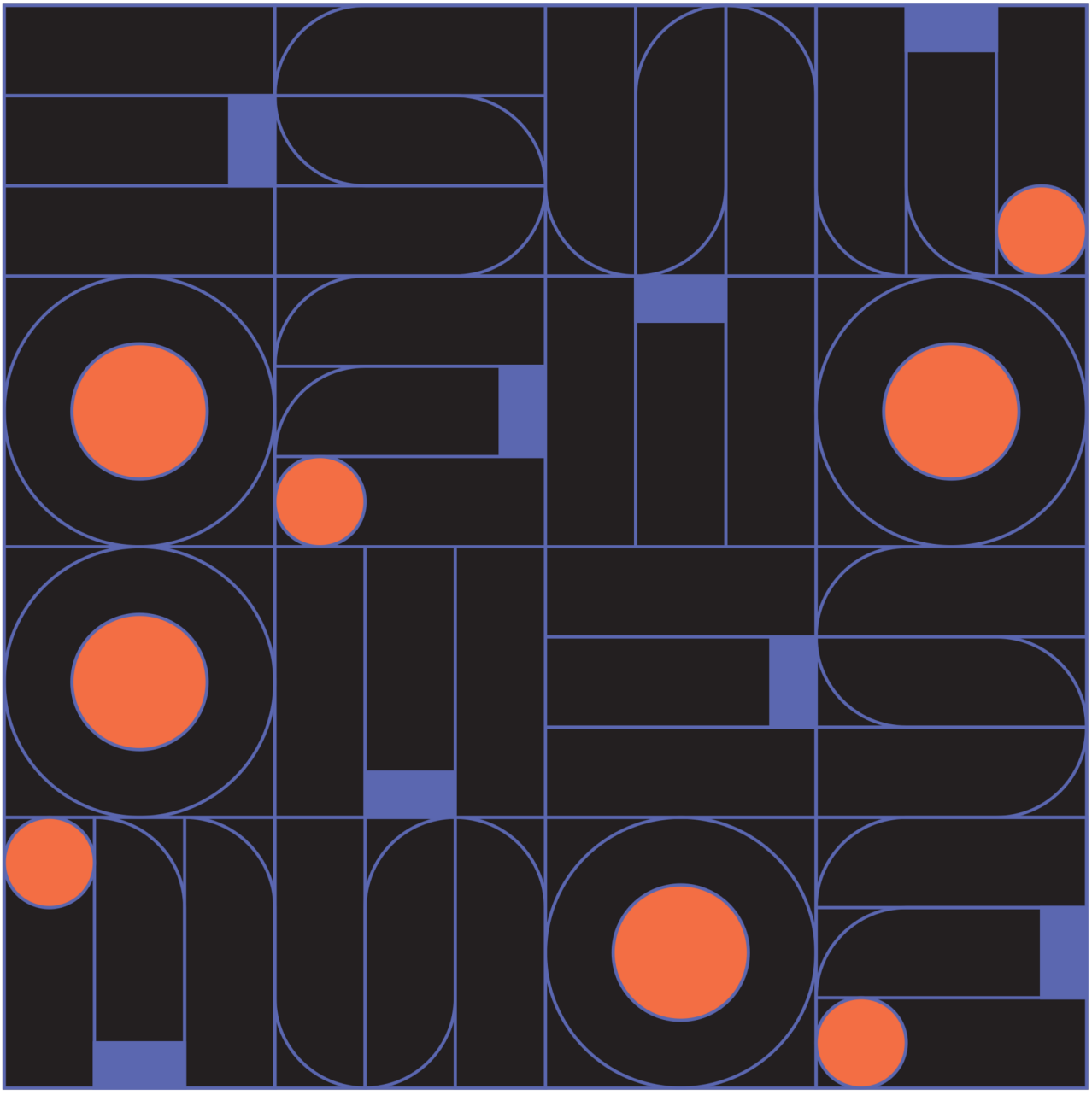
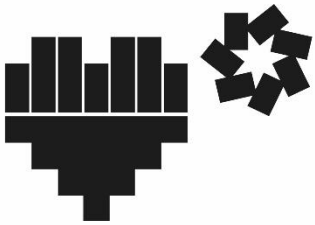


Abstracts

ESOF 2024
EuroScience Open Forum
Katowice 12–15 June
Life Changes Science



European
City of Science
Katowice 2024

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EuroScience Open Forum
12–15 June 2024
Katowice, Poland

Life changes science

Book of abstracts

Editors

Patrycja Kierlik, Science Departament, University of Silesia in Katowice
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Book Cover Design

Tomasz Kipka, University of Silesia in Katowice

Index

The EuroScience Open Forum was a biennial event providing the scientific community with a platform for interdisciplinary debate on scientific culture, research, and innovation. It was created for society's benefit and involved public participation.

The main goal of ESOF2024 was to explore the connections between science and society, the conditions for scientific research, the processes of discovery, and their societal impact. The aim was to spark discussions on the social, cultural, and economic consequences of scientific breakthroughs at regional, national, European, and global levels, emphasizing international cooperation and how science both drives and is shaped by life.

The program featured lectures, seminars, debates, workshops, poster presentations, exhibitions, and interactive sessions. The theme was "Life changes science." Katowice hosted leading scientists, researchers, public and private sector representatives, business leaders, media, and others interested in the role of science in today's world.

ESOF2024 focused on six key areas: Energy Transition, Sustainable Environment, Cultural Identity and Societal Transformation, Changes Within Scientific Excellence, Healthy Society, and Digital Transformation.

Held from June 12–15, 2024, ESOF2024 was organized by six Silesian universities, forming a consortium after Katowice was named European City of Science. Katowice managed the event and funded activities, including ESOF2024.

The conference took place at the International Congress Centre (MCK) in Katowice, located in the Culture Zone. The final program included 121 sessions, 10 keynote speeches, 150 oral presentations, and 91 poster presentations across six thematic areas. Additional activities included the European Talent Fair, exhibitions, seminars, and various networking events.

The ESOF2024 Organizing Team, alongside Steering Committee, Programme Committee and Media Committee, oversaw the conference, with key cooperation between the seven universities and the city of Katowice.

The ESOF2024 Steering Committee

Prof. Ryszard Koziołek, Rector of the University of Silesia, leader of the Academic Consortium Katowice City of Science 2024, ESOF 2024 Champion, and Chair of the Committee,
Matthias Girod, Secretary General at EuroScience,
Marcin Krupa, PhD, Mayor of Katowice,
Anna Budzanowska, PhD, ESOF2024 Champion,
Prof. Władysław Szymański, Rector of Karol Szymanowski Academy of Music in Katowice,
Prof. Grzegorz Hańderek, Rector of the Academy of Fine Arts and Design in Katowice,
Prof. Grzegorz Juras, Rector of Jerzy Kukuczka Academy of Physical Education in Katowice,
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Prof. Tomasz Szczepański, Rector of the Medical University of Silesia in Katowice,
Prof. Celina M. Olszak, Rector of the University of Economics in Katowice.

The ESOF2024 Programme Committee

Prof. Michał Daszykowski, Vice-Rector for Research and Finance of the University of Silesia in Katowice – chair,
Prof. Eng. Marek Pawełczyk, Vice-Rector for Research and Development of the Silesian University of Technology – vice-chair,
Prof. Wanda Palacz, Vice-Rector for Education and Research of the Karol Szymanowski Academy of Music in Katowice,
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Bogdan Bacik, PhD, DSc, Assoc. Prof. of the Academy of Physical Education, Vice-Rector for Research of the Academy of Physical Education in Katowice,
Prof. Katarzyna Mizia-Stec, MD, PhD, Vice-Rector for Science and International Cooperation of the Medical University of Silesia in Katowice,
Prof. Maciej Nowak, Vice-Rector for Research and Academic Staff Development of the University of Economics in Katowice,
Prof. Zbigniew Błocki, Jagiellonian University in Kraków.

The ESOF2024 Media Committee

Jarosław Juszkiewicz, Science journalist – chairman,
Jacek Szymik-Kozaczko, Spokesperson for the University of Silesia in Katowice – vice-chairman,
Anna Leszczyńska-Rożek, Science journalist,
Elżbieta Wieteska, Editor-in-Chief of Świat Nauki (Science World), Polish edition of Scientific American magazine,
Anna Ślązak, Editor-in-Chief of PAP Nauka w Polsce (Polish Press Agency Science in Poland),
Piotr Kieraciński, Editor-in-Chief of Forum Akademickie (Academic Forum),
Ewelina Kosałka-Passia, Radio Katowice,
Przemysław Jedlecki, Gazeta Wyborcza Katowice,
Marcin Zasada, SLAZAG portal,
Maciej Stachura, Secretary of the City of Katowice,
Milica Momcilovic, President of the World Federation of Science Journalists,
Tony Lockett, Head of Communications at the European Research Council,
Clive Cookson, Science Editor of Financial Times UK.

Sustainable Environment

Lectures, Panels, and Short Presentations

0037
Abstract number

Innovative Approaches to Sustainable Resource Management: Bridging Science and Industry

Mulas Gabriele [1], Bartrolí Albert [2], Iyubchyk Svitlana [3], Gutierrez-Dominguez Rodrigo [4], Moschovi Anastasia[5], Piccinetti Leonardo [6], Yakoumis Yakoumis[7]

[1] University of Sassari, Italy

[2] AERIS , Spain

[3] Nova University Lisbon , Portugal

[4] European Research Executive Agency (REA), Belgium

[5] MONOLITHOS Catalysts & Recycling Ltd., Greece

[6] SITES , Ireland

[7] SME, MONOLITHOS Catalysts & Recycling Ltd., Greece

In a time of resource scarcity, resource exploitation has significant environmental and economic impacts. EU's ongoing initiatives emphasize the importance of investing in sustainable resource management-driven innovation, which prioritizes efficiency and minimizes environmental harm through recycling, reusing, and waste reduction. A series of EU-funded projects offer insights into innovative technological solutions. VALZEO enhances rice production and environmental protection by recycling Rice Husk Ash to produce composite materials for pollutant removal and biodiesel catalysts. CO2MPRISE focuses on revolutionizing CO2 capture and conversion while ensuring a sustainable supply chain of raw materials. NANOGUARD2AR applies innovative nanomaterials for environmental protection, and CHemPGM excels in managing platinum group metals resources. A 60-minute debate session will foster knowledge sharing, interdisciplinary collaboration, and sustainable resource management solutions. Team A advocates for the positive impact of clean technologies, while Team B argues for the existing gap between industrial developments and environmental protection. The session includes opening statements, rebuttals, crossfire, closing statements, a QA session, and remarks. This approach promotes holistic learning, critical thinking, and awareness through live streaming and social media promotion, encouraging active participation and interaction with speakers. The target audience are researchers, and professionals in various scientific and engineering fields, promoting a comprehensive understanding of clean technologies' role in sustainable resource management.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Resource, Sustainability, Environment, Innovation, Interdisciplinary, Efficiency, Regulations, Policies, Exploitation, Debate

Bibliography

Additional information
VALZEO , CO2MPRISE, NANOGUARD2AR

Information about speakers
Number of speakers: 3 speakers

0042
Abstract number

Tracking invisible contaminants: sources and fate of micropollutants

Gallego Torres David[1], Jansen Eystein[2], Rissanen Matti[3], Schultz Martin[4], Passananti Monica[5], Niemann Helge[6]

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[2] Department of Earth Sciences, University of Bergen, Norway
[3] Faculty of Engineering and Natural Sciences, University of Tampere, Finland
[4] Institute for Advanced Simulation - Jülich Supercomputing Centre , Forschungszentrum Jülich , Germany
[5] Department of Chemistry, University of Turin, Italy
[6] Microbiology & Biogeochemistry, Royal Netherlands Institute for Sea Research NIOZ, Netherlands

We recently witnessed northwest Spain coasts covered in plastic mini-pellets. The discovery of microplastic particles in remote locations (e.g., Barnes et al., 2009) evidenced that micropollutants are ubiquitous representing a global challenge. These synthetic compounds are accumulated in aquatic, atmospheric and terrestrial environments (e.g., Spindola Vilela et al., 2022; Andrady 2015; Gavrilescu et al., 2015) and consequently incorporated in living organisms. Micropollutants remain difficult to detect and trace despite their generalised occurrence. In this session, our four speakers will present examples of their research on micropollutants found in the ocean, atmosphere and biosphere.

Air pollution is cause of premature mortality. In-situ created nanoparticles are central to reduced air quality. Matii Rissanen (ERC project ADAPT) analyses fast generation of chemicals responsible for airborne nanoparticles and their effect in urban air quality.
What can Artificial Intelligence (AI) do for air quality? The research of Martin Schultz (ERC project IntelliAQ) focuses on the capabilities of using AI in the control and prediction of air quality.
Atmosphere - oceans interaction form a complex coupled system. Monica Passananti (ERC project NaPuE) is studying the reactivity of plastic debris toward (sun)light and chemical oxidants, naturally present in the environment, and their degradation products.
In the aquatic environment, Helge Niemann (ERC project VORTEX) investigates how microorganisms can "eat" microplastics, using them as part of their biological activity.
The session is co-organised with the support of the European Research Council (ERC), aiming at funding research at the frontiers of knowledge. These four projects are examples of the forefront of this emerging field.

Form of presentation
Debate (min. 3 speakers)

Keywords
Microplastics. Nanoparticles. Atmosphere pollution. Ocean contaminants.

Bibliography
A. Andrady. Microplastics in the marine environment. Marine Pollution Bulletin, Vol. 62 – 8, pp. 1596-1605, 2015. 10.1016/j.marpolbul.2011.05.030
D.K. Barnes, F. Galgani, R.C. Thompson, M. Barlaz. Accumulation and fragmentation of plastic debris in global environments. Philos. Trans R Soc Sci. A, 364, pp. 1985-1998, 2009 https://doi.org/10.1098/rstb.2008.0205
M. Gavrilescu, K. Demnerova, J. Aamand, S. Agathos, F. Fava. Emerging pollutants in the environment: Present and future challenges in biomonitoring, ecological risks and bioremediation. New Biotechnology, Vol. 32 – 1, pp. 147-156. 2015. 10.1016/j.nbt.2014.01.001
C.L. Spindola Vilela, T. Lopes Damasceno, T. Thomas, R. Silva Peixoto. Global qualitative and quantitative distribution of micropollutants in the deep sea. Environmental Pollution, Vo. 307, 2022. https://doi.org/10.1016/j.envpol.2022.119414

Additional information
Session moderated by Eystein Jansen, Vice President of the European Scientific Council.

Information about speakers
Number of speakers: 6 speakers

0076
Abstract number

High temperature Hazardous wastes tretment / illegal hazardous wastes landfills in Poland

Mroz Lukasz[1]

[1] Sarpi Dąbrowa, Poland

Infomation about the porcess of disposal hazardous wastes in high temperature instalation (biggest in Poland) , information about the illegal landfils disposal in Poland.

Form of presentation
TED Speech (max 2 speakers)

Keywords
hazardous wastes disposal

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0085
Abstract number

Who wants to be a millionaire?: An interactive session to learn about a greener way of producing medicines thanks to mechanochemistry

Gomollón Bel Fernando[1], Sáenz de la Torre Lasierra Juan José[1], Flamarique Pérez Leyre[1], Colacino Evelina[2]

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[2] Université de Montpellier, France

In this session we want to address the environmental impact of the current pharmaceutical industry and how mechanochemistry is an innovative method to reverse this. Mechanochemistry uses mechanical force to drive the chemical reactions with high efficacy and low cost. The main advantage of mechanochemistry is that it moves away from the need of solvents, usually the basis of all traditional reactions, and often linked to the generation of high quantities of toxic waste.

We will use a very interactive and entertaining format based on the Who Wants to be a Millionaire television game show, but adapted to a TED speech with two speakers and the assistants as contestants. One of the speakers, a science communicator, will be the presenter of the programme. The attendees will be able to answer questions through a digital platform. An expert will participate as a second speaker offering explanations and clarifications after each question. This will be complemented by open questions asked by the audience to the expert, thus increasing participation.

Our objective is, therefore, to mobilise the audience's prior knowledge while encouraging them to engage with the session thanks to its interactive format. The ultimate goal is to raise awareness of how the pharmaceutical industry is a significant contributor to climate change and waste generation and how innovative clean technologies can serve as a bridge for the industry and natural environment.

This session is organised in the framework of a Horizon Europe project, IMPACTIVE, which works to develop greener ways of producing pharmaceuticals, using mechanochemistry.

Form of presentation
TED Speech (max 2 speakers)

Keywords
pharmaceutical industry, mechanochemistry, clean technologies, IMPACTIVE, solvents, chemical reactions, medicines, climate change, environment, waste

Bibliography

Additional information

Information about speakers
Number of speakers: 2 speakers

0088
Abstract number

The Role of Universities to Achieve Climate-Neutral Cities

Rosetta Federica[1], Martin Rachel[2], Voegler Max[3], Dąbrowski Łukasz [4], Hollmén Saija [5], Kiernicka-Allavena Joanna [6], Garbowski Marcin[7]

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[2] Global Sustainability, Research Networks, Elsevier, Netherlands
[3] Elsevier, Netherlands
[4] Pomeranian Local Government, Poland
[5] Aalto Unviersity School of Arts Design Architechture, Finland
[6] Cities Lead, EIT Climate-KIC; Energy Transition Initiative, Poland
[7] Strategy and Investor Relations Department, Lublin Municipal Office, Poland

The European Union's Cities Mission, aiming for 100 climate-neutral cities by 2030, sets an ambitious agenda. Universities, as societal influencers, not only shape perspectives and understanding of sustainability but also hold a pivotal role in translating these perspectives into action. This influence is particularly pronounced in the cities and communities where universities are embedded. The development of clean technology, cutting-edge research and strategic collaborations driven by universities is actively transforming EU cities. However, the path to achieving climate neutrality requires a well-defined blueprint for collaboration between cities and universities. This panel aims to explore the symbiotic relationship between cities and their local universities, emphasising the critical role universities play in realizing the EU Cities Mission. Key questions to be addressed include: what constitutes an effective collaboration model between cities and universities for sustainability? How can universities best support and accelerate their cities' ambitious sustainability plans? This discussion will delve into the multifaceted aspects of collaboration, touching on funding mechanisms, talent development, educational initiatives and creativity in propelling cities towards climate neutrality at an accelerated pace. By examining successful case studies and innovative approaches, we seek to provide insights into how universities can serve as epicentres for driving sustainability in urban spaces. Join us in unravelling the dynamics of this partnership, understanding the levers that universities can pull to bolster the sustainability initiatives of their cities, and charting a course towards the shared goal of achieving climate-neutral urban spaces swiftly.

Form of presentation
Debate (min. 3 speakers)

Keywords
EU Cities Mission; Climate Neutrality; Collaboration Models; Urban Sustainability; Strategic Partnerships.

Bibliography

Additional information
Prof. Francesca Da Porto, Dr. Mariusz Sagan and Dr. Timo Cantell to be confirmed.

Information about speakers
Number of speakers: 4 speakers

0094
Abstract number

Towards coexistence. Symbiocene as a response to the challenges of the climate crisis

Skubała Piotr[1], Ochwat Magdalena[2], Kopaczewska Anna[3]

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[2] University of Silesia in Katowice, Faculty of Humanities, Poland
[3] The Academy of Fine Arts and Design in Katowice, Poland

The human influence of the earth ecosystem has become so destructive that we need a new vision of the world that will offer hope. We believe that we must make an effort to create a new path that takes into account the role of symbiosis in functioning of life on Earth. Symbiosis turns out to be a regular phenomenon that is fundamental to all living beings and permeates ecosystems [1]. Biology today refers to the human, animal, and plant organism as a biological network that is composed of a host and a myriad of non-human beings [2]. Science clearly proves that the metaphor put forth by Alfred Tennyson, "Nature, red in tooth and claw," is far from the truth, whereas Douglas H. Boucher is right when he describes nature as a great community "green in root and flower" [3].
We believe that the time of this change must no longer be called the Anthropocene. Australian scholar Glenn Albrecht postulates the conceptual framework for the new epoch and calls it the Symbiocene [4]. It will be characterized by replicating symbiotic life processes in human activities. We focus on the three selected phenomena in which close multilateral cooperation plays a significant role. These are: the life of lichens, the functioning of mycelium with plants, especially the role of Mother Trees over young stands, and permaculture as an example of symbiotic agriculture. We take these examples as a training in collective imagination in good interspecies living and draw on selected literary texts.
The idea of the Symbiocene, an inclusive and integrative philosophy of life, has great potential to become a new direction not only in the natural sciences, but also in the social sciences and humanities. As part of the conclusion, we will make an attempt to visualize the Symbiocene and its assumptions.

Form of presentation
Lecture (1 speaker)

Keywords
symbiosis, Symbiocene, Anthropocene, competition, literature, art

Bibliography
[1] January Weiner, Życie i ewolucja biosfery. Podręcznik ekologii ogólnej, Warszawa, PWN, 2020.n[2] Seth R. Bordenstein, Kevin R. Theis, Host Biology in Light of the Microbiome: Ten Princi-ples of Holobionts and Hologenomes, PLoS Biology, 13(8): e1002226, 2015, https://doi.org/10.1371/journal.pbio.1002226\\n[3] Piotr Skubała, Marek Oziewicz M., Do We Live on the Symbiotic Planet? Ecological Principles of Life on Earth and Their Literary Implications. In: Justyna Deszcz-Tryhubczak and Marek Oziewicz (eds), Towards or Back to Human Values? Spiritual and Moral Dimensions of Contemporary Fantasy, Cambridge Scholars Press, 2016.n[4] Glenn Albrecht, Earth Emotions. New Words for a New World. Ithaca, Cornell University Press Ithaca–London Press, 2016.

Additional information

Information about speakers
Number of speakers: 1 speaker

0096
Abstract number

Climate Extremes, Ecosystem Dynamics, and Societal Implications in a Changing World- Insides from the MSCA Postdoctorate Fellowship Programme

GAGATSI Elisavet[1], LE SCAO ROZENN[1]

[1] MSCA - PF, RESEARCH EXECUTIVE AGENCY, Belgium

The session showcases results of 6 Horizon Europe projects funded by the prestigious Marie Sklodowska Curie Action, Post-doc fellowship (MSCA-PF) programme.
The projects tackle important global & societal challenges towards a Sustainable Environment addressing the ESOF themes on Understanding the vulnerability & resilience of environment, supporting sustainable development and Observing/predicting future climate dynamics & ecosystem responses.
MSCA-PF supports bottom-up & frontier research, contributes to tackling climate & environmental challenges & promotes sustainable research in line with the Green Deal, the UN2030 Agenda & the Sustainable Development Goals -SDGs.
6 MSCA post-doc researchers will present their interdisciplinary research, including first results of their work on a topic of high interest to both scientists & non-specialist audience.
Researchers will explain how they contribute to specific areas of theoretical & applied research, to societal & global challenges towards sustainable environment and to expanding regional & global knowledge.
The projects are addressing the different fields of terrestrial & marine ecology, paleoecology, biodiversity conservation, climatology, pollution & climate extremes. They address the SDGs on Climate change, Life on land and below water, contribute to the Green Deal goals, the EU Mission on Ocean & Waters, the 2030 biodiversity strategy, the EU Forest Strategy, the sustainable blue economy strategy, as well as the EU climate strategies.
The Research Executive Agency (REA) aims to shed light to excellent research that is being implemented under the MSCA-PF in the above fields allowing researchers to discuss their work, results & considerations on future research priorities.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
climate extremes, terrestrial and marine ecology, paleoecology, biodiversity ecosystem conservation, climatology, pollution

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

0198
Abstract number

Frontier research, concrete outcomes for European ecosystems conservation

Verheyen Kris[1], Gaspar de Freitas Joana[2], Marín Moreno Inés T. [3], Magrach Ainhoa [4], Auvergne Noelie[3], Singer Gabriel[5], de Groeij Jasper[6]

[1] Department of Environment, University of Ghent, Belgium
[2] Faculty of Letters, University of Lisbon, Portugal
[3] European Research Council Executive Agency, Belgium
[4] Basque Centre for Climate Change , Spain
[5] Department of Ecology, University of Innsbruck, Austria
[6] Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam, Netherlands

Biodiversity and nature provide food, clean air and water as well as energy and raw materials. They play a key role in regulating climate, bringing social and health benefits, and supporting economies. Across Europe and the world, human activities have transformed nature for millennia, and impacted biodiversity, which is now declining at an unprecedented rate. With its Nature Restoration Law, the EU agreed on a continent-wide, comprehensive law that aims to restore ecosystems.

This session will bring together researchers whose work is at the forefront of biodiversity conservation. Funded by the European Research Council (ERC) to explore the frontiers of science without any predetermined policy priorities, these speakers have developed models, experiments, tools and recommendations to inform nature conservation policies or lead to concrete biodiversity management actions at the local or regional levels. They bring perspectives and know-how from life and environmental sciences as well as history and environmental governance. Their research bridges the gap between scientific advances and their applications in policy or concrete decisions to protect European ecosystems, from forests to rivers, down to coastal environments and open oceans.

The speakers in this session are among a group of more than 230 ERC grantees who address a wide range of research questions related to biodiversity, advance knowledge, and deliver solutions for the scientific community and policy makers. Their projects were identified by the ERC Executive Agency for their potential to inform biodiversity policies or because they had already demonstrated tangible impact through their results.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Biodiversity, ecosystems restoration and conservation, science for policy, forests, land use, rivers and freshwater ecosystems, ocean, coastal ecosystems, EU protected areas, sustainable environment management, nature-based solutions

Bibliography
European Commission, European Research Council Executive Agency, Mapping ERC frontier research biodiversity, Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2828/42652

Additional information

Information about speakers
Number of speakers: 5 speakers

0223
Abstract number

Preserving soil health and improving soil literacy across Europe

Morawska Joanna[1], Eric Dobrivoje Lale[2], Jianu Daniel[3], Kuhnová Marta[4], Steinhaus Norbert[5]

[1] Faculty of Human Geography and Planning, Adam Mickiewicz University, Poland
[2] Department for International Cooperaton, Center for the Promotion of Science, Serbia
[3] APOPSI Group of Companies, Greece
[4] Faculty of Social Sciences, University of St. Cyril and Methodius of Trnava, Slovakia
[5] Wissenschaftsladen Bonn, Germany

Soil hosts more than 25% of all biodiversity on the planet and is the foundation of our food chains and above ground biodiversity and clean water. However, there are many problems and challenges related to the limitation and mismanagement of global soil resources. These urgent problems lack the necessary visibility and awareness. Current situation demands constant and overarching actions, addressing multiple gaps and shortcomings, as preserving healthy soil is a critical topic of our time. In order to preserve soil, we need more than the scientific information - people need to understand how healthy soils impact their lives and then engage in tackling the problems from different perspectives. This session will showcase selected policies, innovative educational practices and public interventions, aiming at the inevitable action and promotion of the soil health and soil literacy across Europe. Topics that will be discussed are of a multidisciplinary nature, such as: the role of universities in supporting soil education for the future; co-creation of tools and methodologies for innovative education; smart governance and models for agroecological carbon farming; connecting science and art through citizen actions for soil awareness etc. Speakers will present their cases and then allow for subsequent discussion and exchange with attendees. The audience will be asked to comment and reflect on presented practices by sharing their ideas, knowledge and perspectives. Instead of a conclusion, we'll invite participants to join in related activities that will be announced, in their respective countries or through belonging networks and associations across Europe - like the Researchers' Night events, Horizon Europe LOESS project, art+science programmes, Living Knowledge Network etc.

Form of presentation
Debate (min. 3 speakers)

Keywords
soil health; soil education; local environments in tackling global environmental challenges; research on the quality of water, soil and air; biodiversity and protection of selected areas; citizen science

Bibliography

Additional information

Information about speakers
Number of speakers: 5 speakers

0251
Abstract number

Biochemistry for a greener world: how enzymes can transform the chemical industry and help create sustainable consumer products

Hidalgo Aurelio[1], Ferrer Manuel[2], Bjerga Gro[3], Peñalva Carolina[4]

[1] Center for Molecular Biology "Severo Ochoa", Autonomous University of Madrid, Spain
[2] Institute of Catalysis, Autonomous University of Madrid, Spain
[3] NORCE Research, Norway
[4] Aitiip Centro Tecnológico, Spain

Increasing the sustainability of industrial processes is essential to achieve the EU's sustainability goals and strengthen the bioeconomy. Enzymes, as natural tools of chemical transformation, have the potential to provide these solutions sustainably and efficiently. However, their industrial application is still hindered by different technical limitations: low success rates of discovery and engineering; tedious and expensive methods to explore diversity; and limited activity/stability in the final application. How far are we to achieve real change? What barriers lay ahead after scientific development?

In this session, we will explore the state of the art in enzyme research and application from a holistic approach. We will count with the participation of the EU Cluster of Enzymes for Greener Products, which brings together the knowledge, expertise, and technological capacity of 56 research, industry, and innovation organisations across 17 countries to take on the challenge of applying enzymes to boost the development of greener products, fast-tracking them to the market, and enhancing climate neutrality. Along with the Cluster, the session will include external speakers to provide insights on the needs of policymakers and industries in order to make the use of enzymes in consumer products an ever more present reality.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
green economy, clean technologies,, eco-innovations, bioproducts, bioeconomy, biotechnology, enzymes

Bibliography
European commission. Special Eurobarometer 501-Attitudes of European Citizens towards the Environment; 2019
Bell, E.L., Finnigan, W., France, S.P. et al. Biocatalysis. Nat Rev Methods Primers 1, 46 (2021). https://doi.org/10.1038/s43586-021-00044-z
María, P.D.; de Gonzalo, G.; Alcántara, A.R. Biocatalysis as Useful Tool in Asymmetric Synthesis: An Assessment of Recently Granted Patents (2014–2019). Catalysts 2019, 9, 802. https://doi.org/10.3390/catal9100802
Truppo MD. Biocatalysis in the Pharmaceutical Industry: The Need for Speed. ACS Med Chem Lett. 2017;8(5):476-480. Published 2017 Apr 18. doi:10.1021/acsmedchemlett.7b00114
Wu S, Snajdrova R, Moore JC, Baldenius K, Bornscheuer UT. Biocatalysis: Enzymatic Synthesis for Industrial Applications. Angewandte Chemie International Edition. 2020;60(1). doi:https://doi.org/10.1002/anie.202006648

Additional information
The EU Cluster of Enzymes for Greener Products is an initiative joining four projects that have received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement numbers 101000560 (RadicalZ), 101000327 (FUTURENZYME), 101000607 (OXIPRO), 101000831 (EnXylaScope). All projects work on the development of innovative technologies for the use of enzymes in consumer products.

Information about speakers
Number of speakers: 5 speakers

0253
Abstract number

The use of plant growth-promoting bacteria to enhance phytoremediation of polluted areas

Noszczynska Magdalena[1], Pacwa-Płociniczak Magdalena[1], Płociniczak Tomasz[1]

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Phytoremediation is one of the biological methods that uses plants to remove various pollutants from contaminated soil and water. Apart from plants, microorganisms that inhabit their interior and the soil and water environments directly adjacent to the roots also play a crucial role in this method. These bacteria can stimulate the degradation of organic pollutants, e.g., petroleum hydrocarbons (PHs) or bisphenols (BPs), contribute to the mobilization and uptake of heavy metals (HMs) by plants, and improve plant growth under PHs, BPs, and HMs exposure. In general, plant-associated bacteria play a key role in the adaptation of a host plant to a polluted environment. It has been suggested that cooperation between plant growth-promoting bacteria and plants may result in more effective phytoremediation of soil that has been contaminated with these compounds. Nevertheless, under highly polluted conditions or in nutrient-poor areas, the number and activity of microorganisms may not be sufficient to clean the soil and water effectively. Thus, actions are taken to intensify biological decontamination processes. One of them is bioaugmentation, defined as the introduction to a contaminated environment of strains selected in laboratory conditions that have the degradative ability against pollutants, increase their bioavailability, and promote the growth of plants. The main aim of our studies is to identify the main factors that determine the success of bacterial-assisted phytoremediation. Using the latest molecular techniques, we want to examine the mechanisms and interactions to determine if our bioaugmented strains are effective tools for environmental decontamination. Our results may contribute to optimizing phytoremediation processes conducted on a large scale.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Phytoremediation, Bioremediation, Heavy Metals, Bacteria, Organic Pollutants

Bibliography

Additional information
The research received support from the \\\"Innovation Incubator 4.0\\\" program. The program was implemented as part of the Ministry of Science and Higher Education project, \\\"Support for scientific research management and commercialization of R&D results in scientific units and enterprises.\\\" (2022-2023). The research was also supported by the National Science Centre (Poland) (grant numbers: 2020/39/O/NZ9/00342; 2023/49/N/NZ8/02097).

Information about speakers
Number of speakers: 3 speakers

0306
Abstract number

Predicting Our Climate Future: Why we need to rethink our approach to climate change science

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The science of human-induced climate change is profoundly different from the science of climate without human-induced change. It raises new, fundamental challenges that require us to reflect deeply on how we go about its study. This lecture will present a series fascinating questions that climate change raises for how we go about scientific research in a number of fields. It will argue for a substantial restructuring of how we study climate change - a restructuring founded on the need for much deeper integration between the diverse sciences involved, the related conceptual/mathematical/philosophical issues, and the relevant social science disciplines.

The lecture will be based on the recently released, popular science book: "Predicting Our Climate Future: What we know, what we don't know, and what we can't know." It will begin by presenting a series of characteristics that frame the study of climate change and that need to be embedded in future experimental designs and funding initiatives. It will go on to discuss of how these characteristics lead to profound questions that challenge how we go about climate change research and make it as deeply, conceptually interesting as anything in science today; as interesting as the search for dark matter or the origins of consciousness. These questions relate to everything from the limits of our ability to quantify climate change from observations or within a computer model, to how close a model must be to reality to make reliable and detailed climate predictions, to how climate change science needs to be inherently guided by the social sciences in order to provide relevant and robust information.

To respond effectively to the threats posed by climate change the science needs to adapt to how it is being used across society.

Form of presentation
Lecture (1 speaker)

Keywords
climate change, predicting future climate, climate adaptation, designing climate science for society, climate information, climate economics.

Bibliography
Stainforth, D. Predicting Our Climate Future: What we know, what we don't know, and what we can't know. (Oxford University Press, 2023). ISBN: 9780198812937

Also:

Stainforth, D. A. & Calel, R. New priorities for climate science and climate economics in the 2020s. Nature Communications 11 (2020).

Stainforth, D. A., Chapman, S. C. & Watkins, N. W. Mapping climate change in European temperature distributions Environ. Res. Lett. 8 (2013).

Daron, J. D. & Stainforth, D. A. On predicting climate under climate change. Environ. Res. Lett. 8 (2013).

Calel, R., Chapman, S. C., Stainforth, D. A. & Watkins, N. W. Temperature variability implies greater economic damages from climate change. Nature Communications 11 (2020).

Frigg, R., Smith, L. & Stainforth, D. An assessment of the foundational assumptions in high-resolution climate projections: the case of UKCP09. Synthese, 1-30 (2015).

Information about speakers
Number of speakers: 1 speaker

0349
Abstract number

ENERGETIC project: Safer, Smarter Batteries through Advanced BMS and Artificial Intelligence

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[2] Senior Lecturer in Electric Propulsion Systems, University of Bath, United Kingdom
[3] University of Applied Sciences, Karlsruhe, Germany
[4] Pôle Véhicule du Futur, France
[5] Zabala Innovation, Belgium

Energy storage improves grid flexibility and allows higher penetration levels of renewable energy sources to create a decarbonised and more electrified society by means of leveraging second-life batteries. Battery management system (BMS) plays an essential role by ensuring an efficient and safe battery operation. However, current BMS typically rely on semi-empirical battery models and on a limited amount of measured data. Therefore, ENERGETIC project aims to develop the next generation BMS for optimizing batteries' systems utilisation in the first (transport) and the second life (stationary) in a path towards more reliable, powerful and safer operations. The project contributes to the field of translational enhanced sensing technologies, exploiting multiple AI models, supported by Edge and Cloud computing. ENERGETIC's vision not only encompasses monitoring and prognosis the remaining useful life of a Li-ion battery with a digital twin, but also diagnosis by scrutinising the reasons for degradation through investigating the explainable AI models. This involves development of new technologies of sensing, combination and validation of multiphysics and data driven models, information fusion through AI, Real time testing and smart Digital Twin development. Based on a solid and interdisciplinary consortium, the ENERGETIC R&D project develops innovative physics and data-based approaches both at the software and hardware levels to ensure an optimised and safe utilisation of the battery system during all modes of operation.

The speakers will introduce the new challenges in the field of electric mobility and the second life of the battery. The focus will be on new storage chemistries, using advanced AI approaches to understand ageing and act on the total cost of ownership.

Form of presentation
Debate (min. 3 speakers)

Keywords
– Electrical & Electronic engineering,– Battery Management Systems, Digital Twins, AI, Battery Sensors, Cloud and Edge Computing, Data driven models, Multiphysics Models

Bibliography

Additional information

Information about speakers
Number of speakers: 5 speakers

0376
Abstract number

Water in the City

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Of all Earth's sub-cycles, the water cycle, particularly its part acting on the Earth's surface, has always been and will always be crucial for life. The growing population and urbanisation, combined with current climate change, worsen both the availability and quality of water. In the urban areas, the water conditions are particularly complicated. Many cities experience both urban floods and droughts at the same time. The adaptation measures are necessary in line with public discussion to increase awareness and educate the citizens. The debate will start with an introductory presentation on the role of water in the Earth system, focusing on the water cycle and its climate change-induced implications by the moderator.

Each speaker will present the 10 min speech all related to the water in the city.

The topics:

- The effect of climate change on water hazards in the city in global and local scales.
- The monitoring and quality of the water in the city.
- The role of the Rawa river in the city, past, present and future.
- The transformation of the Emscher – what can we learn?
- How can we adapt. The application of AI in water management

Form of presentation
Debate (min. 3 speakers)

Keywords
research on the quality of water, climate change effects, local environments in tackling global environmental challenges, Anthropocene

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

0518
Abstract number

Energy transition - Novel ecosystem development in the urban industry areas as the prerequisite of the modern economy

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Abstract

Novel ecosystems are the results and beginning of the energy transition. Due to the specific habitat conditions of the post-mining mineral material, the organisms are gathered according to new rules and unknown pathways of ecosystem development. The spontaneous herbaceous vegetation growing on post-coal mine heaps consists of a mosaic of patches dominated by species confined to a wide range of microhabitats. The spontaneous herbaceous vegetation growing on post-coal mine heaps consists of a mosaic of patches dominated by species confined to a wide range of microhabitats. The recorded vegetation patches are composed together of species known as typically growing in very different vegetation types including the aquatic and marsh habitats, along with dry meadow and other grassland communities, stony gravel communities, and ruderal habitats. The most accurate description of the vegetation growing spontaneously on post-mineral mining sites is the presence of dominant species. The dominant species drive the physiognomy and functionality of a given vegetation patch. Understanding the mechanisms that rule the spontaneous vegetation plant species composition developed under habitat and environmental conditions created by humans is crucial for efficient management of urban-industrialized areas. It is essential for sites where the knowledge about the ecosystem functioning processes and environmental habitat conditions, from the natural or semi-natural habitats, cannot be used.

Form of presentation
Debate (min. 3 speakers)

Keywords
novel ecosystem, biodiversity enhancement, wildlife dvelopment, the postminig sites environmental potential

Bibliography
Woźniak, G.; Kamczyc, J.; Bierza, W.; Bło ´nska, A.; Kompała-B ˛aba, A.; Sierka, E.; Jagodzi ´nski, A.M. Functional ecosystem parameters: Soil respiration and diversity of mite (Acari, Mesostigmata) communities after disturbance in a Late Cambrian bedrock environment. L. Degrad. Dev. 2022, 33, 3343–3357.

Additional information

Information about speakers
Number of speakers: 5 speakers

Sustainable Environment

Poster Sessions

0025
Abstract number

Investigation of the origin of polycyclic aromatic hydrocarbons (PAHs) in the Katowice area using a multi-component integrated calibration method

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A basic variant of the integrated calibration method (ICM) was applied to multi-component analysis to obtain a new methodological approach to improve the quality of analytical results. The analytical effectiveness of the proposed method was assessed on the example of determining polycyclic aromatic hydrocarbons (PAHs) in various environmental samples from the Katowice region. High-performance liquid chromatography (HPLC) with fluorescence detection (FLD) was used for all analyses. The aim of the study was to determine the origin of PAHs in various places in this urbanized and industrialized region. A method for preparing natural samples (air, dust, river water, tap water, river sediment, snow) and extraction methods was developed during the research. The ICM method allowed for the elimination of interference resulting from the coelution of other substances. The occurring interferences had multiplicative character. Diagnostic coefficients free from systematic errors and interference were calculated for the obtained results. The obtained results were consistent with principal component analysis (PCA). The estimated diagnostic coefficients allowed for the identification of sources of origin. On the one hand, it was determined whether these sources were petrogenic or pyrogenic, and on the other hand, they were classified into the following groups: grass, wood and coal combustion, petroleum combustion, petroleum, or mix sources. The method was assessed for analytical suitability using the RGB Additive Color Model and environmental friendliness using the AGREE - Analytical GREEnness Metric approach. The proposed method has been classified in the White category, which means that it can be successfully adapted to other analytical systems and is environmentally friendly.

Form of presentation
Poster presentation

Keywords
Polycyclic aromatic hydrocarbons (PAHs), Integrated calibration method (ICM), Multicomponent analysis, HPLC, Origin of PAHs

Bibliography
Paweł Świt, Joanna Orzel, Sławomir Maślanka, Investigation of the origin and concentration of polycyclic aromatic hydrocarbon with improved accuracy by the use of a multi-component integrated calibration method in the Katowice region, Poland, Journal of Hazardous Materials 448:130871, 2023, DOI: 10.1016/j.jhazmat.2023.130871

Additional information
The research activities co-financed by the funds granted under the Research Excellence Initiative of the University of Silesia in Katowice.

Information about speakers
Number of speakers: 1 speaker

0036
Abstract number

Mon-ISO-CO2: Insights from the last year of the atmospheric CO2 measurements in the urban atmosphere in Gliwice

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[2] Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Poland

Since 2019, in The Institute of Physics - SCE a new system Mon-Iso-CO2 for sampling the atmospheric CO2 have been developed. This new system have been tested and now have been used in monitoring the CO2 level and isotopic composition of the atmoshperic air in Gliwice to determine the impact of human activity on the environment.
In the last year, monthly and diurnal average CO2 air mole fraction data have been reported for Gliwice. The results reveal greater fluctuations in CO2 amplitude in urban areas compared to the mountain environment. Significant differences in diurnal, nocturnal, monthly, and seasonal variability of atmospheric CO2 are observed in the urban site.

Form of presentation
Poster presentation

Keywords
CO2. monitoring, new system

Bibliography
B. Sensuła, Ł.Chmura, J. Necki, M. Zimnoch, Insights from the last year of the atmospheric CO2 measurements in the urban atmosphere and natural ecosystem in southern Poland, Geochronometria in press (2024, accepted)

Additional information

Information about speakers
Number of speakers: 1 speaker

0050
Abstract number

The impact of climate and human activities on trees growing in Silesia and Opole voivodships - review of the last ten years research

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Trees are an excellent archive of climate change and the anthropogenic effect. Systematic research of recording environmental changes in isotope archives, such as leaves and annual incre-ments of trees growing in Silesian and Opole Voivodeships, conducted since 2011, allows for a comprehensiveanalysis of the impact of environmental changes on trees in 20 and 21st century. The subjects allow fora comprehensive assessment of the impact of biosphere pollution on changes in the width of the annualgrowth of trees and their isotopic and elemental composition in the area of 100 km2. In addition to the creationof chronology (dendrochronology and isotope chronologies), an undoubtedly interesting aspect of theresearch is the analysis of changes in water use by the plant and changes in the isotopic composition ofoxygen and carbon using various models that allow determining isotope fractionation.

Form of presentation
Lecture (1 speaker)

Keywords
climate, human activity, forrests, environment, pollution

Bibliography
B. Sensuła et al., Characteristics of pine needles exposed to pollution in Silesia, Poland: carbon isotopes, iWUE, and trace element concentrations in pine needles, Radiocarbon, 2023, DOI:10.1017/rdc.2023.1

B. Sensuła, N. Fagel, A. Michczyński, Radiocarbon, trace elements and Pb isotope composition of pine needles from a highly industrialized region in southern Poland, Radiocarbon, 2021, DOI:10.1017/RDC.2020.132

B. Sensuła, S. Wilczyński, Tree-ring widths and the stable isotope composition of pine tree-rings as climate indicators in the most industrialised part of Poland during CO2 elevation, Geochronometria, 2018, DOI:10.1515/geochr-2015-0094

Additional information

Information about speakers
Number of speakers: 1 speaker

0054
Abstract number

Proposed practical resolution of the closed loop coal-firing derived fly ash case study in big-volume construction materials production

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The main approaches for delivering low-carbon cementitious materials products focus on energy efficiency in direct, indirect and supply chain emissions, alternative fuels use and prices, decarbonisation through carbon capture, utilisation and storage options, and finally, spreading the market towards bigger-volume closed-loop material availability and performance. Needless to say, new chemistries involve not only the new generation matrix (i.e. geopolymers) but also a green approach to traditional, mineral materials (i.e. Portland cement-based) remaining in their veritable commercialisation although being, as much as possible, optimised in terms of policies to be agreed upon. Technological barriers sensitive to industry, as cement production is, introduced numerous areas of acting within the base of green scoop, where grinding is one of the most electricity-demanding and also resultant material properties-related stages to consider (up to 70% of electric energy consumed used in cement/clinker production). This case study presents experimental results of quality control applied to EN 450 fly ash batch samplings (as received) with different physical-chemical properties (fineness, hydraulicity), and consequently contrasted into different traditional Portland cement-based chemistries. The outcomes challenge the testing for quality requirements towards adjusting the mix formulas in the function of physical parameters, chemical composition, hydraulic factors potential and compressive strength performance derived under the standardised methods (EN 196, EN 197-1), meanwhile discussing CO2 emission savings, energy/material immoderate serviceability or preserving.

Form of presentation
Poster presentation

Keywords
construction industry, hydraulic binders, Portland cement/clinker, coal-fired fly ash by-product, closed circuit economy, Anthropocene, eco-innovations, carbon-intensive industry

Bibliography
Trusilewicz, L. N., Determination of the reactive alumina content of natural and artificial pozzolanic additions, by thermogravimetry and by the Rietveld method. Doctoral thesis, E.T.S.I. Diseño Industrial (Universidad Politécnica de Madrid, Spain), 2014. doi: 10.20868/UPM.thesis.22743.
Marmier, A., Decarbonisation options for the cement industry, Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/174037, JRC131246.
Trusilewicz, L.N., Górak, P., Quality control criteria verified for the EN 450 fly ashes compromising a consistent construction process and use of resources. 8th MCAA Annual Conference 5-7 March 2021 “Research in times of crisis” Marie Curie Alumni Association (MCAA) Poster Panel Session “Engineering” (ENG) 05-07/03/2021 Brussels (Belgium) online event ISBN 978-94-6433-601-6. Book of Abstracts. doi: 10.5281/zenodo.4650066.

Additional information

Information about speakers
Number of speakers: 1 speaker

0056
Abstract number

Biodegradable micronutrients, fertilizers of controlled release, and biostimulants

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We have been given one common planet to inhabit. Its material resources are limited, and human activity has been contributing to environmental degradation since the beginning of its creation. Agriculture provides nutrition for humanity, but not only does it strain environmental resources, but it also leaves an exceptionally large footprint in the form of CO2 emissions and chemical compounds accumulating in the soil, water and air. Fertilizer producers are aware of this problem and at the same time face formal requirements imposed by agencies such as the European Commission (EC). European Green Deal is a set of policy initiatives by the EC with the overarching aim of making the European Union climate neutral in 2050.[1] Bearing in mind concern for the environment we have undertaken joint research with industrial partners that aim to eliminate burdensome chemicals and microplastics accumulating in the environment. The first project we undertook was the development and production of micronutrient fertilizers based on natural ingredients. Every living organism, including plants, needs microelements to function properly. Their bioavailability is limited, and the challenge will be to adjust the dose to individual local needs. But now, thanks to our R&D works, we can be sure that their form, related to natural amino acids and sugars, is fully biodegradable and is not harmful to the environment.[2] Our second project concerns the controlled release of minerals necessary for plant development. Until now, such fertilizers generated microplastics, but we have developed new fertilizers that do not contain synthetic plastics, but natural polymers that easily assimilate in the environment. We are convinced that in this way we successfully achieve the sustainable environment goals.[3]

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
fertilizers; biodegradation; micronutrients; controlled release; biostimulants; European Green Deal

Bibliography
[1] European Commission, Communication from the Commission "The European Green Deal" COM(2019) 640 final Brussels, 11.12.2019.
[2] Patents PL435384A1, PL435383A1, EP3624591A2.
[3] Boberski, P.; Trochała, K.; Studnik, H.; Wójcik, J.; Główka, M.; Kuźnik, N. „Biobased Materials for the Development of Biodegradable Slow-Release Fertilizers" Coatings 2022, 12, 1215. https://doi.org/10.3390/coatings12081215

Additional information
The research was partially financed by: The National Centre for Research and Development under POIR project No. POIR.01.02.00-00-0023/16: Elaboration of innovative fertilizer with the high values of nitrogen as ammonium nitrate enriched with the micronutrients in form of the chelates of biologically important metals (zinc, copper, manganese, molybdenum and iron) based on newly developed chelating ligands. PB acknowledges Ministry of Science and Higher Education of Poland for grant No. DWD/4/21/2020—06/003, NK acknowledges Rector\\\'s professorial grant implemented as part of the Excellence Initiative - Research University program Silesian University of Technology grant No. 04/020/SDU/10-07-01.

Information about speakers
Number of speakers: 1 speaker

0083
Abstract number

Monitoring of Emerging Contaminants in a Drinking Water Reservoir Catchment Area: A Case Study of the Polish Pilot Action within the Interreg Central Europe boDEREC-CE Project

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[2] Faculty of Geographical and Geological Sciences, Adam Mickiewicz University in Poznań, Poland

Emerging contaminants are anthropogenic substances that occur in the environment at relatively low concentrations. These micropollutants encompass residues from pharmaceuticals and personal care products, industrial chemicals, and surfactants. While posing potential risks to the environment and human health, many of these contaminants are not currently included in routine water body monitoring. The boDEREC-CE project tackled the issue of emerging contaminants in drinking water resources, aiming to establish a management strategy for waterworks to ensure the improvement of drinking water quality. The project involved twelve partners from seven European countries, including two Polish partners: Silesian Waterworks PLC and the University of Silesia in Katowice.

The Kozłowa Góra catchment in the Silesian Province (southern Poland) served as the Polish pilot action area. Water monitoring took place between 2020 and 2022 at selected points within the study area. Surface water, groundwater, and wastewater discharge from a treatment plant were sampled at three-month intervals, covering the analysis of 109 emerging contaminants. The analyses were conducted by the Povodí Vltavy laboratory in the Czech Republic.

The results revealed temporal and spatial variability in water contamination with emerging contaminants. While the primary source was the wastewater treatment plant, other pollution sources included an airport, human activities in forested/agricultural areas, and domestic sewage discharges. The project findings underscore the significance of regular monitoring in comprehending the migration and persistence of emerging contaminants in the environment.

Form of presentation
Poster presentation

Keywords
emerging contaminants, pharmaceuticals and personal care products, surface water, water contamination, water quality, monitoring, Poland, Interreg Central Europe

Bibliography
J. Lukač Reberski, A. Selak, V. Vrček, E. De Vito-Francesco, R. Allabashi, S. Handl, J. Czekaj, F. Wolny, K. Ślósarczyk, A.J. Witkowski, S. Sitek, Z. Hrkal, D. Rozman, M. Kuráž, M. Mursaikova, M. Koželuh, M. Brenčič, A. Torkar, I. Vidmar, M. Jelovčan, B.B. Železnik, G. Chiogna, F. Ziliotto, R. Zinser, Y. Adomat, F. Tugnoli, G. Ricciardi, B. Bertolo, S. Ziccardi, G. Roati, MONOGRAPH of the boDEREC-CE project “Board for Detection and Assessment of Pharmaceutical Drug Residues in Drinking Water - Capacity Building for Water Management in CE”, Croatian Geological Survey, Zagreb, 2022, ISBN: 978-953-6907-77-9

M. Patel, R. Kumar, K. Kishor, T. Mlsna, C.U. Pittman, D. Mohan, Pharmaceuticals of Emerging Concern in Aquatic Systems: Chemistry, Occurrence, Effects, and Removal Methods, Chemical Reviews, 2019, DOI: 10.1021/acs.chemrev.8b00299

Additional information
This work was supported by Interreg Central Europe boDEREC-CE project (No. CE1412): “Board for Detection and Assessment of Pharmaceutical Drug Residues in Drinking Water - Capacity Building for Water Management in CE”, co-funded by the European Regional Development Fund. This research was also co-funded by the Ministry of Science and Higher Education of Poland under grant agreement “PMW” No. 5033/INTERREG CE/2019/2.

Information about speakers
Number of speakers: 1 speaker

0115
Abstract number

Fluorescence of beeswax

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Beeswax is a natural substance produced by honeybees through the wax glands. It is a durable and malleable material that honeybees use to construct their honeycombs, providing a structural foundation for storing honey and developing larvae. People have utilized beeswax for various purposes throughout history, including candle making, cosmetics, and as a natural waterproofing agent. Its versatility and natural properties make beeswax a valuable and sustainable resource with applications in traditional and modern industries.
Beeswax is one of the most counterfeited honeybee products. It is adultered with less expensive materials (e.g. stearin, paraffin or lard), colourants or fillers.
Pure beeswax is not inherently fluorescent. However, any impurities may induce fluorescence in the sample. This study examines and discusses the fluorescence properties of natural beeswax and beeswax blends with a few adulterants originating from animals, crude oil and plants.

Form of presentation
Poster presentation

Keywords
Beeswax, fluorescence, adulteration

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0117
Abstract number

Bird Flu Radar: using citizen science data to predict outbreaks of avian influenza

Wortel Marcel[1]

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Avian influenza (AI) is a highly contagious viral disease that affects primarily poultry and wild water birds. There have been continued outbreaks of highly pathogenic avian influenza (HPAI) in both poultry and wild bird flocks. We aim to capitalise on the existence of large citizen datasets on abundance and distribution of 12 wild bird species to assess spatial patterns in abundance and migration migratory routes to develop a prototype spatiotemporal risk assessment from HPAI outbreaks in wild bird populations. We undertake an initial analysis of wild bird abundance from the EuroBirdPortal dataset and movements from the EURING Databank to parameterise a risk model that estimates the weekly probability of having at least one wild bird infected with HPAI at the European Environment Agency (EEA) 50 x 50 km grid scale. The model is validated against data of disease outbreaks from the EU's Animal Disease Information System (ADIS), supplemented with data from EMPRES-i for the United Kingdom. We provide proof of concept that such an approach is valuable and discuss current limitations and outline how the approach might be improved.

We have developed an Early Warning System for HPAI outbreaks in wild birds (https://app.bto.org/hpai). This Bird Flu Radar is a prototype tool which is under constant development and will be further expanded in the future.

Form of presentation
Poster presentation

Keywords
Citizen science, avian influenza, wild birds, poultry, prediction models, bird watching

Bibliography
Gargallo G, Davies JG, Faverjon C, Kampichler C, Baillie SR, Cameron A, Robinson RA and Sierdsema H, 2022. Development of a prototype early warning system for avian influenza in the EU based on risk-mapping. EFSA supporting publication 2022: 19(12):EN-7762. 46 pp. doi:10.2903/sp.efsa.2022.EN-7762.

Additional information
The Bird Flu Radar was produced and adopted by Sovon, ICO, BTO, EuroBirdPortal and Ausvet Europe in the context of a contract with The European Food Safety Authority (EFSA), awarded following a public procurement procedure.

Information about speakers
Number of speakers: 1 speaker

0131
Abstract number

Eco-innovative academic community connecting regional Sustainable Environment Eco-System – Case of University Educons

Andrejevic Panic Andrea [1], Vukadinovic Simonida[1], Kisin Jovana[1], Racic Gordana[2], Jesic Jelena[1]

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[2] Faculty of ecological agriculture, University Educons, Serbia

The Case Study of University Educons encapsulates the essence of an exploration into the transformative potential of an eco-innovative academic community, focusing on the connections between the university and the regional sustainable environment eco-system. Analyzing how sustainability principles are incorporated into academic programs and research initiatives, fostering a culture of environmental responsibility among students and faculty. University Educons integrated new Curriculum into Faculty od Ecological Agriculture – Circular Economy. Eco-innovative on-going projects: GREENLand is an innovative strategy for transforming to a digital Cloud-Based System with the education of staff for research of microplastics in soil, water, and microorganisms, as well as networking with the excellent institutions and stakeholders who are interested in the results of scientific research. The essence of GREENLand is to change the system in which a great contribution will be made to the planet without plastic by working on preventive measures, innovations, and a plan for remediation. Trained professional staff will be able to be more efficient with the help of new digital tools, which will result in the establishment of strong cooperation with institutions and industry. The Science Fund of the Republic of Serbia, approved the financing of the implementation of the University project Educons under the title Circular economy as a model of development that forms a new identity of the Republic of Serbia. The main goal of the project is to assess the capacity of the domestic economy for the transition to circularity, which will provide the basis for the formation of a new identity of the Serbian economy, with an emphasis on agriculture and rural development.

Form of presentation
Poster presentation

Keywords
eco-innovations, eco-sistem, green economy, circular economy, sustainable development

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0134
Abstract number

Preconcentration and determination of selenium in food samples and its speciation in water using total-reflection X-ray fluorescence spectrometry

Musielak Marcin[1], Musielak Ewelina[2], Sitko Rafał[1]

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The presentation presents a new analytical procedure for determining and specifying trace and ultratrace selenium in water, beverages, seafood, milk, and vegetables. The developed method is based on the dispersive micro-solid phase extraction using new thiosemicarbazide-incorporated graphene as a solid sorbent, combined with the total-reflection X-ray fluorescence spectrometry (TXRF). It allows the creation of an auspicious analytical tool for fast and sensitive analysis of samples with a complex matrix. Regardless of the specimen type, the method is characterized by a very low detection limit of 1.7 pg/mL and high precision. The developed strategy allowed us to solve common problems associated with selenium loss during the sample preparation for the TXRF measurement and also improve its performance toward the analysis of beverages and high saline/solid samples, which may even be impossible to perform using standard sample preparation procedures for a TXRF measurement.

Form of presentation
Poster presentation

Keywords
selenium; speciation; determination; trace analysis; preconcentration; DMSPE; TXRF; graphene; thiosemicarbazide

Bibliography
M. Musielak, E. Musielak, R. Sitko, Ultrasensitive determination of selenium in food samples and its speciation in water and beverages using thiosemicarbazide-incorporated graphene and total-reflection X-ray fluorescence spectrometry, Food Chemistry, 439, 2024, 138156.
https://doi.org/10.1016/j.foodchem.2023.138156.

Additional information

Information about speakers
Number of speakers: 1 speaker

0140
Abstract number

A new-clear procedure for the enrichment and removal of uranium from seawater and nuclear wastewater with the use of graphene oxide foams

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Maintaining a balance between the needs of modern society and environmental protection is one of the most important challenges faced by the modern world. Efforts undertaken to reduce CO2 emissions and to stop climate change are based mainly on the use of clean energy sources, such as renewables or nuclear power. Limited resources of uranium in terrestrial systems explains multiple efforts undertaken for its efficient removal from seawater considered as its largest known resource. From its geological deposits and by human-related activities U can be easily transferred to limnic ecosystems, seawater, plants, fertilizers and food, and by this poses a health-related risks due to its chemical and radiological toxicity. For that matter there is a need for development of analytical procedures enabling its efficient monitoring in environmental samples.

The scope of this research covers the application of 3D graphene oxide foam (GOF) for the preconcentration of UO22+ ions with dispersive micro-solid phase extraction prior to its determination by the means of X-ray fluorescence-based methods, namely energy-dispersive (EDXRF) and total-reflection X-ray fluorescence (TXRF). The obtained results highlight the positive synergic effect of microextraction-based preconcentration and X-ray fluorescence detection, which is an aftermath of the sample preparation method imposed by both measurement techniques, such as preparation of sample in the form of thin layers. Parameters affecting adsorption of U on the surface of GOF such as acidity of the solution, adsorbent mass, adsorption time, influence of ionic strength and potentially interfering ions were verified. The adsorption behavior of GOF towards uranium was investigated by the means of kinetics studies and adsorption isotherms.

Form of presentation
Poster presentation

Keywords
uranium, EDXRF, TXRF, ultratrace analysis, graphene oxide, microextrction, X-ray fluorescence, nanomaterials

Bibliography
K. Dungan, G. Butler, F.R. Livens, L.M. Warren, Uranium from seawater – Infinite resource or improbable aspiration?, Prog. Nucl. Energy, 2017, https://doi.org/10.1016/J.PNUCENE.2017.04.016.
H. Liu, Y. Mao, Graphene Oxide-based Nanomaterials for Uranium Adsorptive Uptake, ES Mater. Manuf, 2021, https://doi.org/10.30919/ESMM5F453.
Z. Sun, S. Fang, H.H. Yun, 3D Graphene Materials: From Understanding to Design and Synthesis Control, Chem. Rev, 2020, https://pubs.acs.org/doi/10.1021/acs.chemrev.0c00083.
Y. Zhu, S. Murali, W. Cai, X. Li, J.W. Suk, J.R. Potts, R.S. Ruoff, Graphene and Graphene Oxide: Synthesis, Properties, and Applications, Adv. Mater, 2010, https://doi.org/10.1002/ADMA.201001068.

Additional information

Information about speakers
Number of speakers: 1 speaker

0142
Abstract number

Determinants of Travel Mode Choice and Promoting Active Transport to Pursue Sustainable Transportation Growth, decarbonization, and Improve Health Parameters

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Recent and past studies focusing on technological innovation in transportation sustainability such as electric vehicles play a vital role in meeting global goals on climate change. This study aims to evaluate different transport modes (TM) used for daily activities based on sociodemographic factors and time-use and activity travel involvement to nudge people to use active transport modes for daily short trips to pursue sustainable transportation growth, decrease the greenhouse gas emissions, and advance health parameters. Pearson's Chi-squared test was used for the classification of TM based on socio-demographic characteristics, while to determine the influence of sociodemographic factors, and activity dairy, on TM choices, logit regression models were used. The statistical analysis results show that, in terms of motorized transport mode, those younger adults – 50.65% (above 22 and below 45 years), male – 67.66%, workers – 59.45%, high income – 79.90%, married – 54.89%, and senior high school – 42.32% used high percentage of motorised transport compared to way around. The study also found that income and occupation have a significant impact on TM choice in which a unit increase in T20 (High-income) cause 4.5% positive increase in motorised transport, and 4.2%, 2.2% negatively influence non-motorized and public transport while marital status and education level is the way around. Furthermore, according to Life Cycle Assessment, automobiles emit 140 gCO2/km of GHG. The study found that substituting 50% of automobile trips with active transportation should decrease carbon emissions by 17.5%. These insights might be useful in formulating realistic planning plans to encourage individuals to use active transport that will diminish GHG discharges from the transport segment.

Form of presentation
Lecture (1 speaker)

Keywords
Urban mobility, transport modes, sustainable transportation, greenhouse gas emission, LCA

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0145
Abstract number

Travel Mode Choice Prediction and Influencing Factors Analysis Using Multinominal Logit and Machine Learning Models – Promoting Sustainable Transportation System

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A growing amount of research interest has been drawn to the prediction and behavioral analysis of travel mode choice (TMC) and purpose, which are essential for transport planning. The current study aims to utilize multidimensional datasets by employing both conventional methods and modern techniques such as artificial intelligence and machine learning to predict TMC and its influencing factors and compare the outcomes of conventional and modern algorithms to offer the best predictive model.The conventional models were assessed based on the significance (p = < 0.05) and R2 (coefficient of determination) values, while the ML models were accessed using mean absolute error (MAE), mean squared error (MSE), root mean squared error (RMSE), explained variance score (EVS), accuracy, and precision values. The outcome of the analysis showed that the ML models outperformed the conventional techniques. Among all ML predictive models, RF outperformed DT, SVM, and KNN with an R2 of 0.83 MAE and MSE for training data of 0.21 and 0.08, and for testing data is 0.42 and 0.37. Besides, DT shows the best accuracy of 0.60 and precision values for all three modes of transport. Based on the variable ranking analysis, it was concluded that total travel time and gender are the most influential variables for selecting a specific mode of travel for a journey. The outcome of the current study helps the policymakers to design and develop the policy based on available infrastructure, travel behaviors, and the outcomes of the study.

Form of presentation
Poster presentation

Keywords
Travel Mode Choice, Artificial Intelligence, Machine Learning, Sustainability, Transport Policy

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0157
Abstract number

Preliminary characterization of coal types in the Upper Silesian Coal Basin in terms of the possibility of producing hydrogen from coke oven gas

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Hydrogen is an ecological fuel with no carbon dioxide emissions from combustion, therefore the interest in using hydrogen for energy production is increasing. The current source of hydrogen is, among others, coke production. Significant amounts of hydrogen can be obtained from coke oven gas, with hydrogen content 53–60% [1] but it requires appropriate processing (purification) [2].

In the process of coke and coke oven gas production, the technological type of coal (charge coal) is important, that should be characterized by appropriate natural deposit parameters such as sinterability (RI) and the composition of reactive macerals from the group of vitrinite (V) and liptinite (L), as well as coal rank expressed in the content of volatile matter (Vdaf). From the point of view of hydrogen production, the content of the hydrogen element (Hdaf) in the coal substance may also be important. Preparing an appropriate coal mixture for coke production is the subject of numerous studies and analyses, which reveal that vitrinites achieve the maximum ability to transform into a plastic state at a coal rank corresponding to 32–20% Vdaf [3].

The coals of the Upper Silesian Coal Basin (USCB) were tested for coking properties (coking coals) and hydrogen content in order to find out which technological type of coal has the most favourable features for the production of coke and also hydrogen from coke oven gas. The main focus was on RI, the content of reactive macerals (V+L) and Hdaf. Preliminary results display that type 34 gas-coking coals would be the most useful due to combination of appropriate RI (mean 72%), favourable V+L content (mean 81.6%) and average Hdaf (5.1%). Unfortunately, Vdaf is too high (average 34%). Further thorough research is necessary.

Form of presentation
Poster presentation

Keywords
hydrogen, coal, coke, coke oven gas, coal macerals, Upper Silesian Coal Basin

Bibliography
[1] Karcz A., Coke oven gas as raw material for hydrogen production. Policy Energetyczna , 12/1, 2009.\\\\n[2] Babiński P., Robak Z., Łobojko G., Figiel Z., Kalinowski K., Purification of coke oven gas for application in the energy and chemical industries. Policy Energetyczna , 15/4, 2012.\\\\n[3] Kruszewska K., Dybova -Jachowicz S., Outline of coal petrology. Wyd. Uniw. Śl., 1997.\\\\n

Additional information
This study was undertaken in the framework of the activities of the University of Silesia in Katowice and was funded by the University of Silesia, Institute of Earth Sciences (WNP/INOZ/2020_ZB32).

Information about speakers
Number of speakers: 2 speakers

0158
Abstract number

Polymer-Based Materials for Removal of Organic Pollutants from Water – Review

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Water quality and human health are threatened by organic pollutants (OPs), which include various compounds that are not easily degraded or removed by conventional water treatment methods. Novel and efficient materials for water purification are needed to effectively remove OPs from water. This review summarizes the recent advances in polymer-based materials for removal of OPs from water. It introduces the sources and types of OPs in water, along with their environmental and health effects. It focuses on three types of polymer materials: (1) nanomaterials, which have high surface area, porosity, and reactivity; (2) cyclodextrin-based polymers, which have high affinity and selectivity for OPs due to their molecular recognition properties; and (3) hybrid inorganic-organic materials, which combine the advantages of both inorganic and organic components. The properties and applications of different polymer materials are compared and contrasted, highlighting their strengths and limitations for water purification. The mechanisms of action of these materials, such as adsorption, photocatalysis, biocatalysis, and nanofiltration, are explained, as well as their advantages and challenges. The issue of membrane fouling and some possible solutions are also addressed.

The review concludes that polymer-based materials have great potential for water purification and removal of OPs from water. However, further research is needed to optimize their synthesis, characterization, performance, stability, and environmental impact. The prospects and challenges of polymer-based materials for water purification are discussed, suggesting some directions for further research and development.

Form of presentation
Poster presentation

Keywords
water purification, organic pollutants, polymers, adsorption, nanofiltration

Bibliography
[1] G. Crini and E. Lichtfouse, “A Review of Removal of Pollutants from Water/Wastewater Using Different Types of Nanomaterials,” Advances in Colloid and Interface Science, vol. 2014, Article ID 825910, 24 pages, 2014. doi:10.1155/2014/825910.
[2] N. A. Othman, N. A. Rahman, and N. A. Hassan, “Removal of Pollutants from Wastewater Through Nanofiltration: A Review,” in Nanofiltration: Principles, Applications and New Materials, N. Hilal, Ed. Singapore: Springer, 2023, pp. 323-354. doi:10.1007/978-981-19-5315-6_13.
[3] M. A. El-Sayed, A. A. El-Sherbiny, and A. A. El-Safty, “Removal of organic micro-pollutants from water by β-cyclodextrin triazine polymers,” Journal of Inclusion Phenomena and Macrocyclic Chemistry, vol. 92, no. 3-4, pp. 293-304, 2018. doi:10.1007/s10847-018-0851-8.

Additional information

Information about speakers
Number of speakers: 1 speaker

0163
Abstract number

New plasticizers for poly(vinyl chloride) based on environmentally friendly bio succinic acid

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Plasticizers, along with other additives, enable conferring advantageous properties to poly(vinyl chloride) (PVC) polymers. Phthalates constitute over 50% of the global plasticizer market. Due to their toxic impact on the natural environment and human organisms, European Union regulations prohibit the utilization of selected phthalates for any application in quantities exceeding 0.1% by mass. This study demonstrate the findings of applied research on selected plasticizers derived from succinic acid, known for its environmentally friendly nature and origin from renewable raw materials.

Key parameters of the novel products, such as tensile strength, plasticizer migration, and polymer hardness, are juxtaposed with the properties of other PVC formulations containing bis(2-ethylhexyl) terephthalate (DEHT), a typical and widely used plasticizer for PVC (excluding the phased-out phthalates in many markets). Besides succinic acid, the new plasticizers are synthesized with the involvement of various glycols and 2-ethylhexanol, incorporated in the second stage. It has been demonstrated that the quantitative composition of individual reagents, including the ratio of carboxylic to hydroxyl compounds, significantly influences the creation of product properties.

A sample of the optimal polymer containing plasticizers based on succinic acid (PPB), stored for 28 days at 70 °C under a 5 kg load, exhibits nearly a tenfold reduction in migration compared to a material containing an equivalent amount of a different plasticizer, DEHT. Additionally, the tensile strength is over 20% higher. Consequently, fewer chemical compounds are released into the natural environment, and the final product retains its superior properties over an extended period.

Form of presentation
Poster presentation

Keywords
poly(vinyl chloride) (PVC); plasticizer; polymer; succinic acid; migration; environmentally friendly; DEHT

Bibliography
1. J. Czogała, E. Pankalla, R. Turczyn, Assessments of classical dry-blending/moulding and solution casting PVC plasticization effectiveness – a comparative study, 2022, DOI: 10.21203/rs.3.rs-2015602/v1
2. K. Ledniowska, H. Nosal-Kovalenko, W. Janik, A. Krasuska, D. Stańczyk, E. Sabura, M. Bartoszewicz, A. Rybak, Effective, Environmentally Friendly PVC Plasticizers Based on Succinic Acid, Polymers, 2022, DOI: 10.3390/polym14071295
3. B. Filipiak, B. Tkacz, Plastyfikatory w polimerach : trendy, zdrowie i ekologia, Przemysł Chemiczny, 2016, DOI: 10.15199/62.2016.11.46

Additional information
Project co-financed by the European Union from the European Regional Development Fund under the Intelligent Development Program. The project is implemented under the competition of the National Center for Research and Development: 3/1.1.2/2016, grant agreement number POIR.01.01.02-00-0142/16.

Information about speakers
Number of speakers: 1 speaker

0164
Abstract number

Making agriculture more sustainable and more profitable through circular, biobased value chains.

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This session will consider new developments in the manufacture of high-value, eco-friendly products from agricultural feedstocks and precursors. It will describe how new value chains are being created, based on niche crops such as saffron and sunflower.

It will also explain how agricultural residues and by-products can be transformed into food ingredients, chemicals and biomaterials, with the help of the latest research. Such innovations have the potential to revitalise rural regions and promote sustainable economic and social development by transforming primary producers into active players in the supply chain.

They can also increase resource efficiency through reduced discharges of agricultural residues, while taking share of the highly dynamic worldwide markets of alternative proteins and biochemicals (incl. biopolymers) and thus reduce the cost of agriculture and food systems on our environment and health. However, their adoption is not a given and this session will also discuss what the barriers are to adoption and diffusion of these new, circular value chains and how business support projects and other initiatives are working to overcome these potential blocks and turn the research into reality.

This session will feature short talks from representatives of 3 to 4 ongoing EU-funded projects: AgriLoop, Brillian, MainstreamBio, BioRural and Rural BioUp. These talks will be followed by a panel debate that will be an opportunity to explore issues such as: the environmental impact of agriculture, using waste as a resource and the potential benefits and problems around transitioning towards biobased products and away from fossil fuels.

Form of presentation
Debate (min. 3 speakers)

Keywords
green economy, clean technologies, closed circuit economy, sustainable agriculture

Bibliography
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Additional information
The submission has been put together by Emma Needham, Communications lead for the AgriLoop Project. Other EU project speaker details including another AgriLoop colleague will be confirmed if this proposal is successful. Please contact Emma if you require further information.

Information about speakers
Number of speakers: 1 speaker

0176
Abstract number

Protecting the last line of defense - reserve antibiotics in the environment

Bajkacz Sylwia[1], Wilk Joanna[1], Korzeniewska Ewa[2], Felis Ewa [3], Harnisz Monika[2]

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Drug resistance in microorganisms is a serious threat to life and health due to the limited number of antibiotics that show efficacy in treating infections and the difficulty in discovering new compounds with antibacterial activity. To address this issue, the World Health Organization created the AWaRe classification, a tool to support global and national antimicrobial stewardship programs.

The AWaRe list categorizes antimicrobials into three groups – Access, Watch, and Reserve – according to their intended use. The Reserve group comprises “last resort” medicines used solely for treating infections caused by bacterial strains that are resistant to other treatments. It is therefore necessary to protect them, not only by using them as prudently as possible in humans and animals, but also by monitoring their subsequent fate. Unmetabolized antibiotics enter the environment through hospital and municipal wastewater or from manure, subsequently contaminating bodies of water and soils, thus contributing to the emergence and spread of antibiotic resistance.
The main goal of the counduced study is to include Poland in extensive research on monitoring the concnetration of the reserve antibiotics in hospital wastewater collected from the whole territory of Poland. Achieving the main, scientific research goal will be ensured thanks to develop of the extraction procedures, separation and spectral methods for the determination of the selected reserve antibiotics in hospital wastewater samples.

Additional information: This work was supported by the National Science Centre, Poland, under the project “OPUS 23” no UMO-2022/45/B/NZ7/00793

Form of presentation
Poster presentation

Keywords
reserve antibiotics, environmental pollution, environmental monitoring, antibiotic resistance, AWaRe classification

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0178
Abstract number

Studies on the influence of selected allelopathic compounds on cereal metabolism

Kostina-Bednarz Marianna[1], Barchańska Hanna[1], Płonka Joanna[1]

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Balancing crop productivity with environmental sustainability is one of the main challenges for agriculture worldwide. Incorporating a natural eco-friendly approach - allelopathy - as a tool in an integrated weed control plan by growing specific crops or spraying fields with extracts containing allelopathic compounds can significantly reduce the use of synthetic herbicides. During the development of new formulations, it is necessary to determine their impact on the metabolism of edible plants, as disruption of this process can affect food quality and safety. The study aimed to determine to what extent allelopathic compounds from the coumarin derivatives group with potential use as herbicides and fungicides affect the metabolism of wheat and barley. Cereal crops were grown under laboratory conditions and pesticide-free plants and those treated with 2,4-dichlorophenoxyacetic acid and tebuconazole - synthetic, widely available pesticides - were used as references. The kinetics of allelochemicals dissipation in plant tissues, metabolic profiles of endogenous compounds and metabolic fingerprints were determined using different LC-MS/MS systems. The study showed that umbelliferone and scopoletin induce changes in metabolic processes in wheat but to a lesser extent than conventional pesticides. Whereas no significant differences were observed in the barley metabolic response generated by these allelochemicals. Chemometric tools were employed to find marker compounds defined as characteristic indicators of a metabolic response to a pesticide intervention. The findings contribute to the ongoing discourse on natural alternatives, offering valuable insights for future studies and practical applications in real-world agricultural settings.

Form of presentation
Poster presentation

Keywords
Sustainable agriculture, Allelopathy, Biopesticides, Metabolic profiling

Bibliography
I. Lykogianni M., Bempelou E., Karamaouna F., Aliferis KA., Do pesticides promote or hinder sustainability in agriculture? The challenge of sustainable use of pesticides in modern agriculture, Sci Total Environ, 2021, doi: 10.1016/j.scitotenv.2021.148625
II. Kostina-Bednarz M., Płonka J., Barchanska H., Allelopathy as a source of bioherbicides: challenges and prospects for sustainable agriculture, Rev Environ Sci Biotechnol, doi: 10.1007/s11157-023-09656-1

Additional information

Information about speakers
Number of speakers: 1 speaker

0180
Abstract number

Sustainable production in a circular economy

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Recycling technologies operating according to the principles of sustainable production and the circular economy will be presented. They will concern waste electronic equipment and construction waste. The session will cover the following UN goals: Innovation, Industry, Infrastructure, and Responsible Production, focusing on increasing material and energy efficiency. Recycling will be promoted, which increases the efficiency of resource use and uses clean and environmentally friendly technologies and production processes. The financial and technological potential of the presented recycling methods as well as the accompanying environmental and legal problems will be presented. The importance of recovered raw materials, including critical metals, and the global risk of their supply shortages will be discussed. The presented recycling technologies are fully compliant with the principle "do no significant harm" written in Article 11 of Regulation EU*. They therefore contribute to the implementation of two out of the six environmental objectives of the Regulation* (Article 9), i.e. climate change mitigation and transition to a circular economy, and thus make a significant contribution to reducing the impact of manufactured processes and products on the natural environment. Technological processes are resource-efficient and have the least possible impact on the environment and operate with much higher energy efficiency, thereby reducing greenhouse gas emissions. All substances separated in technologies, including those of low value, are to be reused or create new consumer goods.
* REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation EU 2019/2088

Form of presentation
Poster presentation

Keywords
recycling, circular economy, sustainable production, Waste Electronic Equipment, construction waste, material and energy efficiency, eco-effective technology, critical metals, composite, printed circuit boards, neodymium magnets

Bibliography
Suponik, Tomasz, et al. Impact of grinding of printed circuit boards on the efficiency of metal recovery by means of electrostatic separation. Minerals 11.3 (2021): 281. doi.org/10.3390/min11030281 Suponik T., Franke D.M., Neculita C.M., Mzyk T., Frączek R.: Prediction and Potential Treatment of Underground Contaminated Water Based on Monitoring of pH and Salinity in a Coal Mine Waste Heap, Southern Poland, Minerals, vol. 12, Issue 4: 391, 2022, ISSN: 2075-163X https://doi.org/10.3390/min12040391nSuponik Tomasz, Neculita Carmen Mihaela. Reactivity of nZVI in the removal of Cu(II) and Zn(II) from synthetic mine drainage, Environment Protection Engineering, vol. 47, no.2, 2021, DOI: 10.37190/epe210207

Additional information

Information about speakers
Number of speakers: 6 speakers

0197
Abstract number

Advantages of Vegetable Tanning Process over Chrome-tanning for the Sustainable Leather Industry

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Vegetable tanning and Chrome tanning are two main types of leather tanning methods. Chromium is found in nature in two oxidation states-Chromium (III) and Chromium (VI). Chromium (III) in the form of Chromium salt is mainly used for leather tanning. The Chromium salt solution can contain Chromium (VI), a more toxic form of Chromium, if an error occurs during the salt production process. Chrome tanning has adverse effects both on the environment and human health. If Chromium (III) contaminated effluent discharges to water bodies, some can oxidize to Chromium (VI) by other agents such as manganese dioxide, hydrogen peroxide and hypochloric acids. Hexavalent chromium is hazardous to the environment. Therefore, Chromium (VI) can create acute and chronic toxic effect that includes dermal and respiratory damage to tannery workers, and gastrointestinal effects, if drinking water contaminated with Chromium. Human exposure to Chromium (VI) can also cause cancer, vomiting and hemorrhage. The chromium rich effluent can damage the ecosystem and cause loss of agricultural land as well.
In a vegetable tanning process, the untanned animal hides are repeatedly soaked in vegetable tannins bath to produce workable leather. Natural tanning uses materials such as tree bark extracts to tan the hides. Oak, chestnut, mimosa and other types of trees are used to produce vegetable tannins. The plant-based tanning is favorable for the environment, which doesn't require harmful chemicals and also reduces solid wastes and wastewater during leather production. The vegetable-tanned leather is biodegradable. The tanning materials are derived from renewable resources and the process is not energy-intensive. Vegetable tanning ensure responsible production and the long durability of the product.

Form of presentation
Poster presentation

Keywords
Chromium, carcinogenic, natural tanning, biodegradable, sustainable development

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0199
Abstract number

Extraction of reserve antibiotics from liquid samples: a first step in preserving efficacy, monitoring environmental presence and mitigating resistance

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The World Health Organization's AWaRe classification system categorizes antibiotics into three groups: Access, Watch, and Reserve. The term 'reserve antibiotics' refers to a category of antibiotics, such as tigecycline, colistin, and linezolid, that are classified as last-resort treatment options for infections caused by multidrug-resistant bacteria. Preserving reserve antibiotics is crucial to ensure their effectiveness in treating life-threatening infections where no other options are available. Environmental pollution caused by antibiotics is a significant concern due to the widespread use of antibiotics in human therapy, animal farming, and agriculture. Residues from these activities can contaminate natural environments, leading to the selection of resistant bacteria and the dissemination of resistance genes. Monitoring the presence of antibiotics in the environment can provide valuable insights into the impact of antibiotic use on both the environment and human health. This information can enable appropriate measures to be implemented to minimize the risks associated with antimicrobial resistance and environmental contamination. The purpose of the study was to develop a procedure for the solid-phase extraction (SPE) of reserve antibiotics from liquid environmental samples. The study considered various SPE parameters, including the type of sorbent, pH of the sample, and solvents used for conditioning and elution. To determine the extraction efficiency, samples after SPE were analyzed by liquid chromatography coupled to a tandem mass spectrometry (LC-MS/MS). The most effective SPE-LC-MS/MS method was validated, and then used to determine selected reserve antibiotics in hospital sewage across Poland, to assess the release of these drugs into the aquatic environment.

Form of presentation
Poster presentation

Keywords
reserve antibiotics, AWaRe classification, environmental pollution, environmental monitoring, antibiotic resistance, SPE, LC-MS/MS

Bibliography
I. Web Annex C. WHO AWaRe (access, watch, reserve) classification of antibiotics for evaluation and monitoring of use, WHO/MHP/HPS/EML/2023.04, Geneva, 2023\\nII. Larsson DGJ, Flach CF, Antibiotic resistance in the environment, Nat Rev Microbiol, 2022, https://doi.org/10.1038/s41579-021-00649-x\\nIII. Martinez JL, Environmental pollution by antibiotics and by antibiotic resistance determinants, Environ Pollut 2009, https://doi.org/10.1016/j.envpol.2009.05.051

Additional information
This work was supported by the National Science Centre, Poland, under the project “OPUS 23” no UMO-2022/45/B/NZ7/00793

Information about speakers
Number of speakers: 1 speaker

0211
Abstract number

New formulations of slow-release fertilizers containing biologically active micronutrients

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[2] Łukasiewicz Research Network – New Chemical Syntheses Institute, Poland
[3] Łukasiewicz Research Network - Institute of Heavy Organic Synthesis ,

Project involved development of a new group of bifunctional additives which enabled the slow release of nutrients to the soil and metals complexing. In project there were developed 2 groups of additives: organic and inorganic. Inorganic additives based on natural or synthetic zeolites, where microelements will be introduced by deposition in the porous structure of the grain. Organic additives, depending on their final form (polymeric, gel, or hydrogel form), based on polymeric compounds which have the ability to chelate the micronutrients. Obtained the final form of selected groups of fertilizers in laboratory scale, where for obtained samples there will be determined the functional parameters of obtained products and their long-term stability. The research proved that the developed range of organic additives can be used in high nitrogen content fertilizers, while keeping the process and storage safety. For the final fertilizer composition a series of application tests have made in order to determine the efficiency of fertilization, including field trials. The efficiency of new fertilizers was compared to standard fertilizers, which give a full scope of view for usefulness of new additives and its formulations. Comparision of obtained values allowed to confirm the superiority of the developed fertilizers. Micronutrient loaded fertilizer will be dedicated to the cereals, corn and rapeseed growers from the European Union, in particular those of the large-surface cultivations. Developed fertilizers have water retention properties.

Form of presentation
Poster presentation

Keywords
fertlizers; micronutrients; complex compounds, ammonium nitrate, zeolites, polyamides, Silicaalumina, Slow release fertilizers, complexing agents

Bibliography

Additional information
The research was partially financed by: The National Centre for Research and Development under POIR project No. POIR.01.02.00-00-0025/16: New formulations of slow-release fertilizers containing biologically active micronutrients

Information about speakers
Number of speakers: 1 speaker

0216
Abstract number

Experimental animal research: a sensitive issue for both scientists and society

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Animals are used in experimental research for different purposes (e.g., mice and rats in biomedical and fundamental biological research). Ruminants, cattle, pigs, poultry, and fish are used in livestock research targeting the production and management of farm animals to produce animal-derived foods. The use of animals in research is challenged by society. The European Commission was asked by both the European Parliament and through a European Citizens' Initiative to develop an action plan to ban animal experimentation. The Commission responded that banning animal experimentation remains an objective, but that a timeline to achieve this could not be given and that scientific communities need to play a role in achieving the objective. However, animal scientists are not at ease to communicate with society about their research, because of the sensitivity of the question "which issue justifies the use of animals in research?" To find a cure for diseases is probably acceptable for most people. However, using animals in research to provide animal-derived foods is probably less acceptable for citizens, even though it is not always consistent with their behavior as consumers. An open question to the EuroScience Open Forum is how scientists and society (i.e., citizens and consumers) can find a common ground to engage in a constructive dialogue about animal production and animal production research, which is a complex and sensitive issue for all parties.

Form of presentation
Poster presentation

Keywords
experimental animal research; animal production

Bibliography

Additional information
The PIGWEB project has received funding from European Union's Horizon 2020 research and innovation program under Grant Agreement No 101004770.

Information about speakers
Number of speakers: 1 speaker

0250
Abstract number

Slow Release Fertilizers with biodegradable coatings

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Modern agriculture is focused on specialized fertilizers, which can reduce the nutrient losses. On the market there are mostly CRD and SRF coated with nonbiodegradable polymers. To reach potentially future regulations Grupa Azoty ZAK developed biodegradable coatings for Calcium Ammonium Nitrate fertilizers. Developed fertilizers contains also micronutrient layer coating and biostimulant coating layer. New fertilizer have been developed for particular different uses. Nitrogen fertilizers developed in ZAK enriched with additional components will increase yield and will raise efficiency of nutrients usage. Through application of several biopolymers (e.g. Polybutylene succinate, polylactic acid, polybutylene adipate terephthalate), complementary solvents and others additives we achieved good emulsion for fertilizer coating. We achieved several fertilizers formulations. Fertilizers were coated in large laboratory scale coating unit. Results were obtained regarding the release of nutrients within one month.

Form of presentation
Poster presentation

Keywords
controlled release fertlizers; micronutrients; biopolymers; biostimulants; European Green Deal

Bibliography

Additional information
The research was partially financed by: The National Centre for Research and Development under POIR project No. POIR.01.01.01-00-1497/19: Nowe formulacje wysokoazotowych nawozów typu CRF/SRF na bazie azotanu amonu i powłok biodegradowalnych

Information about speakers
Number of speakers: 1 speaker

0255
Abstract number

Organo-Mineral Ferilizers Based on Ammonium Nitrate and Urea – Pot and Field Experiments

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[3] Departament Rozwoju, Grupa Azoty ZAK SA, Poland

Modern agriculture is focused on specialized fertilizers, composition of which is suited depending on crop species to limit the nutrient losses. On the basis of previously elaborated formulations of bio-products for plant treatment – innovative specialized organo-mineral fertilizers containing micronutrients in biological form, biofertilizers and plant growth stimulants have been produced. New fertilizer formulations provide controlled kinetics of nutrient release in ratios corresponding to soil composition and nutrient requirements of given cultivation, as well as increase in availability of fertilizer components and their further use by plants. These fertilizers were produced based on renewable raw materials (e.g. algae, focus and fruit seeds) and mineral raw materials. The use of new types of fertilizers brings benefits in the controlled release of micronutrients which will minimize the contamination of underground with heavy metals and will affect in more effective use of nutrients. Fertilizers based on ammonium nitrate (low nitrogen content due to process safety) or urea (higher nitrogen content) were tested in pot experiment in University of Warmia and Mazury in Olsztyn and tested in field experiments in University of Life Sciences in Lublin. New fertilizers were compared with blend of commercial fertilizers with similar nutrient content. Interesting results were obtained. Pot experiment have conducted with abiotic stress (less amount of sunlight and less watering).

Form of presentation
Poster presentation

Keywords
organo-mineral fertilizers; circular economy; micronutrients; biostimulants; European Green Deal

Bibliography

Additional information
The research was partially financed by: The National Centre for Research and Development under POIR project No. POIR.01.02.00-00-0029/17: New formulations of specialized organo-mineral fertilizers

Information about speakers
Number of speakers: 1 speaker

0257
Abstract number

Specialty NPK Fertilizers for special tasks

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[2] Department of egriculture and economy, Agricultural University of Kraków, Poland
[3] Departament Rozwoju, Grupa Azoty ZAK SA, Poland

Modern agriculture is focused on specialized fertilizers, composition of which is suited depending on crop species to limit the nutrient losses. On the basis of previously elaborated formulations of bio-products for plant treatment – innovative specialized NPK fertilizers containing micronutrients, selenium and plant growth stimulants have been produced. New fertilizer have been developed for particular different uses: forest nursery, sport turfs, vegetable and fruit crops. These fertilizers were produced based on mineral raw materials (ammonium nitrate, ammonium phosphate) and biostimulants (e.g. focus extract). The addition of selenium additives will allow to obtain health-promoting functional food (anti-cancer prevention). Fertilizers were tested in field experiments University of Life Sciences in Lublin (fruit, vegetables and pine trees) and tested in field experiments in Agricultural University of Kraków (sport turfs). New developed fertilizers were compared with commercial fertilizers with similar nutrient content. Interesting results were obtained.

Form of presentation
Poster presentation

Keywords
complex fertlizers; micronutrients; selenium; biostimulants; European Green Deal

Bibliography

Additional information
The research was partially financed by: The National Centre for Research and Development under POIR project No. POIR.01.01.01-00-0741/18: Specjalistyczne nawozy wieloskładnikowe na bazie azotanu amonu zawierające podstawowe składniki pokarmowe (NPK), mikroskładniki, selen oraz stymulatory wzrostu roślin.

Information about speakers
Number of speakers: 1 speaker

0274
Abstract number

"Forever Chemicals"– monitoring of poly- and perfluoroalkyl substances (PFAS) in aquatic environments

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Poly- and perfluoroalkyl substances (PFAS) are a group of extremely persistent, synthetic compounds widely used for almost 80 years in a wide range of industrial and consumer products, i.e. cosmetics, Gore-Tex clothing, Teflon-coated cookware and firefighting foams. The unique properties of these compounds cause PFAS to be difficult to degrade in the environment in which they accumulate, earning them the term of "forever chemicals". Fluoroorganic contaminants were identified in drinking water, soil, air and even food, causing a growing global problem with threats not only to ecosystems but, above all, to human health. The necessity for ongoing PFAS monitoring in the environment has driven the development of analytical methods to identify these persistent pollutants. The analysis of perfluoroalkyl compounds poses enormous analytical challenges and generates numerous problems. Therefore, the development of effective methods for the determination of PFAS in the environment should be considered a priority research task. The subject of this study was the monitoring of selected PFAS contaminants in the Odra River waters, using a newly developed analytical procedure based on solid phase extraction, chromatographic separation and mass spectrometry (SPE-LC-MS/MS). The results obtained allowed the assessment of water quality, verification of compliance with EU environmental quality standards and identification of potential sources of PFAS contamination.

Form of presentation
Poster presentation

Keywords
poly- and perfluoroalkyl substances, PFAS, emerging contaminants, forever chemicals, environmental monitoring, analytical methods

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0286
Abstract number

Nanotechnology and environmental and fire safety

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Nanotechnology is a rapidly developing technology that is present in virtually every area of our lives. Solutions based on nanotechnology are used in the food, pharmaceutical, cosmetics, construction, energy and many other industries. However, it is necessary to take into account both the positive sides of new technologies and their negative aspects. Awareness of both faces of nanotechnology will allow for its appropriate use and minimization of threats related to, for example, the release of nanoparticles into the environment. Due to their small size and extensive surface area, nanosubstances often have properties that are different from their macro counterparts. That is why it is so important to include these substances in environmental and fire safety tests. Their use to improve the safety of both areas, but also to set standards and legal regulations in relation to nanoparticles in the workplace and the environment. The survey results showed, among others: a certain lack of knowledge about national and EU regulations (containing detailed requirements) that can and/or should be applied and implemented by entrepreneurs. Additionally, legal regulations defining the directions of activities in industrial areas do not take into account all aspects related to nanosubstances. It is therefore necessary to initiate a discussion and indicate the necessary actions that will allow for the identification of the threat resulting from the presence of nanoparticles and the use of nanotechnology during various activities in industrial plants and everyday life. As well as an increase in the awareness of managers in this area and people responsible for fire safety and environmental safety.

Form of presentation
Lecture (1 speaker)

Keywords
nanotechnology, threat, application, legal regulations, standards of conduct, fire safety, environmental safety

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0334
Abstract number

Environmental and climate change assessment based on stable carbon isotopes of tree rings

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Isotopic methods are widely used in many fields of research. They help in assessing air quality degradation, environmental and climate reconstructions, and predictions of environmental conditions. Commonly used archives of climate and environmental change are tree rings. Wood from tree rings is an excellent study material due to the ubiquity of trees and the annual resolution of studies due to the structure of the growths. In tree rings, there is a depletion of the 13C isotope in plant tissues relative to atmospheric CO2. This is caused by diffusion and biochemical processes. The stomatal aperture changes with climatic factors. In this way, environmental variables control the degree of fractionation and thus δ13C values.
Since the beginning of the industrial revolution, the δ13CC of atmospheric CO2 has decreased due to the emission of 13C-depleted CO2 from human activities. The effect of pollutants such as SO2, Nox, or O3 on δ13C values in tree rings is also observed. The increase in pollutant concentrations lead to the rise of the δ13C values by reducing the conductivity of the stomata or increasing the rate of carboxylation (McCarroll and Loader, 2004).
Investigations of stable isotopic carbon composition in cellulose extracted from tree rings of pines (Pinus sylvestris L.) growing in the ecologically clean Suwałki Region, the north-eastern part of Poland, were undertaken. δ13C in tree ring cellulose responds to temperature and precipitation. These studies showed no climate signal stability for the years of the maximum industrial human activities. After removing individual components of δ13C originating from climatic factors it is possible to estimate the CO2 emission, but only in terms of quality.

Form of presentation
Poster presentation

Keywords
carbon stable isotopes; tree ring; climate; CO2 emission

Bibliography
McCarroll, D., Loader, N.J., Stable isotopes in tree rings, Quaternary Science Reviews ,2004, 10.1016/j.quascirev.2003.06.017

Additional information

Information about speakers
Number of speakers: 1 speaker

0347
Abstract number

Degradation of petroleum pollutants present in post-fire water

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Threats related to fires in industrial facilities are associated primarily with the issue of conducting large-scale firefighting operations. However, recent years, during which fires and large-scale failures occurred, resulting in environmental pollution, have brought a change in the perception of this problem. Post-fire water may contain various chemical compounds, including: petroleum hydrocarbons from industrial lubricants and oils. However, in many countries there are no appropriate legal regulations regarding the treatment of post-fire water generated as a result of firefighting operations. Guidelines are gradually being developed, such as those regarding the application of good practices in this area, published in the form of Safety guidelines and good practices for the management and retention of firefighting water (UNECE). These recommendations indicate good practices divided according to the responsibility of state authorities, management bodies of enterprises and operators of fire extinguishing equipment. The main purpose of their development is to ensure a minimum level of safety by limiting the uncontrolled release of firefighting water into the natural environment. However, without appropriate legal regulations, work on neutralizing pollutants generated during operations is difficult. In order to limit the amount of pollutants entering individual elements of the environment, it is necessary to develop a method for proper handling of post-fire water. Activities in this area should include activities related to the collection of contaminated water, purification and storage, enabling its reuse. These activities should be a response to the most key problems related to environmental protection and protection of water resources.

Form of presentation
Poster presentation

Keywords
post-fire water, petroleum hydrocarbons, phenols, firefighting wastewater

Bibliography
Safety guidelines and good practices for the management and retention of firefighting water (UNECE), United Nations Economic Comission for Europe, Genewa 2019
Tian, H., Xu, X., Qu, J., Li, H., Hu, Y., Huang, L., He, W., Li, B., Biodegradation of phenolic compounds in high saline wastewater by biofilms adhering on aerated membranes, Journal of Hazardous Materials, Volume 392, 2020, 122463, https://doi.org/10.1016/j.jhazmat.2020.122463

Additional information

Information about speakers
Number of speakers: 1 speaker

0352
Abstract number

Probing the Multifarious Attributes of Bacillus spp. for Plant Growth Stimulation and Anti-phytopathogenicity

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Phyto-microbiomes have been well explored in providing wide range of beneficial services to the plants leading to the enhancement of the plant growth. Among these rhizomicrobiome communities, the best understood and characterized are Bacillus spp. which through a variety of mechanisms directly and indirectly aid in plant nutrition. Keeping in view the multifaceted beneficial traits exerted by Bacillus spp., this study targeted the detailed polyphasic characterization of three root-colonizing Bacillus strains. The strains exhibited broad-spectrum antifungal abilities and inhibited 43-86% growth of fungal pathogens tested in-vitro. All strains produced IAA and were positive for the production of extracellular enzymes including protease, cellulase, and lipase. Bacillus amyloliquefaciens solubilized 23.2±0.21 µg/mL of tri-calcium phosphate and ZnCO3 (SI=2.1±0.18). UPLC-ESI-MS/MS analysis revealed the production of surfactins, iturins, fengycins, macrolactins and bacillomycin-D, which were further confirmed by amplifying the genes involved in the biosynthesis of these antimicrobial lipopeptides. Furthermore, all strains showed the production of catechol-based siderophore bacillibactin, and antibiotics bacilysocin and bacillaene. Plant experiment results manifested that inoculation with Bacillus spp. strains demonstrated substantial growth improvement of wheat biomass, number of spikes and dry weight of shoots and roots. The most significant results were shown by B. amyloliquefaciens as bioinoculant over un-inoculated control plants which caused ~42% increase in the total biomass. Results of this study indicate the potential of biocontrol and biofertilizer Bacillus spp. in disease and nutrient management of crop plants for the development of resilient agronomic systems.

Form of presentation
Lecture (1 speaker)

Keywords
Biopesticides, Biofertilizers, B. amyloliquefaciens, Sustainable Agriculture, Bioinocula, Plant Growth Promoting Bacteria, Rhizomicrobiome, Plant Microbe Interactions, Antifungal Metabolites

Bibliography
1- Dobrzyński J, Jakubowska Z, Kulkova I, Kowalczyk P, Kramkowski K. Biocontrol of fungal phytopathogens by Bacillus pumilus. Frontiers in Microbiology. 2023;14. doi: 10.3389/fmicb.2023.1194606\\\\\\\\n2- Samaras A, Karaoglanidis GS, Tzelepis G. Insights into the multitrophic interactions between the biocontrol agent Bacillus subtilis MBI 600, the pathogen Botrytis cinerea and their plant host. Microbiological Research. 2021;248:126752. doi.org/10.1016/j.micres.2021.126752\\\\\\\\n3- Mullins AJ, Li Y, Qin L, Hu X, Xie L, Gu C, Mahenthiralingam E, Liao X, Webster G. Reclassification of the biocontrol agents Bacillus subtilis BY-2 and Tu-100 as Bacillus velezensis and insights into the genomic and specialized metabolite diversity of the species. Microbiology. 2020;166(12):1121. doi: 10.1099/mic.0.000986\\\\\\\\n

Additional information
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Information about speakers
Number of speakers: 1 speaker

0357
Abstract number

ENERGETIC project: Safer, Smarter Batteries through Advanced BMS and Artificial Intelligence

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Energy storage improves grid flexibility and allows higher penetration levels of renewable energy sources to create a decarbonised and more electrified society by means of leveraging second-life batteries. Battery management system (BMS) plays an essential role by ensuring an efficient and safe battery operation. However, current BMS typically rely on semi-empirical battery models and on a limited amount of measured data. Therefore, ENERGETIC project aims to develop the next generation BMS for optimizing batteries' systems utilisation in the first (transport) and the second life (stationary) in a path towards more reliable, powerful and safer operations. The project contributes to the field of translational enhanced sensing technologies, exploiting multiple AI models, supported by Edge and Cloud computing. ENERGETIC's vision not only encompasses monitoring and prognosis the remaining useful life of a Li-ion battery with a digital twin, but also diagnosis by scrutinising the reasons for degradation through investigating the explainable AI models. This involves development of new technologies of sensing, combination and validation of multiphysics and data driven models, information fusion through AI, Real time testing and smart Digital Twin development. Based on a solid and interdisciplinary consortium, the ENERGETIC R&D project develops innovative physics and data-based approaches both at the software and hardware levels to ensure an optimised and safe utilisation of the battery system during all modes of operation.

The speakers will introduce the new challenges in the field of electric mobility and the second life of the battery. The focus will be on new storage chemistries, using advanced AI approaches to understand ageing and act on the total cost of ownership.

Form of presentation
Poster presentation

Keywords
– Electrical & Electronic engineering,
– Battery Management Systems, Digital Twins, AI, Battery Sensors, Cloud and Edge Computing, Data driven models, Multiphysics Models

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0387
Abstract number

Analysis of the relationship between EU investment in sustainable innovation and business performance

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In an era marked by global challenges, the pursuit of sustainable innovation stands at the forefront of societal and economic agendas. As the world grapples with issues such as climate change, resource depletion, and social inequality, the role of investment in fostering sustainable innovation has gained prominence. The quest for efficient allocation of resources is no longer solely a matter of financial gains, it has evolved into a pressing need to address environmental and social concerns. This brings us to a critical inquiry: Is investment in sustainable innovation truly efficient? Can the allocation of financial resources towards environmentally and socially responsible initiatives yield not only positive societal impacts but also robust economic returns? This exploration delves into the complex interplay between investment, sustainable innovation, and efficiency, unraveling the potential synergies that could shape a more resilient and equitable future.

Investment in green innovation has become a vital driver in many industries today. How green innovation contributes to a firm's environmental and financial performance remains uncertain and there is debate about this relationship.

The study examines the criteria for assessing business performance in terms of sustainability, the relationship between EU investment in sustainable innovation and business performance indicators.

Form of presentation
Lecture (1 speaker)

Keywords
sustainable innovation, business performance

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0395
Abstract number

Opportunities for Reducing Emissions of Harmful Particles into the Atmosphere During 3D Printing in Home Environments

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The intensive development of additive manufacturing technologies has resulted, among other things, in a significant decrease in the prices of 3D printers and consequently led to the widespread adoption of 3D printing technology. Manufacturing machine and device components using additive technologies is no longer solely the domain of companies or research laboratories; it is now achievable by individuals in home settings. This trend aligns with the concept of Industry 4.0.

One of the most advanced 3D printing techniques is FDM (Fused Deposition Modeling). Currently, it is possible to produce structural components at home using a wide range of plastic materials with this method. Particularly popular and widely used are materials such as PLA (polylactic acid) and ABS (acrylonitrile butadiene styrene). The former is preferred due to its relative ease of use in FDM, while the latter enables the production of components with excellent mechanical properties, suitable for industrial applications. Literature data indicate that both ABS and PLA emit harmful particles into the environment during printing, and prolonged exposure to them can pose health risks [1-4]. Due to the higher printing temperature required for ABS, it emits more particles into the atmosphere compared to PLA. The authors of the paper propose a solution to limit particle emissions during 3D printing, based on the use of a chamber with a filtering system utilizing activated carbon. Such a solution allows for the reduction of harmful emissions and, importantly, can be implemented in home environments with minimal financial investment.

Form of presentation
Poster presentation

Keywords
Indoor air quality, Additive manufacturing, Fused Deposition Modelling, Clean room

Bibliography
Yelin Deng, Shi-Jie Cao, Ailu Chen, Yansong Guo: The impact of manufacturing parameters on submicron particle emissions from a desktop 3D printer in the perspective of emission reduction. Building and Environment, Volume 104, 1 August 2016, pp. 311-319 (doi.org/10.1016/j.buildenv.2016.05.021)\\\\\\\\nBrent Stephens, Parham Azimi, Zeineb El Orch, Tiffanie Ramos: Ultrafine particle emissions from desktop 3D printers, Atmospheric Environment, Volume 79, November 2013, pp. 334-339 (doi.org/10.1016/j.atmosenv.2013.06.050)\\\\\\\\nManoj Aluri, Bhuyan Monami, Swarup Raj Banik, Ravi Sankar Mamilla, Review on particle emissions during fused deposition modeling of acrylonitrile butadiene styrene and polylactic acid polymers, Materials Today: Proceedings, Volume 44, Part 1, 2021, pp. 1375-1383 (doi.org/10.1016/j.matpr.2020.11.521)\\\\\\\\n

Additional information

Information about speakers
Number of speakers: 2 speakers

0435
Abstract number

The capture of carbon dioxide as a useful gas stream in a hybrid, adsorption-membrane process for the separation of flue gas and biogas

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Carbon dioxide from anthropogenic sources, seen as the main driver of climate change, is and may continue to be a valuable raw material in many industries. The processes of its capture from waste gases or separation from biogas should therefore enable the parallel generation of two useful gas streams: the basic one, e.g. purified exhaust gases or biomethane, and carbon dioxide with a purity and content of other components appropriate for potential use. At the Institute of Chemical Engineering, Polish Academy of Sciences in Gliwice (Poland), a hybrid adsorption-membrane process for the separation of carbon dioxide from gas mixtures has been developed, which can be used either to purify flue gases or to upgrade biogas into biomethane. A demonstration hybrid plant was also designed and commissioned, with a maximum capacity of 10 mn3/h. In the case of flue gas treatment, it has been found experimentally that in such an installation it is possible to recover nearly 100% carbon dioxide and concentrate it from about 12 vol.% to more than 95 vol.%. The mathematical model of the hybrid process developed for the separation of CO2 from gas mixtures and implemented in the gPROMS computing environment, has been positively validated based on experimental results [1,2]. As a result of numerical simulations of biogas upgrading to biomethane, it was found that in the developed hybrid process, it is possible to simultaneously obtain a stream of biomethane with parameters allowing it to be injected into the gas network and a stream of CO2 for food purposes. The specific energy consumption associated with the production of two useful gas streams in the hybrid process does not exceed 1.6 MJ/kg CO2 for flue gas treatment and 0.3 kWh/mn3 for biogas separation.

Form of presentation
Poster presentation

Keywords
hybrid process; vacuum swing adsorption; membrane separation; CO2 abatement; flue gas; biogas; biomethane

Bibliography
1. M. Jaschik, M. Tańczyk, J. Jaschik, A. Janusz-Cygan: The performance of a hybrid VSA-membrane process for the capture of CO2 from flue gas, International Journal of Greenhouse Gas Control, 2020, DOI: 10.1016/j.ijggc.2020.103037
2. A. Janusz-Cygan, J. Jaschik, A. Wojdyła, M. Tańczyk: The Separative Performance of Modules with Polymeric Membranes for a Hybrid Adsorptive/Membrane Process of CO2 Capture from Flue Gas, Membranes, 2020, DOI:10.3390/membranes10110309

Additional information

Information about speakers
Number of speakers: 1 speaker

0437
Abstract number

WHITE-ROT FUNGI-MEDIATED CYTOSTATIC DRUGS DETOXIFICATION

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Due to rising cancer rates, cytostatic drugs pose a significant environmental threat. Inefficient wastewater treatment allows these compounds to persist in surface, ground, and drinking water. They can cause various harmful effects towards aquatic organisms, as they exhibit toxic, cytotoxic, genotoxic, mutagenic, carcinogenic, and teratogenic effects [1, 2]. White-rot fungi, with their non-specific ligninolytic enzymes, show promise in degrading these drugs, including those resistant to conventional treatment [2, 3]. However, successful pharmaceuticals detoxification is not assured.

The aim of the study was to determine the influence of white-rot fungi treatment on cytostatic drugs toxicity, using: Trametes versicolor (strain CB8) and Hypholoma fasciculare (strain CB15). Tests with drugs: bleomycin and vincristine at 10 mg/L initial concentration were conducted for 10 and 3 days, respectively. The post-processed and untreated samples toxicity were evaluated in acute ecotoxicity tests toward representatives of all trophic levels of aquatic organisms: freshwater plant Lemna minor (OECD 221, 2006), crustacean Daphnia magna (ISO 6341, 2012), and bacteria Pseudomonas putida (PN-EN ISO 10712, 2001). Results were expressed as half maximal effective concentration (EC50) values.

The results showed that the biodegradation process of cytostatic drugs mediated by white-rot fungi not only removed over 70 % of bleomycin and at least 95% of vincristine, but also exhibited drugs ecotoxicity decrease. Even though, T. versicolor (CB8) generally achieved better detoxification effect, H. fasciculare (CB15) had the most remarkable impact on vincristine (EC50 change from 22% to 41%). These findings inspire further research into the application of fungi in the elimination of pharmaceuticals.

Form of presentation
TED Speech (max 2 speakers)

Keywords
anticancer drugs; basidiomycetes; ecotoxicity

Bibliography
1. Ferrando-Climent L., Cruz-Morató C., Marco-Urrea E., et al. Non-conventional biological treatment based on Trametes versicolor for the elimination of recalcitrant anticancer drugs in hospital wastewater. Chemosphere, 2015, doi: 10.1016/j.chemosphere.2015.03.051.\\\\n2. Sośnicka A., Kózka B., Makarova K., et al. Optimization of white-rot fungi mycelial culture components for bioremediation of pharmaceutical-derived pollutants. Water, 2022, doi.org/10.3390/w14091374.\\\\n3. Prieto A., Möder M., Rodil R., et al. Degradation of the antibiotics norfloxacin and ciprofloxacin by a white-rot fungus and identification of degradation products. Bioresour Technol, 2011, doi.org/10.1016/j.biortech.2011.08.055.

Additional information
The study was financed by the National Science Centre, Poland, project: “Research on white-rot fungi ability to remove cytostatic drugs on an example of: bleomycin and vincristine” (UMO-2020/37/N/ST8/01077).

Information about speakers
Number of speakers: 1 speaker

0463
Abstract number

Multi-functional bio-inspired and metal-free organic dyes for advanced bioimaging and optoelectronic applications

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Efficient near-infrared (NIR) emitters remain one of the most sough elements for the development of new functional materials for healthcare & telecommunications. These technologies are of great societal impact, and their use is expected to grow rapidly in the coming years.

Majority of NIR emitters are based on phosphorescent organometallic motifs, which, in addition to the problem of scarceness of the metallic constituents, do not meet sufficient biocompatibility & recyclability levels. A more environmentally sound alternative was recently proposed with purely organic materials. Due to the absence of rare and precious metals such as iridium or platinum, those emitters are foreseen as an emerging class of dyes for biomedical applications. However, the development of NIR emitters applications such as organic light-emitting devices (OLEDs) still lags their phosphorescent counterparts. Thermally activated delayed fluorescence (TADF) which allows to upconvert non-emissive triplets into emissive singlets came up as the emerging design strategy to improve OLEDs efficiencies. Besides, the linear and nonlinear optical functionalities are rarely combined despite they would allow multiple bioimaging options. In addition, bringing chirality to these materials would not only improve bioimaging by allowing biorecognition of chiral materials, but also contribute to the developments of NIR circularly polarized light (CPL) OLEDs. The overreaching goal of the presented work is the realization of multifunctional materials with advanced optical properties in the NIR range for applications in imaging and electronics. The newly designed chiral organic dyes will combine linear and nonlinear optical properties and will be distinguished by large (i) CPL-NIR emission and (ii) two-photon activity.

Form of presentation
Lecture (1 speaker)

Keywords
multifunctional materials, bioimaging, organic light-emitting diodes, photodynamic therapy, computational material science, two-photon absorption, chiroptics

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0465
Abstract number

Biochar for the benefit of city and town environments and local economies

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[1] Energy and Bioproducts Research Institute, Aston University, United Kingdom

Biochar is considered a double green revolution, serving both carbon sequestration (storage of carbon in the soil and reduction of carbon in the atmosphere) and soil amendment purposes. Different researchers and organisations have estimated the global potential of biochar to reduce and remove GHG emissions. Estimates of 5.5 to 9.5 billion tonnes of carbon per year by 2100 have been proposed but controverted due to high requirements of land use change. Combining biochar and bioenergy production using green, forestry and agricultural residues as feedstock offers an exciting approach to carbon emission reduction and climate change mitigation. Through this strategy, a share of the carbon in biomass transferred via the pyrolysis process to biochar can be used in a soil amendment (long-term carbon sink). Practical questions regarding biochar production technologies, biochar quality and stability assessment, commercialisation and market potential still need to be addressed to potential biochar manufacturers and end-users.

To address those issues, the Energy and Bioproducts Research Institute (Aston University, Birmingham, UK) developed a mobile biochar production unit (Urban Biochar & Sustainable Materials Demonstrator), and in collaboration with Birmingham City Council, this innovative demonstrator is devised to thermally convert wood cuttings from around Birmingham and Solihull (West Midlands, UK) into biochar.

This case study will demonstrate how the Uban Biochar and Sustainable Materials Demonstrator can aid the local region both environmentally and economically (1. biochar for the benefit of city/town environments and local economies; 2. biochar as a soil enhancer in urban landscapes; 3. carbon capture and storage - CCS merits of biochar).

Form of presentation
Poster presentation

Keywords
biochar; biomass; organic waste, pyrolysis; sustainable engineering; carbon capture and storage (CCS);

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0468
Abstract number

Urban voids

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Since the turn of the 20th and 21st centuries, it has increased effort to develop solutions aimed at balancing the pace and intensity of urban changes has been observed. Unused spaces (i.e. undeveloped areas, wastelands, open or green areas) are becoming an increasingly popular subject of discussion in the context of contemporary concepts of city development (e.g. sustainable city, high-density city, compact city, 15-minute city). These spaces are created as a result of the loosening of the previously compact spatial structure of the city (related to uncontrolled development of buildings, deindustrialization, depopulation and changes in preferences on housing markets, among others). On the other hand, the uneven development of cities results, among others, in "spatial chaos", the creation of perforated cities, or the occurrence of "island urbanism".

The key thread is to identify the causes of created unused urban spaces, as well as ways to classify them. Then, the results of the study of unused spaces on the example of Katowice (the capital of the Silesian Voivodeship in Poland) will be presented. At the end of the presentation, there will also be considerations about the future of unused urban spaces, in particular the possibilities and barriers to their development.

Form of presentation
Poster presentation

Keywords
urban planning; urban development; urban voids

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0471
Abstract number

VAMOXID – technology for the utilization of ventilation air methane (VAM)

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Methane is a greenhouse gas and it negatively influences the environment. Its emission to the atmosphere in lean methane-air mixtures is a serious problem and human activity also contributes to it. Such mixtures often accompanies coal extraction. It is known that about 70% of the total emission of methane in the mining industry is released into the atmosphere as VAM (Ventilation Air Methane). For many years VAM was treated as a waste, and nowadays, due to changes regarding methane inclusion in the EU ETS system, the need for its utilization is more visible. Methane concentration in VAM may vary from a very low amount to even 1 vol.% [1]. VAM sources with low the methane content prevails and it is difficult to perform its utilization. VAM streams are characterized by a huge flow rates with high humidity and contaminated by dust and other components [2] [3]. VAM may be utilized by its combustion in a thermal flow reversal reactor and the appropriate technology (VAMOXID) was developed in ICE PAS in cooperation with “KATALIZATOR” Sp. z o.o. [4]. The experiments performed in a demonstration unit built at ICE PAS premises revealed that it works autothermally from methane concentrations as low as 0.2 vol.%. Moreover, a reasonable heat recovery is already possible for a methane concentration of 0.4 vol.% or higher, which bodes well for future industrial installation [5]. In the case of applying VAMOXID at the average ventilation shaft one may expect the heat recovery of 4.3 MWt and 20.2 MWt for methane concentration of 0.43 vol.% and 0.77 vol.%, respectively. The recovered heat can be further applied for cold generation or electricity production.

Form of presentation
Poster presentation

Keywords
methane, thermal combustion, reversal flow reactor, VAM, utilization

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0472
Abstract number

Micro- and nanoplastics determination in postmortem human tissues

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The global trend to increasingly consume and throw away single-use plastic products and packaging has resulted in a tenfold increase in the amount of plastics in municipal solid waste since the 1960s. Furthermore, the increase further accelerated during the SARS-CoV-2 pandemic. The increasing amount of waste plastic goes in parallel with more plastic litter in the environment, which then accumulates in living organisms, including humans.

Over the past few years, various microbeads of plastic have been identified in human lungs, colon, placenta, feces, sputum and the bloodstream. Most commonly, the presence of microplastic particles is detected in the lungs, in varying abundance, size, shape and polymer composition. The most popular methods for identifying microplastics are Fourier transform infrared spectroscopy (FTIR) and Raman spectroscopy. In the present study, selected post-sectional human tissues were examined in which the presence of microplastic particles was detected by FTIR spectroscopy.

Identification and elimination of MPs pollution is key to reducing environmental pollution and protecting human health, and moreover in line with the concept of a sustainable environment and the Sustainable Development Goals.

Form of presentation
Poster presentation

Keywords
microplastics, nanoplastics, FTIR spectrosopy

Bibliography
1) L.C. Jenner, J.M. Rotchell, R.T. Bennett, M. Cowen, V. Tentzeris, L.R. Sadofsky, Detection of microplastics in human lung tissue using μFTIR spectroscopy, Science of the Total Environment, 2022, 831, 154907 http://dx.doi.org/10.1016/j.scitotenv.2022.154907
2) L. Zhu, Y. Kang, M. Ma, Z. Wu, L. Zhang, R. Hu, Q. Xu, J. Zhu, X. Gu, L. An, Tissue accumulation of microplastics and potential health risks in human, Science of The Total Environment, 2024, 915, 170004, https://doi.org/10.1016/j.scitotenv.2024.170004

Additional information

Information about speakers
Number of speakers: 1 speaker

0481
Abstract number

Changes in the surface urban heat island between 1986 and 2021 in the polycentric G´orno´sląsko-Zagłębiowska Metropolis, southern Poland

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[2] Faculty of Natural Science, University of Silesia in Katowice, Poland

Progressing urbanization leads to urban infrastructure development, thus an increase in artificial impervious surfaces that directly contribute to changes in the structure of surface urban heat islands (SUHI) in cities. SUHI, which manifests itself in higher temperatures in the city compared to the surrounding areas, is considered a dangerous phenomenon on a local scale for city residents in summer. The study aimed to determine spatial and temporal changes in the extent and intensity of SUHI in the Górnośląsko-Zagłębiowska Metropolis (GZM) between 1986 and 2021. The study was conducted based on Landsat satellite images, demographic data, and the CORINE Land Cover classification from 1990-2018, which contains information on land cover types.

It was noted that the SUHI extent in the GZM increased from 0.6% to 4.3% in 1986–2021, comparing satellite images taken on the close date, and during similar meteorological conditions. The reason for these changes was the increase in the share of impervious areas within the GZM. Regardless of changes in spatial extent, an increase in the mean surface land temperature of all land cover types was found, which is in accordance with current climate changes. Despite the increase in the mean land surface temperature, the SUHI intensity decreased by 0.7 – 3.4°C between 1986 and 2021 due to the higher increase in the cold islands' surface temperature in the GZM.

The expansion of summer SUHI combined with global warming is a particularly negative effect for highly urbanized urban areas and aging societies, to which GZM belongs.

Form of presentation
Poster presentation

Keywords
surface urban heat island, land cover, remote sensing

Bibliography
Renc, A., Łupikasza, E., 2024. Changes in the surface urban heat island between 1986 and 2021 in the\\npolycentric Górnośląsko-Zagłębiowska Metropolis, southern Poland. Build. Environ., 247, 110997

Additional information

Information about speakers
Number of speakers: 1 speaker

0487
Abstract number

Analysis of the possibilities of process heat recovery on a model hot-dip galvanizing technological line - an example of the functioning of material technology in the aspect of achieving sustainable development goals.

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[1] Department of Materials Technologies, Silesian University of Technology, Poland
[2] FAM Rawa Mazowiecka Sp. z o.o., Poland

Corrosion destruction of steel structural elements results in huge economic losses and, consequently, also has a negative impact on the natural environment. Restoring technical infrastructure requires its re-production in technological processes that are energy-intensive and very burdensome for the environment. For this reason, the production of hot-dip zinc coatings, as an effective protection against corrosion of metal structural elements, is and will continue to be widely used in industrial conditions. The hot-dip galvanizing process itself is harmful to the environment, not least because of its energy consumption. The operation of the galvanizing bath requires maintaining the zinc alloy continuously at a temperature of 450°C using gas or electric furnaces. Process solutions used to prepare the surface of products before galvanizing also require heating.
The authors analyzed the possibility of recovering process heat on the hot-dip galvanizing technological line. As a result, it was found that effective energy recovery is possible for the model summer and winter periods of galvanizing plant operation. The energy balance carried out for individual hot-dip galvanizing technological treatments showed that energy recovery is possible for the galvanizing furnace, water cooling tower and air cooling tower. The use of process heat will reduce its loss and increase the economic efficiency of the galvanizing process. However, this requires the use of an appropriate heat exchanger equipped with a control system and software enabling proper heat distribution to individual technological nodes.

Form of presentation
Poster presentation

Keywords
anti-corrosion coatings, hot-dip galvanizing, process heat recovery, sustainable development technologies

Bibliography
1. Blakey S.G, Beck S.B.M.: Energy consumption and capacity utilization of galvanizing furnaces. Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, 218 (4), 2004, pp. 251-259;
2. Shulz W. D., Thiele M.: Feuerverzinken von Stuckgut. Die Schichtbildung in Theorie und Praxis, Eugen G. Leutze Verlag, Bad Saulgau, 2008; \\\\\\\\n3. Liberski P.: Antykorozyjne powłoki zanurzeniowe. Publishing house Silesian University of Technology, Gliwice 2013;

Additional information

Information about speakers
Number of speakers: 1 speaker

0503
Abstract number

Sorbents for recovering uranium from seawater based on MOF material or oxide containing uranium complexing ligandss

Gładysz-Płaska Agnieszka[1], Majdan Marek[1], Lipke Agnieszka[1], Grabias-Blicharz Ewelina[2], Łyszczek Renata[1]

[1] Department of Chemistry, Maria Curie-Sklodowska Univeristy, Poland
[2] Faculty of Pharmacy, Medical Univeristy, Poland

In the face of the modern energy crisis, various ways to improve the situation are constantly being sought. One of the alternatives is nuclear energy, which is still a controversial issue and subject for its supporters and opponents. The topic of nuclear energy is inextricably linked to uranium as an element being an important component of nuclear fuel. Therefore uranium is one of radioactive elements found in nuclear waste. It most often occurs in the form of soluble UO22+. This form of uranium is characterized by high mobility and for this reason can pose a serious threat to humans, which is why its removal is necessary. Another aspect is the accessibility of uranium as a nuclear fuel that can be obtained from seawater.The oceans represent a potentially huge resource, containing more than 4 billion tons of uranium, which could provide it for nuclear power for several thousand years.

Therefore, it is advisable to find adsorbents for the effective extraction of uranium from seawater despite many problems. One of them is the low concentration of uranium in seawater (3.25 μg L-1). Another difficulty is the presence of many other dissolved ions which, due to their high affinity, compete for adsorption sites (e.g. V, Fe, Ni, Na, Mg, Ca). An important aspect of the research is finding and using sorbents containing uranium complexing ions (i.e. N, P, O) and examining the stability of the complexes created in order to reuse them. Ligands containing N or P atoms or coordination polymers are the subject of our research in terms of effective adsorption, determining its rate and the mechanism of active ions interactions.

Form of presentation
Poster presentation

Keywords
uranium, seawater, sorbents, MOF, removal, ligands,

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

Energy Transition

Lectures, Panels, and Short Presentations

0072
Abstract number

Skills4Wind: Boosting the wind energy sector through interdisciplinary and intersectoral training

Vyzikas Thomas[1]

[1] A.1 MSCA Doctoral Networks, European Research Executive Agency, Belgium

Why offshore energy and why now?

European companies have been at the forefront of the development of offshore wind energy globally. The sector is steadily growing and the cost per KWh produced by wind energy became cheaper compared to electricity produced by oil&gas even before the recent energy crisis. Offshore wind has great potential because larger turbines can be used, while interfering much less with land uses. To meet the ambitious target for carbon neutrality by 2050 and Europe to become the first climate-neutral continent, the EC recognises the offshore wind energy as a major contributor to the future energy mix. There are now about 12GW of installed capacity in the EU. By 2030, EC aims to increase this to 60GW (by 5 times), and 300GW (by 30 times) until 2050.

How does MSCA come into play?
One of the main hurdles in the achieving these very ambitious targets is the lack of skilled researchers and engineers (described as “The skills challenge”). High level and interdisciplinary training is required to tackle challenges spanning from the foundations of offshore wind, to grid connectivity and smart grids, to optimisation and environmental impacts, in order to cover the full life-cycle of offshore wind energy projects.

In light of 2023 being the European year of skills, it’s time to take stock of the achievements of MSCA projects, raise awareness to the industry about the MSCA Wind Energy Cluster and promote doctoral careers among potential candidates.

This session brings together the research, industry and financial sectors to discuss the main challenges, gaps in skills and opportunities to meet the EU policy goals for sustainable development, while maintaining and expanding Europe’s leadership in the sector, boosting clean growth and enhancing energy security.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
wind energy, EU green deal, low-carbon, research training, intersectoral mobility, industry-driven, doctoral programmes, high-skills jobs, interdisciplinary research, environmental impacts, European Year of Skills

Bibliography
An EU strategy to harness the potential of offshore renewable energy for a climate neutral future, COM(2020) 741 final, European Commission. Link: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2020:741:FIN&qid=1605792629666\\n\\nOffshore renewable energy in the EU: Ambitious plans for growth but sustainability remains a challenge, European Court of Auditors, 2023. Link: https://www.eca.europa.eu/ECAPublications/SR-2023-22/SR-2023-22_EN.pdf\\n\\nWind energy in Europe: 2022 Statistics and the outlook for 2023-2027, Wind Europe report February 2023. \\n\\nOffshore Wind Energy in Europe— A Review of the State-of-the-Art, Andrew R. Henderson, Colin Morgan, Bernie Smith, et al., Wind Energy, Wiley, 2023, https://doi.org/10.1002/we.82\\n\\nWind Energy sector skills in Europe, 2015-1-ES01-KA202-015935. Link: https://skillwind.com/wp-content/uploads/2017/11/IO1_Wind-Energy-sector-skills.pdf \\n

Additional information
The session aims to demonstrate how important synergies among projects and organisations are to tackle the interdisciplinary challenges and boost growth in Europe. It is worth noting that the speakers include supervisors, coordinators, industry representatives as well as a PhD fellow to share their experience. The moderation of the session will be done by Dr Vyzikas, who initiated and coordinates the Wind Energy Cluster of MSCA Doctoral Networks, which has 9 running projects and more than 100 funded PhD fellows.

Information about speakers
Number of speakers: 6 speakers

0084
Abstract number

The Green Hydrogen tour throughout Europe: an interactive session to discuss the impacts & advantages of green hydrogen across Europe

Saenz De La Torre Lasierra Juan Jose[1], Gomollón Bel Fernando[1], Flamarique Pérez Leyre[1], Farràs Pau[2]

[1] Agata Communications, Spain
[2] University of Galway, Ireland

Our objective in this session is to showcase the different scenarios for green hydrogen across Europe. To do so, we will visit between 3 and 5 specific locations on the European continent. For each of them we will have an expert who will present the different opportunities, barriers to implementation or environmental impact, among others. By going through different use cases, geographically diverse, we aim to discuss the scope of green hydrogen in Europe as an option adaptable to the territory.

To achieve this, we will use an innovative and interactive format with the audience. This will be supported by audiovisual tools that will allow us to fictitiously tour the different locations. Each of them will be explained by a different expert as a flash presentation. In addition, through an initial interactive presentation, real-time audience responses will be gathered in order to adapt the session to the interests and background of the audience. A science communicator will moderate the event, guiding the discussion and introducing the locations and experts.

As anticipated above, our goal is to outline the status of green hydrogen in Europe as well as to present it as a feasible technology to promote an energy transition on the continent.

This session is organised within the framework of a Horizon Europe project, ANEMEL, focused on developing an electrolyser that converts sea water and waste water into hydrogen. It is funded through the EIC Pathfinder and will be attended by experts not only from the ANEMEL project but also from the EIC cluster of projects working on green hydrogen (9 projects with different approaches, available at: https://eichydrogen.eu/).

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Green hydrogen, Europe, Energy transition, ANEMEL, Interactive, local context, barriers, resources

Bibliography
Pau Farràs et al 2023 Prog. Energy 5 023001, DOI 10.1088/2516-1083/accef8

Additional information

Information about speakers
Number of speakers: 3 speakers

0206
Abstract number

Escaping the tragedy of the commons? Motivating policies for global emissions reductions through local improvements in air quality.

Reeves Guy[1], Pozzer Andrea [2]

[1] Science Policy, Max-Planck-Society, Germany
[2] Atmospheric Chemistry, Max-Planck-Society, Germany

Motivating policymakers and citizens to accept the short-term costs of reducing their emissions in order to mitigate the ongoing global climate crisis has proven challenging. However, in the many cases where clean air policies have been implemented, their positive effects are rapidly felt and supported at the local level. Possibly illustrating how the tragedy of the commons operating at different geographical and temporal scales may differ in their ease of motivating policy solutions.
Our panel will discuss the growing understanding of the links between outdoor air pollution and its implications for global climate policy. We will look at policies (and how they are communicated) that are designed to work locally, but which may also have measurable regional or global impacts. Our discussion will be moderated by Susana Romao (vizzuality.com), who works to integrate environmental data to improve policy creation.

Form of presentation
Debate (min. 3 speakers)

Keywords
Policy, Communication, Climate crisis, Climate action , Clean air, Pollution, Global, Local, Public debate, Political support , PM2.5, Health

Bibliography
Lelieveld, J., Haines, A., Burnett, R., Tonne, C., Klingmüller, K., Münzel, T., & Pozzer, A. (2023). Air pollution deaths attributable to fossil fuels: observational and modelling study. British medical journal, 383.https://www.bmj.com/content/383/bmj-2023-077784
Lehtomäki, H., Rao, S., & Hänninen, O. (2023). Phasing out fossil fuels would save millions of lives worldwide. British medical journal,, 383.https://doi.org/10.1136/bmj.p2774
Shi, Q., Zheng, B, ... & Zhang, Q. (2022). Co-benefits of CO2 emission reduction from China's clean air actions between 2013-2020. Nature Communications,13(1), 5061.https://doi.org/10.1038/s41467-022-32656-8
Swart, R., Amann, M., Raes, F., & Tuinstra, W. (2004). A good climate for clean air: linkages between climate change and air pollution. An editorial essay. Climatic Change,66, 263-269.https://doi.org/10.1023/B:CLIM.0000044677.41293.39

Additional information
(1) Guy Reeves will not be participating in the panel discussion and will not appear on any materials. He is purely acting as a coordinator. He has experience in ESOF panels and in 2020 co-organized and participated in a panel that remains the most viewed panel on the ESOF channel https://www.youtube.com/watch?v=GIuXtmtj2nA. We attribute this to the promotion efforts we coordinated with ESOF that included this highly watched trailer https://www.youtube.com/watch?v=n3IVJQnaiog I would hope to do something similar for this panel.guy.reeves@gv.mpg.de
(2) Our panel is gender balanced (50:50) and diverse in a number of ways.
(3) We very much appreciate your instruction " It is encouraged to minimize the impact on the environment and climate when composing the panel." Indeed it is our efforts to ensure that we confirm a colleague from China that is already in Europe that means that we are currently unable to name a person, but we are in contact with several high profile and articulate candidates

Information about speakers
Number of speakers: 3 speakers

0233
Abstract number

Is the post-mining infrastructure a viable option for energy storage?

Lutynski Marcin[1], Bartela Lukasz[2]

[1] Faculty of Mining, Safety Engineering and Industrial Automation, Silesian University of Technology, Poland
[2] Faculty of Energy and Environmental Engineering, Silesian University of Technology, Poland

According to the European Association for Energy Storage the need for energy storage capacity in European Union will be approximately 200 GW in 2030 which is over two times more than current levels (88 GW). The growth in renewable energy sources, mainly wind and solar, requires large scale energy storage solutions such as pumped-storage hydroelectricity (PHS) or Compressed Air Energy Storage (CAES). Although these technologies are well developed there is a scarcity of suitable sites where they can be further implemented. One of the solutions is to use post-mining infrastructure where technologies such as PHS, CAES and gravity storage can be implemented. Mines on European continent are located mostly close to urban areas, are well communicated and usually suitable electric grid connections are available. In this debate a discussion on the possibility of using post-mining infrastructure and potential future opportunities will be discussed. Professionals from the industry and academia will share their ideas on the possibility of future implementation of project related to energy storage in underground mines.

Form of presentation
Debate (min. 3 speakers)

Keywords
energy storage, post-mining infrastrcuture, Compressed Air Energy Storage, pumped storage hydroelectricity, gravity storage

Bibliography
Ł. Bartela, J. Ochmann, S. Waniczek, M. Lutyński, G. Smolnik, S. Rulik. Evaluation of the energy potential of an adiabatic compressed air energy storage system based on a novel thermal energy storage system in a post mining shaft. Journal of Energy Storage,2022, DOI:10.1016/j.est.2022.105282\\\\\\\\\\\\\\\\nS. Waniczek, J. Ochmann, Ł. Bartela, S. Rulik, M. Lutyński, M. Brzuszkiewicz, K. Kołodziej, G. Smolnik, M. Jurczyk, M. Lipka. Design and construction challenges for a hybrid air and thermal energy storage system built in the post-mining shaft. Journal of Thermal Science, 2022, DOI:10.1007/s11630-022-1593-x\\\\\\\\\\\\\\\\nM. Lutyński. An overview of potential benefits and limitations of Compressed Air Energy Storage in abandoned coal mines. IOP Conference Series: Materials Science and Engineering, nr 268, 2017, DOI:10.1088/1757-899X/268/1/012006

Additional information
This debate is within the scope of the 6th Priority Research Area Climate and environmental protection, modern energy

Information about speakers
Number of speakers: 5 speakers

0261
Abstract number

Energy research at CERIC - Synchrotron light-based complementary techniques offered by a European Research Infrastructure Consortium

Turconi Marcello Maria[1], Maximenko Alexey[2], Aquilanti Giuliana[3], d'Acapito Francesco[4]

[1] Science Communication, CERIC-ERIC , Italy
[2] SOLARIS Synchrotron, Poland
[3] Elettra Synchrotron, Italy
[4] ESFR, France

The rapidly increasing energy demand our society faces has severe consequences on the global climate, making it urgent to achieve a paradigm shift towards renewable energy. However, the intermittent nature of most renewable energy sources available today is a significant limiting factor that must be solved to achieve better performance and a longer lifetime of batteries, fuel cells, and solar-to-chemical converters. CERIC, a Research Infrastructure Consortium that provides open access to some of Europe's most advanced analytical facilities in materials, biomaterials, and nanotechnology, in the latest years focused on these topics. Thanks to its advanced analytical techniques, such as the ones available at three synchrotron radiation facilities (SOLARIS – Krakow, Poland; Elettra – Trieste, Italy; LISA@ESRF – Grenoble, France), scientists can realize time and space-resolved studies to provide a greener future for European citizens. One of the most promising techniques in this field is X-ray absorption spectroscopy (XAS), an approach used to determine the local structure of materials with unique sensitivity that can be used to study the interaction between solar light and electrodes for solar-based water splitting or to unravel the change in the phase composition of electrodes during the operation of a new type of batteries.
Besides being a clear example of how basic research can provide the necessary first step in tackling critical societal challenges related to sustainable development, the studies we are going to discuss are also evidence of the scientific excellence that is guaranteed at the European level by cooperation ensured by research infrastructure consortia such as CERIC.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
energy, batteries, fuel cells, synchrotron, research, physics

Bibliography
1)Li M, Gaboardi M, Mullaliu A, Maisuradze M, Xue X, Aquilanti G, et al, Influence of Vacancies in Manganese Hexacyanoferrate Cathode for Organic Na-Ion Batteries: A Structural Perspective, Chemistry Europe, 2023, https://doi.org/10.1002/cssc.202300201 2)Ćwieka K, Bojarska Z, Czelej K, Łomot D, Dziegielewski P, Maximenko A, et al., Zero carbon footprint hydrogen generation by photoreforming of methanol over Cu/TiO2 nanocatalyst, Chemical Engineering Journal, 2023, https://doi.org/10.1016/j.cej.2023.145687 3)Amthor S, Ranu K, Bellido CG, Salomón FF, Piccioni A, Mazzaro R, et al., Robust Molecular Anodes for Electrocatalytic Water Oxidation Based on Electropolymerized Molecular Cu Complexes, Advanced Materials, 2023, https://doi.org/10.1002/adma.202308392

Additional information

Information about speakers
Number of speakers: 4 speakers

0282
Abstract number

Legal framework for local energy communities

Kmieć Jakub[1], Tyński Artur[1], Kupiec Bartłomiej[2], Kanas Justyna[3], Gacki Maciej [4], Żaba Mateusz[5]

[1] Doctoral School, University of Silesia, Poland
[2] Stowarzyszenie "Z energią o prawie" (Association "With energy on law"), Poland
[3] Faculty of political science and internatoional studies, Uniwersity of Warsaw, Poland
[4] Energy markets specialist , Instytut Jagielloński (Jagiellonian Institute) , Poland
[5] Faculty of Law and Administration of the University of Silesia, University of Silesia, Poland

The Energy Transition (ET) involves changes not only at the central level but also at the local level. At the local level, ET can take the form of Energy Communities (ECs), the collective frameworks for energy generation activities that revolve around principles of openness, democracy, and shared governance, ultimately benefiting their members and/or the local community (A. Caramizaru, 2020). The European Union (EU) has established a legal framework for ECs through the Fourth Energy Directive and Renewable Energy Directive (recast). However, the choice of the directive as a regulatory tool has resulted in diverse models for the operation of ECs in national legislation, with each EU Member State establishing its laws differently. As a result, a variety of organizational forms for such initiatives (e.g. energy cooperatives, energy clusters, citizen energy communities) have emerged in practice.

This variety creates a wide spectrum for the debate on ECs and their development. EU law promotes the development of ECs, particularly those related to the production of energy from renewable sources to meet local energy needs in particular through dedicated economic support mechanisms. To ensure the proper operation of ECs, it is necessary to correctly define the relations and competencies of state authorities concerning the activities of ECs, as well as to define the rights and obligations of ECs in relation to other market participants (e.g. energy producers, energy trading companies, energy distribution companies). Representatives of legal sciences and policymakers will engage in a debate on these issues, ensuring a diverse approach to the topics covered.

Form of presentation
Debate (min. 3 speakers)

Keywords
#energy communities#energy clusters#energy cooperatives#decentralized energy#citizen energy#renewable energy sources

Bibliography
I. Bauwens T., Gotchev B., et al., ‘What drives the development of community energy in Europe? The case of wind power cooperatives’, Energy Research & Social Science, 2016, DOI: 10.1016/j.erss.2015.12.016 II. Caramizaru A., Uihlein A., ‘ECs: an overview of energy and social innovation’, Publications Office of the European Union, 2020, DOI:10.2760/180576 III. Diestelmeier L., Cappell V., ‘Conceptualizing ‘Energy Sharing’ as an Activity of ‘ECs’ under EU Law: Towards Social Benefits for Consumers?’, Journal of European Consumer and Market Law, 2023 IV. Sokołowski M, ‘European Law on the ECs: A Long Way to a Direct Legal Framework’, European Energy and Environmental Law Review, 2018, DOI: 10.54648/EELR2018006

Additional information

Information about speakers
Number of speakers: 6 speakers

0464
Abstract number

Almost perpetuum mobile

Truszczyński Andrzej[1]

[1] TKHolding Truszczyński Kobierzewski Sp. z o.o., Poland

Fourteen years ago, it was not popular to create eco buildings, especially if they were aquaparks. However, as architects, we had a vision of creating environmentally friendly investments. Eventually, we found an investor who saw the benefits of such approach. By founding an investor I mean we participated in an international architectural contest. We took on the ambitious commitment to create a surplus green energy building. The challenge was to design a water park that, despite the natural tendency of such facilities to consume a huge amount of energy, would have a minimal impact on the environment. Thanks to innovative solutions in the field of renewable energy sources, the Park not only self-sufficiently covers its energy needs but also generates twice as much. Enough energy to support the local community. This surplus is so significant that during the summer, it could cover the heat energy needs of 1/7 of the city's inhabitants, at the same time water park gives back to the society enough power to run the trolleybuses in the city.

At the time of undertaking this task, many skeptics doubted the feasibility of such an ambitious project. Today, after more than five years of the Tychy Water Park's operation, the facility stands as living proof that it is possible to create an eco-friendly water park that contributes to the sustainable development of the city. What is even more shocking, this solution is making money. Green transformation can be profitable. This facility is a testament to our vision and determination. It is a unique facility, but it also serves as a model for our future projects. This is a testimony that WE CAN MAKE A CHANGE!

Form of presentation
TED Speech (max 2 speakers)

Keywords
Perpetuum mobile, eko-friendly building

Bibliography
PhD. eng. arch. Andrzej Tuszczyński, Gamification of Architecture in the design of public facilities on the example of water parks, 2019

Additional information

Information about speakers
Number of speakers: 1 speaker

0525
Abstract number

Effects of source specific PM2.5 on acute health outcomes in New York State

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In prior studies of the changes in acute health outcomes (emergency department visits and hospitalizations for cardiorespiratory diseases) from 2005 to 2016 at 6 urban sites in New York State, it was found that the toxicity per unit mass of PM2.5 had increased for a number of those outcomes. Those effects were commonly associated with oxidative stress and systemic inflammation. To explore the likely cause(s) for the toxicity increase, PM2.5 composition data from these sites were source apportioned.

The sources most commonly associated with rises in toxicity were spark-ignition vehicles (GAS), compression-ignition vehicles (DIE), road dust (RD), and residual oil combustion (RO). These source types are associated with secondary organic aerosol (SOA) formation (GAS) or redox-active transition metals (DIE, RD, RO). GAS was likely affected by changes in gasoline vehicle technology and gasoline reformulation that replaced benzene with intermediate volatility organic compounds (IVOCs).

The introduction of Tier 3 vehicle emissions controls (similar to Euro 6) on new vehicles sold after January 1 was expected to reduce emissions and related health outcomes. Thus, analyses have been conducted covering the period of 2014 to 2019. Initial findings suggest that the PM2.5 toxicity per unit mass has remained high.

Form of presentation
Lecture (1 speaker)

Keywords
#keynote_speaker

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

Energy Transition

Poster Sessions

0022
Abstract number

IMPROVING QUALITY OF SOLID BIOMASS FUELS: “PL-US BIO” - POLAND'S INNOVATIVE CERTIFICATION PROGRAM

Drobniak Agnieszka[1], Jelonek Zbigniew [2], Jelonek Iwona[2], Mastalerz Maria[3]

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[2] University of Silesia, Poland, Poland
[3] Indiana University, United States

The global biomass industry has been experiencing unprecedented growth as renewable energy targets, innovative technologies, and favorable policies drive the market. However, the growth and success of the industry can be jeopardized by customers’ apprehension toward using solid biomass fuels. This reservation can come from a lack of stable fuel prices, interrupted supply, and negative experiences of using low-quality biomass pellets.

Over the last 7 years, the Centre for Biomass Energy Research and Education at the University of Silesia in Katowice has analyzed more than 1,000 samples of solid biomass fuels from nine countries. The research shows that fuels can be contaminated to various degrees, even up to 26 vol. % of impurities. Such a low quality of biomass pellets on the market gives rise to concerns that can affect a broad spectrum of bioenergy including not only energy efficiency, but also environmental sustainability, public health, and the long-term viability of biomass as a renewable and clean energy source.

The study results led to the establishment of a "PL-US BIO" certification program which is designed for the quality assessment of solid biomass fuels manufactured for energy generation in non-industrial settings in Poland. This is the first certification scheme in the world that implements optical microscopy analysis as part of testing to provide a comprehensive assessment of fuel quality.

The research highlights also a need for implementing stricter fuel quality standards and policies, which in turn, would lead to safer utilization and a cleaner environment. These fundamental measures are crucial in raising customer awareness and fostering trust, ultimately promoting the broader adoption of biomass fuels as a dependable and sustainable energy source.

Form of presentation
Poster presentation

Keywords
bioenergy, biomass fuels, quality assessment

Bibliography
Drobniak, A., +45 others 2023. Interlaboratory study: Testing reproducibility of biomass fuels component identification using reflected light microscopy. International Journal of Coal Geology 277, 104331. https://doi.org/10.1016/j.coal.2023.104331.

Drobniak, A., Jelonek, Z., Mastalerz, M., Jelonek, I., 2023. Residential gasification of solid biomass: Influence of raw material on emissions. International Journal of Coal Geology 271, 104247. https://doi.org/10.1016/j.coal.2023.104247.

Drobniak, A., Jelonek, Z., Mastalerz, M., Jelonek, I., 2022, Developing methodology for petrographic analysis of solid biomass in reflected light. International Journal of Coal Geology 103959. https://doi.org/10.1016/j.coal.2022.103959.

Additional information

Information about speakers
Number of speakers: 1 speaker

0154
Abstract number

In search of new materials for energy storage using synchrotron radiation

Pitala Krzysztof[1], Partyka - Jankowska Ewa[1], Stępień Joanna[2], Strączek Tomasz [1], Zając Marcin[1]

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[2] Academic Centre for Materials and Nanotechnology, AGH University of Krakow, Al. Mickiewicza 30, 30-059, Kraków, Poland

Increasing demand for sustainable and reliable energy storage system puts an enormous toll on Li-on batteries, which are widely used in portable electronics, electric vehicles and personal energy storage devices. Lithium's scarcity in nature leads to high market values and excessive excavation in search for it. Therefore, new technologies based on sodium (Na), potassium (K) or manganese (Mn) are being intensively sought. The synchrotron radiation is powerful tool for effective materials characterization. The PIRX (Premiere InstRument for Xas) beamline at SOLARIS Centre is an excellent example of infrastructure sub-nanometer sensitivity and element selectivity [1]. Its design based on collimated PGM working in soft X-ray photon energy range (100-2000 eV) and energy resolution at level 2.5 x 10-4 is suitable for material science, physics, spintronics, energy and engineering and technology use. The briefly presented beamline allows for a deep understanding of the processes occurring in sodium based new material generation used for batteries and energy storage [2,3].

Form of presentation
Poster presentation

Keywords
synchrotron radiation, energy storage, research, new materials, energy transition

Bibliography
[1] M. Zając, T. Giela, K. Freindl, K. Kollbek, J. Korecki, E. Madej, K. Pitala, A. Kozioł-Rachwał, M. Sikora, N. Spiridis, J. Stępień, A. Szkudlarek, M. Ślęzak, T. Ślęzak, D. Wilgocka-Ślęzak., The First Experimental Results from the 04BM (PEEM/XAS) Beamline At SOLARIS, Nucl Instrum Methods Phys Res B 492, 43 (2021), DOI: 10.1016/j.nimb.2020.12.024
[2] A. Plewa, A. Kulka, E. Hanc, J. Sun, M. Nowak, K. Redel, L. Lu, and J. Molenda, Abnormal Phenomena of Multi-Way Sodium Storage in Selenide Electrode, Adv Funct Mater 31, 2102406 (2021), DOI: 10.1002/adfm.202102406
[3] K. Walczak, A. Plewa, C. Ghica, W. Zając, A. Trenczek-Zając, M. Zając, J. Toboła, J. Molenda, NaMn0.2Fe0.2Co0.2Ni0.2Ti0.2O2 high-entropy layered oxide – experimental and theoretical evidence of high electrochemical performance in sodium batteries, Energy Storage Mater 47, 500 (2022), DOI: 10.1016/j.ensm.2022.02.038

Additional information

Information about speakers
Number of speakers: 1 speaker

0168
Abstract number

Permeability of Carbon Nanotube-Based Buckypaper and its Effects on Biofuel Cell Development

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[2] Wydział Chemiczny/ Katedra Fizykochemii i Technologii Polimerów, Silesian University of Technology, Poland

Enzymatic biofuel cells that convert chemical energy into electrical energy by electroenzymatic reactions offer attractive potential for powering disposable electronic systems. Recently, a new type of biofuel cell design containing the enzyme in solution in a microcavity of two glued conductive sheets of carbon nanotubes (CNTs), known as buckypaper (BP), has been developed. However, one of the challenges associated with the use of BPs is ensuring their proper permeability to prevent the elution of enzymes while allowing the entrance of substrates.
Herein, by using different types of CNTs, we have shown that the permeability of BPs is a function of their physical and chemical characteristics. We synthesized three batches of BPs, i.e., one with “fluffy” CNTs composed of long CNT bundles with a low apparent density (f-BP), another with a conventional CNT powder (c-BP), and a third batch with a mixture of both types of CNTs (m-BP). Following the synthesis, we opted to study the permeability of Methylene Blue (MB) as a model molecule, as it is a low-cost and efficient electron transfer mediator between the enzyme and the electrode and gives a strong signal in the UV-Vis spectrum. We observed a 25% and 55% decrease in the concentration of MB in the permeate in the cases of c-BP and f-BP, respectively, after 3 mL of permeation of the MB solution, followed by another increase in concentration after adding further volume. The best results were obtained for m-BP, with a continuous decrease in concentration up to 90% and a continuous flow of MB solution up to 12 mL. Our results show that it is possible to tune the permeability of BPs synthesised from different types of CNTs and develop semi-permeable systems that will be suitable for the design of enzymatic biofuel cells.

Form of presentation
Poster presentation

Keywords
Enzymatic Fuel Cell, Bioelectrodes, Bucky Paper, Permeability, Carbon nanotubes

Bibliography
Wang, L., Wu, X., Su, B.S.Q.-w., Song, R., Zhang, J. and Zhu, J., Enzymatic Biofuel Cell: Opportunities and Intrinsic Challenges in Futuristic Applications. Adv. Energy Sustainability Res., 2: 2100031, (2021). https://doi.org/10.1002/aesr.202100031Zohri, AN.A., Kassim, R.M.F. & Hassan, S.H.A. Methylene blue as an exogenous electron mediator on bioelectricity from molasses using Meyerozyma guilliermondii as biocatalyst. Biomass Conv. Bioref. (2022). https://doi.org/10.1007/s13399-022-03016-9

Additional information
This project was partly funded by the National Science Centre, Poland [2023/49/B/ST4/02942].

Information about speakers
Number of speakers: 3 speakers

0218
Abstract number

Converting mine shaft into Compressed Gas Energy Storage – basic guidelines

Kolodziej Konrad[1], Lutyński Marcin[1], Smolnik Grzegorz[1]

[1] Faculty of Mining, Safety Engineering and Industrial Automation, Silesian University of Technology, Poland

This poster explores the potential of repurposing post-mining infrastructure as innovative energy storage systems. We present practical guidelines for adapting post-mining infrastructure into hybrid facilities, utilizing a combination of compressed air and thermal energy storage technologies. This approach offers a promising solution for mitigating the challenges of renewable energy intermittency and maximizing storage capacity within existing infrastructure.

Our poster delves into the technical specifics of compressed air energy storage (CAES) systems, showcasing their storage potential and operational effectiveness in post-mining excavations. We further demonstrate the enhanced capabilities achieved by integrating a thermal energy module, creating a synergetic hybrid system. Traditionally, decommissioning of mines through backfilling or flooding has been the only option, resulting in a missed opportunity for sustainable development of mining regions. Proposed guidelines offer a viable alternative, allowing an easy assessment of the feasibility of transforming these spaces into valuable assets for the energy sector, while minimizing the environmental impact and footprint of land use. Taking into account the most important parameters for this transformation, such as shaft size, casing quality and type, and general mining-geological conditions, we can readily make a preliminary selection of sites suitable for conversion into energy storage facilities.

In conclusion, this poster paves the way for a future where post-mining infrastructure is not a burden of the past, but a springboard for renewable energy innovation. By unlocking this potential, we can build a sustainable energy future upon the foundations of our industrial heritage.

Form of presentation
Poster presentation

Keywords
Post-mining, CAES, Mine shaft conversion, Land use minimization, Renewable energy intermittency, Surface protection, mining,

Bibliography
Ł. Bartela, J. Ochmann, S. Waniczek, M. Lutyński, G. Smolnik, S. Rulik. Evaluation of the energy potential of an adiabatic compressed air energy storage system based on a novel thermal energy storage system in a post mining shaft. Journal of Energy Storage\\\\\\\\n2022,\\\\\\\\nDOI:10.1016/j.est.2022.105282
M. Lutyński. An overview of potential benefits and limitations of Compressed Air Energy Storage in abandoned coal mines. IOP Conference Series: Materials Science and Engineering, nr 268, 2017, DOI:10.1088/1757-899X/268/1/012006

Additional information
The paper was created as a result of the project: Hybrid energy storage system using post-mining infrastructure (HESS) The project is implemented with the support of EU funds from the European Commission under the Coal and Steel Research Fund Programme. (nr 101112380, RFCS-2022)

Information about speakers
Number of speakers: 3 speakers

0295
Abstract number

Accelerator mass spectrometry for determination of bio-based carbon

Piotrowska Natalia[1], Ustrzycka Alicja[1], Baranyika Jean Baptiste [1], Aziz Gill Komal[1], Michczyńska Danuta J.[1]

[1] Institute of Physics - CSE, Silesian University of Technology, Poland

Renewable materials refer to substances derived from natural resources that can be replenished over time, providing a sustainable and environmentally friendly approach to production. These materials are often derived from plants, animals, or other organic matter, and the carbon contained within is called biocarbon. The use of biocarbon in production processes helps reduce the dependence on fossil fuels, contributing to lower carbon emissions and a circular economy.

The introduction of biobased materials into the market triggered the development of techniques to accurately evaluate the biocarbon content. Radiocarbon (14C) method is a precise way to quantify the contents of bio-carbon in a variety of the materials. The contemporary biosphere has a known and relatively high radiocarbon content, whereas fossil fuels no longer contain measurable radiocarbon due to their ancient origin. This contrast forms the basis for a 14C-mass-balance method used to distinguish fossil and modern carbon in a variety of carbon-containing materials. Measurements of 14C content in materials are conducted with the techniques listed in international standards (e.g. EN 16640, ASTM D6866) for liquid, gaseous and solid samples. One of the methods is accelerator mass spectrometry (AMS).

In Gliwice Radiocarbon and Mass Spectrometry Laboratory, a compact modern AMS system known as Mini Carbon Dating System (MICADAS) was launched in 2022 as a result of “CEMIZ: Centre of Isotope Methods” project. The results obtained so far encompass liquids used as an energy resource (Baranyika et al. 2022, Baranyika and Piotrowska 2023), tires and their pyrolysis products (Aziz et al. 2022), technical carbon black (Aziz et al. 2023) as well as packaging materials.

Form of presentation
Poster presentation

Keywords
bio-based carbon; radiocarbon; accelerator mass spectrometry (AMS)

Bibliography
Aziz Gill K, Michczyńska DJ, et al., 2022. Study of bio-based carbon fractions in tires and their pyrolysis products. Radiocarbon 64(6): 1457-1469 https://doi.org/10.1017/RDC.2022.88 Aziz Gill K, Michczyńska DJ, et al., 2023. Technical carbon black and green technology. Geochronometria 50; https://doi.org/10.2478/geochr-2023-0016
Baranyika JB, Piotrowska N, et al., 2022.Testing the Methods for Determination of Radiocarbon Content in Liquid Fuels in the Gliwice Radiocarbon and Mass Spectrometry Laboratory. Radiocarbon 64(6): 1447–1456. https://doi.org/10.1017/rdc.2022.35
Baranyika JB, Piotrowska N, 2023. Determination of radiocarbon content in bio-oil samples by Mini Carbon DAting System in the Gliwice Radiocarbon and Mass Spectrometry Laboratory. Geochronometria. 49, 1–7. https://doi.org/10.2478/geochr-2023-0005

Additional information
The acquisition of AMS spectrometer was conducted within Centre for Isotope Methods CEMIZ (Regional Operational Programme of the Silesian Voivodeship 2014-2020 - European Regional Development Fund - ERDF). The research was financed by 14/020/BKM22/0022, 14/020/BKM22/0024, 14/020/BKM22/0025, 14/020/BKM23/0041, 14/020/BKM23/0045 projects with support from 14/020/BKS23/0043 for maintenance of scientific and research equipment.

Information about speakers
Number of speakers: 1 speaker

0309
Abstract number

Development of the automotive industry from the perspective of energy transformation

Cebulski Janusz[1]

[1] Materials Engineering, Silesian University of Technology, Poland

The decarbonization process has determined a new perspective on the broadly understood automotive industry in the areas of alternative vehicle power sources, but also on the broadly understood technological space. Particular attention should be paid to reducing vehicle weight, using as many recycled materials as possible, and using systems that collect kinetic energy when braking the vehicle.
There are a number of ways to reduce the weight of a vehicle, which are possible thanks to the development of new materials and technologies. An example is the use of light metal alloys in spark ignition engines with an intake system integrated with the head. Another example is the use of EPP and EPS materials for car elements - these are innovative materials characterized by low weight, which is combined with very high durability and full safety of use. Expanded polypropylene and polystyrene, i.e. EPP and EPS, can be used to make various automotive components.

Another example is the use of the KERS (Kinetic Energy Recovery System). By accumulating the kinetic energy occurring while the vehicle is moving, it can be reused when it is necessary to generate torque while driving the vehicle.

The above examples make it possible to reduce the amount of greenhouse gases emitted by the automotive industry from the stage of vehicle production, through its operation and recycling.

Form of presentation
Poster presentation

Keywords
automotive, materials engineering, transport, fuels, energy transformation

Bibliography

Additional information

Information about speakers
Number of speakers: 3 speakers

0422
Abstract number

Introducing nuclear energy sources to the Polish energy mix - selected technical, environmental and safety aspects

Bury Tomasz[1]

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The development of a reasonable energy system structure should take into account national energy resources, environmental aspects and legal requirements, both domestic and international. Poland has been moving away from coal monoculture in terms of electricity and heat generation towards renewable energy sources for many years. It is obvious, contrary to popular belief, that energy security cannot be ensured based only on renewable sources. It is planned to further increase the level of diversification of energy sources by introducing nuclear energy. The Polish Nuclear Energy Plan assumes the installation of from 6 GWe to 9 GWe in large nuclear power plants. In parallel to these plans, the last decade has seen great industry interest in introducing the technology of small modular nuclear reactors to generate electricity and heat, including process heat. In both cases, there is talk of building such nuclear units from scratch. On the other hand, in Poland there are many power plants and heat and power plants that promise the possibility of replacing traditional heat sources with nuclear reactors. The analysis of these possibilities is one of the tasks in the DEsire project, the aim of which is to develop a plan for the decarbonization of the national economy using the technology of generation III, III+ and IV nuclear reactors.
This paper discusses issues related to the selection of locations for nuclear investments, both for the green field option and for nuclear retrofit. For the latter case, a location selection methodology based on defined technical and safety criteria is presented. Issues related to environmental impact were also discussed, taking into account avoided emissions from conventional sources, but also the generation of radioactive waste.

Form of presentation
Poster presentation

Keywords
nuclear energy, energy mix, safety aspects, environmental aspects, technical aspects

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0493
Abstract number

PASSENGER – For Sustainable and efficient rare-earth-free magnets

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PASSENGER (Pilot Action for Securing a Sustainable European Next Generation of Efficient RE-free magnets) is a 4-year project funded by the European Union (ref. 101003914) that aims to resolve Europe's dependence on rare earth elements imports for permanent magnets fabrication.
The project targets the substitution of REE-permanent magnets in many technological applications with materials widely available in Europe: manganese-aluminium-carbon (Mn-Al-C) and improved strontium ferrite ($SrFe_{12}O_{19}$).

Within a consortium of 20 experts covering the whole value chain (from lab, to the fab, to the user), and 3 pilot actions within 8 pilot plants PASSENGER aims to:

- Diversify the permanent magnet sector by:
  - Testing new and improved materials
  - Transforming alloys in new ways to explore their properties
  - Exploring the sustainability and recycling potential of new technologies and magnets
- Produce functional REE-free permanent magnets for the e-mobility market and water pump solutions by:
  - Integrating the magnets into products
  - Standardising
  - Industrialising and commercialising the new magnets and technologies

The materials and technology developed by this project will offer extremely valuable options to support EU self-reliance in permanent magnets production for strategic e-mobility market and water pump solutions, thus actively contributing to the implementation of a sustainable circular economy and providing support to the EU green and digital transition.

Form of presentation
Poster presentation

Keywords
permanent magnets, rare earth elements, electric motors, e-mobility, critical raw materials, circular economy, green and digital transition

Bibliography
https://passenger-project.eu/

Additional information

Information about speakers
Number of speakers: 1 speaker

Digital Transformation

Lectures, Panels, and Short Presentations

0015
Abstract number

The role of machine learning and artificial intelligence in digital transition

Giannotti Fosca[1], Helbing Dirk[2], Croce Valeria[3], ter Hoeven Claartje[4], Ganna Andrea[5]

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[2] ETH Zurich , Switzerland
[3] European Research Council, Belgium
[4] Erasmus University Rotterdam, Netherlands
[5] Molecular Medicine Finland, Finland

Human-centric digital solutions are heralded to open up new opportunities, that is, as the backbone for sustainable development, adaptable job market, more efficient healthcare, accelerated scientific discovery, and increased business productivity. Among such solutions, artificial intelligence (AI) including recent advances in machine learning (ML), is set to unlock the value of big data and data-driven decision making. Developments in research and policy circles are now increasingly focused on how to design and use AI/ML as trustworthy technologies, that is, lawful, ethical and technically robust.
This session will explore the potential of AI/ML as human-centric technologies to address large societal challenges. It will bring together ERC-funded researchers who are pioneering new advancements in their fields and were identified by the ERC Executive Agency from a portfolio analysis of more than 1,000 ERC projects developing or using AI or studying its impact. This session will focus on:
- State of the art and future developments of black box systems for automated decision making (as scene setting): e.g. project XAI on how to construct meaningful explanations of opaque AI/ML systems;
- Smart cities and transport: e.g. project CoCi on digitally assisted self-organisation of cities and transport that is compatible with sustainability requirements and stronger democratic participation;
- Workplace and employment: e.g. project GHOSTWORK on ghost workers' working conditions (short-term tasks on demand, anonymously, through automated platforms) and how these impact their well-being;
- Health and disease prediction: e.g. project AI-PREVENT on AI and genetic-based risk assessment of cardiometabolic diseases before an individual even steps into the doctor's office.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Automated decision making; Explainable AI; Algorithmic fairness; Smart Cities; Digital labour; Disease prevention and diagnostics

Bibliography

Additional information

Information about speakers
Number of speakers: 5 speakers

0023
Abstract number

The future of healthcare is digital

Geris Liesbet[1], Huberts Wouter[2], Curreli Cristina[3], Van Horenbeeck Zita[4], Montesarchio Davide[5]

[1] Biomechanics Research Unit, University of Liège, Belgium
[2] Department of Biomedical Engineering, Eindhoven University of Technology (TU/e), Netherlands
[3] Medical Technology Laboratory, University of Bologna, Italy
[4] Centre for Sociological Research, KU Leuven, Belgium
[5] Communication, Virtual Physiological Human Institute, Belgium

Biomedical innovations and successes are intertwined with technological advancements that allowed previously impossible procedures. In silico medicine is the application of mathematical modelling and computer simulations to all areas of healthcare, and is such a step forward. The key potential is to provide personalised treatments, cost- and time-efficient healthcare, virtual clinical trials for drugs and devices, medical training, surgical intervention planning, and much more for the benefit of patients, healthcare providers and companies.

A key concept in in silico medicine is the Virtual Human Twin (VHT), an integrated digital representation of the human physiology. Together with stakeholders, academia and industry in the EU have already developed different virtual human twins, but the ecosystem still needs further alignment. To this end, in December 2023, the European Virtual Human Twins Initiative was officially launched. This is a flagship initiative of the European Commission facilitated by the EDITH Coordination and Support Action and the Virtual Physiological Human Institute(VPHi).

This proposal aims to present some of the most relevant topics in silico medicine on the ESOF stage. Prof. Liesbet Geris (ULiège, KU Leuven) will introduce in silico medicine and the VHT Initiative. Prof. Wouter Huberts (Eindhoven University of Technology) and Dr. Cristina Curreli (University of Bologna) will present two practical use cases on cardiovascular modelling and musculoskeletal applications, respectively. Ultimately, Zita Van Horenbeeck (VPHi) will discuss some of the key social implications and the importance of responsible research and innovation to ensure such technologies are in line with the needs and values of all stakeholders involved.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Innovation, Healthcare, Computer Modelling and Simulation, Clinical Trials, Artificial Intelligence, Data, Responsible research & innovation, Digital Twin, In silico medicine, Social acceptance

Bibliography
Viceconti Marco et al., Position paper From the digital twins in healthcare to the Virtual Human Twin: a moon-shot project for digital health research, IEEE JBHI, 2023, doi:10.1109/JBHI.2023.3323688
Geris L. on behalf of EDITH consortium., First Draft of the Virtual Human Twin Roadmap, Zenodo, 2023, doi:10.5281/zenodo.8200955
Huberts Wouter, et al., What is needed to make cardiovascular models suitable for clinical decision support? A viewpoint paper, Journal of computational science, 2018, doi:10.1016/j.jocs.2017.07.006
Viceconti Marco et al., Effect of suboptimal neuromuscular control on the risk of massive wear in total knee replacement, Annals of Biomedical Engineering, 2021, doi:10.1007/s10439-021-02795-y
Steerling, Emilie et al., Implementing AI in healthcare—the relevance of trust: a scoping review, Frontiers in health services, 2023, doi:10.3389/frhs.2023.1211150

Additional information
https://www.virtualhumantwins.eu/
https://www.virtualhumantwins.eu/manifesto
https://www.edithcsa.eu/
https://www.vphinstitute.org/

Information about speakers
Number of speakers: 5 speakers

0081
Abstract number

Do you know how your data was made? You should.

Huvila Isto[1]

[1] Department of ALM, Uppsala University, Sweden

The accelerating datafication of social life from everyday pursuits to societal and economic decision-making to scientific research means that we rely more and more on “data”. But do we know if, how and why we can and sometimes should not rely on it? In addition to knowing what the data is about, we should also know where the data comes from, who created it, how, why, and how it has been processed after its conception. Information on data creation, processing and use is “paradata” – and remarkably often there is far too little of paradata available.

This presentation shows where paradata can be found, how it works, and how appropriate paradata can make data more useful, usable, and trustworthy. The presentation is based on the results of five years of research in the ERC-funded research project CApturing Paradata for documenTing data creation and Use for the REsearch of the future (CAPTURE). Drawing on examples from a range of disciplinary contexts in scientific and scholarly research, professional and everyday life, the presentation shows the variety of ways how we can figure out how earlier data making has taken place on the basis on a great variety of information sources, how paradata works in practice i.e. how it tells us about data creation, processing, use and the interllectual work underpinning them. Finally, the presentation delves into the series of techniques how to collect, preserve and extract paradata useful for data creators and users across contexts.

Form of presentation
Lecture (1 speaker)

Keywords
paradata, data, data creation, documentation

Bibliography
• Huvila, Isto (ed.) Archaeology and archaeological information in the digital society. London: Routledge, 2018. ISBN 9780415788434.

• Huvila, Isto. Improving the usefulness of research data with better paradata. Open Information Science, 2022, Volume 6, Number 1, p. 28-48. ISSN: 2451-1781 DOI:10.1515/opis-2022-0129

• Huvila, Isto, Sköld, Olle and Börjesson, Lisa (2021): Documenting information making in archaeological field reports, Journal of Documentation, Volume 77, Issue 5, 2021, pp. 1107-1127. ISSN: 0022-0418. DOI:10.1108/JD-11-2020-0188

Additional information
This work is part of a project that has received funding from the European Research Council (ERC) under the European Union’s Horizon 2020 research and innovation programme (Grant agreement No. 818210)

Information about speakers
Number of speakers: 1 speaker

0099
Abstract number

The Evolution of Universities as catalysts for Innovation Ecosystems: towards the 4th Generation University?

Westenbrink Renee[1], Dumoulin Max[2], Pickard Simon [3], Poszytek Pawel [4], Put Paul [5], Rosetta Federica[6]

[1] Head Research Policy, Eindhoven University of Technology, Netherlands
[2] Vice President Portfolio Innovation, Elsevier, Netherlands
[3] Science Business, Belgium
[4] Foundation for the Development of the Education System, Poland
[5] Philips, Netherlands
[6] Elsevier, Netherlands

In the past 10-15 years, the role of universities in society has evolved. In tune with the Smart Specialisation Strategy (S3), the linchpin of the EU 2020 strategy and the advent of mission-driven R&D-funding programs, regional innovation ecosystems have emerged. Universities often act as drivers of such ecosystems, attracting international talent and serving as a gateway of global frontier knowledge in science & technology. They have been transforming from talent education and knowledge production houses - the so-called 3rd generation university - into 4th generation universities that are key innovation partners. This evolution is grounded in key considerations:

- Collaborative Knowledge Creation: Recognizing that impactful knowledge is best cultivated through active engagement with entities such as companies, governments, and society.
- Open Innovation: Realizing that innovation requires management of R&D across organizational boundaries, leading to interdependency of innovation actors.
- Competition for Resources: Acknowledging the positive impact of competition for talent and investments, fostering innovation and creativity.
- Local and National Investment: Understanding that knowledge is funded by local and national sponsors, underscoring the responsibility to showcase tangible returns on investment within the local context.

This panel discussion, featuring academic leaders, policymakers, and industry representatives, aims at exploring the emerging concept of the 4th generation University, its distinctive characteristics and contributions to the EU innovation ecosystems. It will also explore the prospect of establishing a meaningful benchmark for like-minded universities, as a mechanism to monitor key contributions of universities to local and EU innovation agendas.

Form of presentation
Debate (min. 3 speakers)

Keywords
Universities; 4th generation; Innovation ecosystems; Societal impact; Benchmarking; Collaboration.

Bibliography

Additional information
Prof. Tullio Tolio and Marianne Thellersen to be confirmed.

Information about speakers
Number of speakers: 5 speakers

0210
Abstract number

Is risk communication prepared for AI?

Sierra Leonor [1], Brown Tracey[2]

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[2] Sense about Science, United Kingdom

Artificial intelligence (AI) is playing an increasing role in our day-to-day lives . For such tools to be effective, an understanding of the risks associated with their use will be needed across society, meaning widespread risk communication will be necessary. This session discusses whether current risk communication is prepared for such a task, and whether those who need to make informed decisions when using AI tools have the risk know-how necessary to do so.

Policymakers are already trying to mitigate some of the risks through regulation, such as the EU's proposed Artificial Intelligence Act. However, regulation won't be enough. Many of the risks associated with AI cannot be avoided if we wish to get the full benefit of this technology, and so we must prepare to live with these risks. Right now, AI is being used to help doctors diagnose, determine people's parole decisions, and even approve marriage licenses. All these applications have their unique risk-benefit considerations, and people who are applying the AI and those whom the AI is being applied to must have the know-how to question the quality of the tool, understanding its strengths and limitations to ensure it's used as intended.

What questions do policymakers need to ask to hold decision-making by government on AI to account? How should journalists communicate the associated trade-offs of using AI to make decisions? What questions should a patient be able to ask when they receive a diagnosis involving an AI tool?

This session will make recommendations on how policymakers can prepare society for the widespread use of AI in public life so that people are empowered to understand the key impacts of AI in their lives.

Form of presentation
Debate (min. 3 speakers)

Keywords
Artificial intelligence; Risk communication; Risk analysis; Informed decision-making

Bibliography

Additional information

Information about speakers
Number of speakers: 5 speakers

0311
Abstract number

Shaping the Future of Teaching AI: Exploring Key Considerations for Discussion

Nowak-Brzezińska Agnieszka[1], Baczyński Michał[1], Kłosiński Michał[2], Krzykawski Michał[2], Szostek Dariusz[3]

[1] Faculty of Science and Technology, University of Silesia in Katowice, Poland
[2] Faculty of Humanities , University of Silesia in Katowice, Poland
[3] Faculty of Law and Administration, University of Silesia in Katowice, Poland

The evolution of Artificial Intelligence (AI) presents an unprecedented opportunity to redefine the landscape of educationAs we stand on the brink of a transformative era, it is crucial to engage in thoughtful discourse to ensure the responsible and effective integration of AI in teaching methodologies. This session aims to bring together educators, researchers, policymakers, and industry experts to explore these critical dimensions of the future of teaching AI. Through vibrant discussions and shared insights, we hope to chart a course that harnesses the full potential of AI while prioritizing ethical considerations, inclusivity, and the overall enhancement of the educational experience.

Key topics for discussion in this session include:

- Incorporating AI into education - tools and technologies that enhance teaching, learning, and administrative processes (Adaptive Learning Platforms, Automated Grading Systems, Virtual
- Learning Assistants, Learning Management Systems, AI-Powered Content Creation Tools)
- Ethical Frameworks for AI in Education (guidelines for responsible AI use to safeguard privacy, equity, and fairness, promoting a critical ethics approach to AI in education)
- Human-AI Collaboration in the Classroom (how AI can complement and devalue the role of educators, collaboration between teachers and AI systems for optimal learning outcomes)
- Personalized Learning and Adaptability (the role of AI in tailoring educational content to individual student needs)
- Data Privacy and Security in Educational AI (Addressing concerns related to data collection, storage, and utilization, Developing robust security measures to protect sensitive student information).

Form of presentation
Debate (min. 3 speakers)

Keywords
AI tools and technologies in education
Ethical Frameworks for AI in Education
Human-AI Collaboration in the Classroom
Personalized Learning and Adaptability
Data Privacy and Security in Educational AI

Bibliography

Additional information

Information about speakers
Number of speakers: 5 speakers

0366
Abstract number

GENAI, SCIENCE AND THE EUROPEAN DIGITAL AGENDA: HOW CAN WE LEAP AHEAD?

Pickard Simon[1], Rosetta Federica[2], Arranz David[3], Trzcinski Tomasz[4], Hasgall Alexander [5]

[1] Network Director, Science|Business, Belgium
[2] Vice President, Research Networks, Elsevier, Netherlands
[3] European Commission , Belgium
[4] Tooploox, Poland
[5] EUA Council for Doctoral Education, Switzerland

Generative artificial intelligence (GenAI) took the world by storm in 2023, and many believe that it can play a transformational role in scientific research. Despite current scrutiny of its reliability, limitations and use of intellectual property (IP), GenAI could revolutionise the information infrastructure that supports research, while accelerating scientific discovery and dissemination. Other benefits may include boosting researcher productivity, addressing inefficiencies in the system, and increasing the societal impact of research outputs. In this session, a panel of experts will address future scenarios for GenAI in research in the context of Europe's evolving digital agenda. It will build on the outcomes of a November 2023 high-level roundtable debate, organised by Science|Business and Elsevier, which convened European research, industry and policy leaders to explore what the future might hold. Among the topics to be explored: 1. How can GenAI help European research maintain its world-class status? 2. Could the development of highly specialised GenAI systems, tailored to particular scientific questions or domains, allow Europe to become a sector leader? 3. Could a global "CERN for AI" based in Europe be an important building block in the process? 4. Will the technology require research organisations to rethink IP management systems, also in line with the EU's AI and Data Acts? 5. How can Europe leverage GenAI to strengthen international research cooperation, especially with emerging and developing nations?

Form of presentation
Debate (min. 3 speakers)

Keywords
GenAI, European digital agenda, Scientific research, Transformational role, Intellectual property (IP), Research productivity, International research collaboration.

Bibliography

Additional information
Generative AI: How will it transform science and its impact on society? A Science|Business hybrid roundtable, organised in partnership with Elsevier - https://sciencebusiness.net/events/generative-ai-how-will-it-transform-science-and-its-impact-society

Information about speakers
Number of speakers: 5 speakers

0379
Abstract number

Is artificial intelligence a game-changer for research ethics?

Kritikos Mihalis[1]

[1] Ethics and Research Integrity Sector-DG RTD, European Commission , Belgium

The EU is leading the way in regulating AI. A The European Commission's draft Artificial Intelligence Act is the first comprehensive attempt at global level to regulate specific uses of AI systems that is based on a trustworthy to AI.
The session will focus on the gradual development of an EU ethical governance framework in the field and will discuss EU's Trustworthy approach to AI. It will also shed light on the need for a possible revamping of the traditional ethical structures and practices in the domain of AI research given the novelty of this set of technologies from a research ethics governance perspective. The session will also discuss the particular needs for guidance, education, training and oversight also at the EU level and the need for operationalising AI ethics principles. Within this frame, the ongoing work in this field in Europe will be presented with a particular focus on the need for concrete actions for the development of a trustworthy AI research framework. Special attention will be given to the ongoing international initiatives in the domain of AI ethics and their potential to offer human-centric and research-friendly guidance in this disruptive domain of research.

Form of presentation
Debate (min. 3 speakers)

Keywords
AI, Ethics, values, EU, ethics appraisal, research/technology ethics, Generative AI, operationalisation, digital technologies, bias, privacy, rights of children, algorithms, UNESCO, Council of Europe

Bibliography
V. Dignum. Responsible Artificial Intelligence. Springer International Publishing, 2019 in A. Jobin, M. Ienca, and E. Vayena. The global landscape of AI ethics guidelines. Nature Machine Intelligence, 1(9):389–399, 2019 B. Mittelstadt. Principles alone cannot guarantee ethical AI. Nature Machine Intelligence, 1(11):501–507, 2019Kuziemski, M., & Misuraca, G. (2020). AI governance in the public sector: Three tales from the frontiers of automated decision-making in democratic settings. Telecommunications Policy, 44(6). https://doi.org/10.1016/j.telpol.2020.101976Lane, M. (2014). When the experts are uncertain: Scientific knowledge and the ethics of democratic judgment. Episteme, 11(1), 97–118. https://doi.org/10.1017/epi.2013.48

Additional information

Information about speakers
Number of speakers: 5 speakers

0522
Abstract number

Digital transition as a stimulator of changes in the science system

Pascual Jara [1]

[1] CEO Collabwith , Netherlands

In this presentation you will discover that digital transitions open opportunities for new ways of knowledge transfer or technology transfer from science to industry and society. Those opportunities are coming when there is a synchronization between digital tools, new mindset for collaboration for science and industry and digitalization of knowledge and collab opportunities.

In this presentation, you will learn the critical role of partnership building in enabling organizations to adapt to the ever-evolving landscape of digitalization. ear insights on how this approach enhances agility, responsiveness, and overall competitiveness in a fast-paced and dynamic environment. Learn how it optimizes resource utilization, aligning organizations with partners possessing complementary skills, knowledge, and assets. This strategic approach not only accelerates innovation cycles but also ensures a more efficient and effective use of resources.

New changes and a new science system triggered by the digital transition are coming when working with the quadruple helix in a format of innovation ecosystem, when the hybrid (digital and local) governance and coordination supports those models and opportunities.

Form of presentation
Lecture (1 speaker)

Keywords
#keynote_speaker

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0541
Abstract number

LATEST DIGITAL SOLUTIONS FOR SUPPORTING SMES PROCESSES

Michałek Janusz[1]

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The panel "Latest Digital Solutions for Supporting SMEs Processes" aims to increase the competitive edge of small and medium-sized enterprises (SMEs) on the global stage through the adoption of cutting-edge digital solutions. This discussion will explore how digital technologies, in particular Artificial Intelligence, can transform business processes, increase efficiency and significantly reduce operational costs.Key topics will include

- Strategies for SMEs to use the latest digital technologies to improve market competitiveness.
- The role of artificial intelligence in streamlining business processes and decision-making.
- The impact of modern technologies on cost reduction, enabling SMEs to allocate resources more effectively and sustainably.
- Techniques for adapting quickly to changing customer expectations, ensuring SMEs stay ahead in a rapidly changing marketplace.
- The wide range of benefits that digital technologies bring to organisations, including improving efficiency, innovating processes and empowering people within the organisation.

This panel will provide valuable insights into how SMEs can navigate the digital landscape and make informed decisions that drive growth and innovation. It's an essential discussion for SME leaders looking to leverage digital solutions for operational excellence and improved customer satisfaction.

Form of presentation
Debate (min. 3 speakers)

Keywords
Digital Solutions, SME Competitiveness, Artificial Intelligence, Technology Implementation

Bibliography

Additional information

Information about speakers
Number of speakers: 5 speakers

Digital Transformation

Poster Sessions

0126
Abstract number

TechDiversity projects - overcoming participation barriers in the global digital transition by enhancing underrepresentation groups

Zielińska Agnieszka[1]

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The lack of varied representation in the technology and digital sector is emerging as a significant concern, even for smaller cities aspiring to build advanced knowledge-based digital and tech ecosystems. One viable strategy involves ensuring the inclusion of all community members in the digital ecosystem and linking underrepresented groups to opportunities in digital and tech employment and entrepreneurship.

Therefore the international project "TechDiversity" is realized to enhance underrepresented groups, support enriching knowledge, improve skills, and break obstacles to be actively present in the technology sector.

Especially women, refugees, or seniors are underrepresented groups in the technology sector. During the project, the integrated action plan will be established and pilot actions will be realized.They will be focused on the Tech Talent and Tech Entrepreneurship issues.

The project is conducted by the eight European cities: Amarante (Portugal), Arezzo (Italy), Bucharest District 6, (Romania), Idrija (Slovenia), Larnaka (Cyprus), Psahna (Greece) and Bielsko Biała (Poland). It was started in 2023 and it will be ended in December 2025.

During the presentation, it will be space to share realized actions based on the case studies from all participants. Moreover, it can be an excellent opportunity to arrange an active discussion on ideas that could be implemented during the project.

Form of presentation
Lecture (1 speaker)

Keywords
diversity, equity, technology, digital skills, international collaboration

Bibliography

Additional information
Project co-funded by European Union / UrbAct

Information about speakers
Number of speakers: 1 speaker

0129
Abstract number

Resilient societies in the wake of persistent crises. A case study of Ukrainian women refugees' digital work

Rosca Mariana[1]

[1] Transilvania University of Brasov, Romania

In recent years, the world has been confronted with many crises that have changed traditional approaches to life and work. The COVID-19 pandemic lockdowns, quarantines, and self-imposed isolation pushed millions around the world to study, work, and socialise via digital platforms. The war in Ukraine has forced many Ukrainian women to flee their homeland, making remote work their only means of accessing employment, whether with their previous employer or by finding new jobs online (hereinafter called digital work). These two crisis scenarios prove the urgent need for the EU to advance the process of labour market digitalization in order to build a more resilient society in the face of current and future crises, with new opportunities for growth, sustainability, and job creation and a better use of the available global talent pool (e.g., including refugees and immigrants).

However, making this change requires transformative and evidence-based policies that will help the EU embrace a more sustainable path and ensure an effective, comprehensive, and resilient digital work approach during and after a crisis. To address this gap, the research project @Work: Resilient Societies in the Wake of Persistent Crises. A case study of Ukrainian women refugees' digital work is proposed. The overall objective of the @Work project is to advance knowledge and evidence in the field of refugees´ digital work based on the case study of Ukrainian women refugees (UWRs), to contribute to the development of a more resilient society by addressing current and future crises (pandemics, war, climate, etc.).

Form of presentation
Poster presentation

Keywords
Digital work, the future of work, refugees, women

Bibliography

Additional information
Project „@Work: Resilient societies in the wake of persistent crises. A case study of Ukrainian women refugees` digital work", grant nr. 760132/18.09.2023",
PNRR. Finanțat de Uniunea Europeană – UrmătoareaGenerațieUE, https://mfe.gov.ro/pnrr/, https://www.facebook.com/PNRROficial/

Information about speakers
Number of speakers: 1 speaker

0169
Abstract number

Media Literacy: Navigating the Depths of the Media Ocean

Frania Monika[1]

[1] Faculty of Social Sciences, Institute of Pedagogy, University of Silesia in Katowice, Poland

Embark on a journey into the heart of the ever-evolving media landscape with "Media Literacy: Navigating the Depths of the Media Ocean" speech. In an era where media and technology are in constant flux, the importance of media education becomes more evident than ever. This talk underscores the enduring relevance of media literacy, emphasizing its crucial role in empowering individuals to navigate the dynamic and ever-changing currents of information. By appreciating the significance of media education, we gain a compass that not only guides us through today's digital sea but equips us to face the challenges of tomorrow's media horizons. Join us in recognizing the enduring importance of media literacy and the perpetual need for understanding in an era of rapid technological transformation.

Form of presentation
TED Speech (max 2 speakers)

Keywords
AI, critical thinking, digital literacy, media education, technology

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0241
Abstract number

SME 5.0 - Why Digital Transformation is an Enabler for Sustainable Development within Industry 5.0

Rauch Erwin[1]

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In the era of Industry 5.0 the role of digital transformation becomes paramount in fostering sustainable development. In this poster we explore, based on the outcomes of a European project, the relation between digital transformation and its potential to drive sustainable practices within the context of Industry 5.0. The poster aims to provide new insights to scientists, industry and policy makers into how digitalisation is an enabler for making European enterprises more resilient, sustainable and human-centred.
The Marie Skłodowska-Curie Actions project SME 5.0 reports about needs and barriers of SMEs to introduce Industry 5.0. The project provides a strategic roadmap towards the next level of intelligent, sustainable and human-centred SMEs. The project conducted empirical research with more than 250 SMEs followed by 10 focus group workshops with more than 100 SME companies. The outcomes of the empirical research are summarized in a White Paper as recommendation for the EC and for policy maker.
In the second phase of the project guidelines for intelligent, sustainable, resilient and human-centred manufacturing will be developed and implemented as pilots in form of lab demonstrators as well as real case studies in SMEs worldwide.

In this project 16 international partners from 10 countries in Europe, North America, South America, Africa, Asia and Australia collaborate to bring SMEs to a new level of smart and sustainable innovation.
The poster will provide an overview of the project as well as recommendations for scientists, business as well as policy-makers.

Form of presentation
Poster presentation

Keywords
Industry 5.0, Sustainability, Smart, Resilience, Human-Centred, Engineering Education, Digital Transformation

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0328
Abstract number

Evolution of Vocational Education: Reclaiming skills and competences together with GETES Foundation

Jędrasiak Karol[1]

[1] WSB University, Poland

In the rapidly evolving landscape of vocational education, the incorporation of virtual reality (VR), augmented reality (AR), and extended reality (XR) technologies represents a transformative approach to skill acquisition and training. The Global Education, Training and Education Gaming Standards Foundation (GETES) is at the forefront of integrating these immersive technologies into global vocational training programs. This initiative aims to improve the effectiveness and accessibility of vocational training to meet the diverse needs of learners in various sectors, including industry, manufacturing, and the military. Through the use of VR/AR/XR, GETES aims to create a highly interactive and engaging learning environment that transcends traditional educational boundaries and provides learners with a more practical and hands-on experience.

This presentation discusses the theoretical framework, implementation strategies, and initial results of this innovative educational model. It also explores the potential socio-cultural and economic implications that align with the United Nations and NATO DEEP eAcademy Sustainable Development Goals, particularly in promoting quality education, decent work, and economic growth. The international collaboration facilitated by GETES highlights the importance of global partnerships in addressing educational challenges and preparing a skilled workforce for the future. Any participant with an interest in the development of vocational education and training can get involved. You are cordially invited.

Form of presentation
Lecture (1 speaker)

Keywords
Vocational Education, VR/AR/XR Technologies, GETES Foundation, Immersive Learning, Skill Acquisition, Sustainable Development, Global Partnerships, Interactive Training, Workforce Development, Educational Innovation

Bibliography
Carreon, A., Smith, S. J., Frey, B., Rowland, A., & Mosher, M. (2023). Comparing immersive VR and non-immersive VR on social skill acquisition for students in middle school with ASD. Journal of Research on Technology in Education, 1–14. https://doi.org/10.1080/15391523.2023.2182851
Mulders, M., Buchner, J., & Kerres, M. (2022). Virtual Reality in Vocational Training: A Study Demonstrating the Potential of a VR-based Vehicle Painting Simulator for Skills Acquisition in Apprenticeship Training. Technology, Knowledge and Learning, 1–16. https://doi.org/10.1007/s10758-022-09630-w
Yu, Z. (2023). A meta-analysis of the effect of virtual reality technology use in education. Interactive Learning Environments, 31(8), 4956–4976. https://doi.org/10.1080/10494820.2021.1989466

Additional information
This presentation is supported by the GETES Foundation through its initiative to promote innovative educational technologies in vocational training. The project aligns with the United Nations Sustainable Development Goals 4 (Quality Education) and 8 (Decent Work and Economic Growth

Information about speakers
Number of speakers: 1 speaker

0392
Abstract number

From Digital Screens to Virtual Spaces: Reimagining Academic Conferences in the Age of Social VR

Waligórski Jan[1]

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In recent years, academic conferences organized via video-conferencing systems (VCS), such as MS Teams and Zoom, have seen a notable surge in popularity. The online format of such events may reduce the costs associated with organizing and attending these events, enhance their accessibility, and have a positive impact on the environment. However, it may diminish the sense of co-presence and have a negative impact on the opportunities for networking, which are foundational to conferences. We aimed to explore the potential of social virtual reality (VR) platforms as alternative tools for organizing academic conferences, assessing their ability to reduce VCS limitations while retaining remote event benefits. We present the case study of one of the first conferences organized entirely on a social VR platform (Wirtualium 2.0) and the outcomes of a survey conducted among its participants (n=43). The results suggest that social VR platforms may enhance the sense of co-presence among attendees, foster networking opportunities, and facilitate more natural conversations, as compared to VCS, and thus make a contribution to enhancing quality of education in the era of digital transformation. We identified several constraints associated with organizing academic conferences in social VR, such as limited access to head-mounted displays, the requirement for acquiring new technical competencies, and constrained note-taking capabilities. Despite these obstacles, the majority of respondents view social VR as a promising venue for such type of events. While acknowledging technical and practical limitations, our study suggests that leveraging social VR's unique capabilities can offer experiences unattainable in physical settings, potentially transforming the future landscape of academia.

Form of presentation
Poster presentation

Keywords
academic conference, virtual reality, online, networking, e-learning, digital education

Bibliography
J., Waligórski, Z., Samsel, A., Cząstkiewicz, N., Frys, Reimagining Online Academic Conferences: The Promise of Social Virtual Reality for the Return of Co-Presence, International Journal of Research in E-learning, 2023, https://doi.org/10.31261/IJREL.2023.9.2.05

G., Roos, J., Oláh, R., Ingle, R., Kobayashi, M. Feldt, Online conferences–Towards a new (virtual) reality, Computational and Theoretical Chemistry, 2020, https://doi.org/10.1016/j.comptc.2020.112975

H. J., Bray, J., Stone, L., Litchfield, K. L., Britt, J. L., Hopper, W. V., Ingman, Together alone: Going online during covid-19 is changing scientific conferences. Challenges, 2022, https://doi.org/10.3390/challe13010007

Additional information
We warmly invite participants to experience virtual auditoriums by using the VR headsets that we will supply alongside our poster presentation.

Information about speakers
Number of speakers: 2 speakers

0454
Abstract number

Application of artificial intelligence models to the task of real text detection.

Kalisz Seweryn[1], Marczyk Michał[1], Fagas Rafał[2], Polańska Joanna[1]

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[2] media-press.tv S.A., media-press group, Poland

Scene text detection in natural images is a rapidly developing area where artificial intelligence-based techniques are widely used. The complexity of the issue has attracted the interest of machine learning researchers, particularly deep neural networks, which allow high performance in the problem of character detection and recognition. With the development of algorithms, two main methodologies can be distinguished: (i) methods based on multi-step pipelines, which are often characterized by high complexity and long execution time, and (ii) methods based on the idea of general object detection. During the task of text detection, it is necessary to consider its characteristics: size, style, color, position, irregular shape, and image-related features such as brightness, resolution, and complexity of the background on which the text appears, often in the vicinity of other objects.

In this work, we present a quantitative analysis of the most popular publicly available databases used for scene text detection, such as ICDAR, COCOText, Total-text, TextOCR, and a comparative analysis of state-of-the-art deep learning models based on the ResNet architecture such as TextPMS and PAN++. We trained and validated models using images from different datasets, which were normalized and selected based on analysis of their similarity. Finally, we focused on applications of the discussed solutions in the daily work on image processing.

Form of presentation
Poster presentation

Keywords
artificial intelligence, deep learning, convolutional neural networks, text detection

Bibliography

Additional information
This work was partially financed by the Silesian University of Technology grant for maintaining and developing research potential (MM, JP, SK) and by the Ministry of Science and Higher Education.

Information about speakers
Number of speakers: 1 speaker

0495
Abstract number

Adapting Education to the Digital Revolution: Meeting the Demands of the IT Sector in Poland

Kansy Dominika[1]

[1] Department of Business Informatics, University of Economics in Katowice, Poland

Nowadays the digital revolution is reshaping the economy and transforming our interpersonal relationships. Modern technologies and solutions based on the Fourth Industrial Revolution necessitate the development of more advanced digital skills.

The technology sector serves as the primary driver of this revolution. Innovative technological solutions are not only altering methods of production and distribution but also fundamentally transforming our approach to work, entertainment, personal development, research, learning, and knowledge.

In the digital activities, the preparation of skilled workers with IT knowledge should be integrated into a comprehensive system. It is essential to align educational programs with the dynamically changing job market needs. Collaboration with employers and access to an increasing amount of digital data allows for monitoring the demand for technical skills and digital competencies in the job market, as well as observing trends in the IT sector. The model of competence based on digital skill is promoting strongly in European policy.

According to data from 2020 to 2023, the demand for IT specialists in Poland is presented, considering various specializations and market trends. This analysis enables a better understanding of how the education system can address the needs of the IT industry and provide adequate training for future specialists. The education system should flexibly respond to the challenges it faces. This requires not only occasional shifts in teachers' approaches but also the involvement of political decision-makers who influence the rigid frameworks and procedures related to the development and implementation of educational programs.

Form of presentation
Poster presentation

Keywords
digital transformation, labour market, education, digital skills, data analysis

Bibliography
A. Alibasic, H. Upadhyay, M.C.E. Simsekler, et al. Evaluation of the trends in jobs and skill-sets using data analytics: a case study, Journal of Big Data 9, 2022, 10.1186/s40537-022-00576-5.\\\\\\\\nH. Chang, C.Wang, S. Hawamdeh, Emerging trends in data analytics and knowledge management job market: extending KSA framework, Journal of Knowledge Management, 2018, 10.1108/JKM-02-2018-0088.\\\\\\\\nB.Gajdzik, H. Štverková, Industry 4.0 workforce: Encyclopedia of the digital professions by groups of technological innovation, Scientific Papers of Silesian University of Technology. Organization & Management 170, 2023, 10.29119/1641-3466.2023.170.5.\\\\\\\\nB. Gajdzik, R.Wolniak, Smart Production Workers in Terms of Creativity and Innovation: The Implication for Open Innovation, Journal of Open Innovation: Technology, Market, and Complexity 8 (2), 2022, https://doi.org/10.3390/joitmc8020068.

Additional information

Information about speakers
Number of speakers: 1 speaker

Healthy Society

Lectures, Panels, and Short Presentations

0008
Abstract number

Innovative strategies for prevention and treatment of severe human diseases

Silvestre-Albero Joaquin[1], Komarov Igor[2], Kiokias Sotirios[3]

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[2] EMANIME, Ukraine
[3] European Commission , Belgium

Prevention and treatment of diseases require the design of innovative therapies with high efficiency and limited adverse effects. Nanomaterials with tunable properties and light-controllable biologically active compounds are promising in i) mitigating adverse side effects such as acute radiation symptoms and undesired biodistribution of drugs in human body ii) improving the safety of therapies by light-induced processes.
In this TED session, the leaders of two EU funded projects under the MSCA-RISE Action (NANOMED and PELICO) will talk about the potential of nanotechnology and photo-controllable peptides in the design of biocompatible materials against certain diseases. Both projects were completed and selected by the EU directorate as success stories.

The speakers will demonstrate how therapies based on non-traditional ideas could be successfully applied in humans to prevent or treat specific severe diseases (e.g. cancer, infectious diseases).
The NANOMED project was devoted to the design of inorganic nano-porous enterosorbents (made of activated carbon and pectin) able to mitigate adverse effects in the human body after exposure to acute radiation (for instance, after a nuclear disaster).

The PELICO project addressed one of the main problems which medicinal chemists face when developing new drugs – excessive drug toxicity and low safety. With this aim, the PELICO consortium developed light-controllable cytotoxic peptides which can be administered in the inactive, non-toxic form, and then activated by light only when and where required (e.g. only in tumors) that sharply increases their safety.
The research consortia of the projects, involving highly engaged industry partners, enhanced the prospects for innovation and forthcoming clinical advancements.

Form of presentation
TED Speech (max 2 speakers)

Keywords
severe diseases; nanomaterials; drug-delivery; nuclear disaster; photopharmacology, therapeutic peptides

Bibliography

Additional information

Information about speakers
Number of speakers: 2 speakers

0092
Abstract number

Tissue regeneration: from skin tissue models to curing fatal skin diseases

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[2] University of Trento, Italy
[3] European Research Council Executive Agency, Belgium

Over the past decade, various cell and gene therapy approaches have led to advanced medicinal products that offer effective treatment for patients suffering from rare genetic diseases. This also applies to conditions affecting the musculoskeletal system or the skin, which represent the largest organs in the human body. The impairment of skin due to a genetic abnormality is usually detrimental to the whole organism. Junctional Epidermolysis Bullosa (JEB) is a severe, often lethal genetic disease characterized by structural and mechanical fragility of the integuments. Massive chronic skin wounds greatly impair the patients' quality of life, leading to recurrent infections, severe inflammation and scars, and predisposition to skin cancer. In 2017, for the first time, the entire, fully functional epidermis of a seven-year-old child suffering from JEB was regenerated by applying skin grafts developed from autologous transgenic keratinocyte.

The above stunning achievement underlines the importance of the continued development of skin tissue engineering approaches. In this process, organotypic tissue models and bioscaffolds play an important role and represent major research directions. Organotypic tissue models allow systematic investigation of tumour signalling pathways, of the function of glycans in human tissue formation and homeostasis, and of their role in epithelial interaction with viruses and the microbiome. Novel multifunctional bioscaffolds, produced by advanced manufacturing technologies, e.g., 3D-bioprinting, are essential in expediting complex skin tissue regeneration.
In this session, our distinguished invited speakers discuss the challenges, but also promising recent developments in the context of skin tissue regeneration and treatment for severe skin diseases.

Form of presentation
Debate (min. 3 speakers)

Keywords
Tissue regeneration, skin diseases, biomaterials, organotypic models

Bibliography
Gallagher, J. https://www.bbc.com/news/health-41914101

Kueckelhaus, M. et al. https://www.nejm.org/doi/full/10.1056/NEJMoa2108544

De Rosa, L. et al. https://cshperspectives.cshlp.org/content/15/4/a041229.long

Schneider, H., De Luca, M. https://www.frontiersin.org/articles/10.3389/fgene.2021.771611/full

Hirsch, T. et al. https://www.nature.com/articles/nature24487

Dabelsteen, S. et al. https://www.sciencedirect.com/science/article/pii/S1534580720305475?via%3Dihub

Ye, Z. et al. https://www.science.org/doi/10.1126/scisignal.abo2206

Bagdonaite, I. et al. https://www.nature.com/articles/s41467-023-42669-6

Fadilah, NIM. et al. https://www.frontiersin.org/articles/10.3389/fbioe.2023.1160577/full

Maestri, CA. et al. https://onlinelibrary.wiley.com/doi/10.1002/jbm.a.36922

Masri, S. et al. https://www.mdpi.com/1424-8247/15/11/1328

Additional information

Information about speakers
Number of speakers: 4 speakers

0177
Abstract number

Air quality – current challenges

Mainka Anna[1], Przystaś Wioletta[1], Sajdak Marcin[1], Kozielska Barbara[1], Widziewicz Kamila[2], Zabłocka-Godlewska Ewa[1], Kaleta Dorota[1], Mucha Walter[1], Muzyka Roksana[1], Puszczało Ewa[1], Żak Magdalena[1], Chyzhykov Dmytro[2], Melaniuk-Wolny Edyta[1]

[1] Department of Air Protection, Silesian University of Technology, Poland

[2] Department of Air Pollution, Institute of Environmental Engineering Polish Academy of Sciences, Poland

The authors tackle complex environmental and public health issues by examining the interaction between air quality and emission sources. Addressing recognized sources like transport and fossil fuel combustion, they delve into emerging challenges, such as waste-contaminated biofuels, airborne microbial migration impacting infectious disease transmission, and indoor air quality (IAQ). The panel commences with an evaluation of biomass quality in the Polish market. Pellets, pivotal in EU households and district heating, face contamination due to increasing plastic waste. The authors present a method for detecting polymer contamination in solid biofuels. They then explore bioaerosol occurrences in ambient air, considering the local and global impacts of microclimatic conditions on microbial migration. The connection between human mobility, tourism, and infectious disease transmission is emphasized. The discussion shifts to the issue of high particulate matter (PM) concentration, focusing on PM10-bound polycyclic aromatic hydrocarbons (PAHs), especially benzo(a)pyrene. The authors analyze National Environmental Monitoring System data (2018-2022) to assess cancer risks from particle-bound PAH exposure. A panel on air quality would not be complete without low-cost sensors. Portable and low-cost sensors cannot substitute professional air monitoring systems; however, they contribute to public awareness, particularly in specific locations like bedrooms or sports halls. Biological contaminants pose health challenges, addressed through regular disinfection in facilities, for example, by ozonation. These comprehensive explorations underscore the multidimensional aspects of air quality, covering detection methods, microbial dynamics, health risks, and practical solutions.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Ambient air quality; Bioaerosols; Biofuels; Indoor air quality; Particulate matter

Bibliography
1. Muzyka R. et al., Py–GC–MS and PCA analysis approach for the detection of illegal waste combustion processes in central heating furnaces, Chromatographia 2019, 82, 1101–1109, DOI: 10.1007/s10337-019-03747-4
2. Kaleta D.; Kozielska B., Spatial and temporal volatility of PM2.5, PM10 and PM10-bound B[a]P concentrations and assessment of the exposure of the population of Silesia in 2018-2021. Int. J. Environ. Res. Public Health 2023, 20, 138, DOI: 10.3390/ijerph20010138
3. Werle S., Ferdyn-Grygierek J. (eds), Monografia Ochrona Klimatu i Środowiska, Nowoczesna Energetyka Wybrane zagadnienia, Gliwice 2023, 58–69, DOI: 10.34918/86732
4. Zabłocka-Godlewska E. et al., Assessment of possibilities of spreading of bioaerosol from different technological objects in small sewage treatment plants. Architecture Civil Engineering Environment, 2022, 15, 2, 177-186; DOI: 10.2478/ACEE-2022-0025

Additional information

Information about speakers
Number of speakers: 6 speakers

0207
Abstract number

Lifestyle medicine in academia

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In the fast-paced and demanding world of academia, where intellectual pursuits and scholarly achievements take center stage, the importance of self-care often becomes overlooked. This session delves into the critical role that self-care plays in the academic sphere, emphasizing its multifaceted impact on the well-being and productivity of scholars.

Academia is notorious for its high levels of stress, burnout, and mental health challenges. The pressure to publish, secure funding, and excel in teaching can result in neglecting one's physical and mental health. Prioritizing self-care is not merely an indulgence but a necessity for sustained academic success.

Effective self-care in academia involves cultivating a balance between professional and personal life. Engaging in regular physical exercise, maintaining a nutritious diet, and ensuring adequate sleep are foundational elements. Mental well-being is equally paramount, requiring academics to foster mindfulness, resilience, and seek professional support when needed.

Furthermore, self-care contributes to heightened cognitive function and creativity. Breaks and leisure activities have been linked to improved problem-solving skills and enhanced focus, ultimately benefiting research and teaching endeavors. This session explores the symbiotic relationship between self-care and academic performance, underscoring how a healthy mind and body foster a conducive environment for intellectual pursuits.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
lifestyle medicine, academia, research, researchers, well-being, mental health, work-life balance

Bibliography

Additional information

Information about speakers
Number of speakers: 3 speakers

0212
Abstract number

From pandemics to antibiotic resistance: can science communication really save the day in the face of existential threats?

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[3] Erasmus University Rotterdam, Netherlands
[4] Formicablu, Italy

The COVID-19 pandemic exposed the challenges to effective communication of science at times of health crises. Antibiotic resistance is another case in point, with inappropriate antibiotic use by patients being a continuing exacerbating factor despite scientific evidence of the growing risk of resistance and how to address it.

In today's complex communication ecosystem, with a cacophony of actors, messages and misinformation, can science communication ever hope to mobilise society to change for the benefit of our collective health when it is really needed?

This session will use insights from European Commission-funded Science With and For Society (SwafS-19) projects to highlight the challenges to effective science communication at times of crisis. It will encourage debate about what the most pressing challenges to effective communication are and how best to overcome them. Insights from this discussion will inform the guidance and policy insights in development by a new European Competence Centre for Science Communication being formed within the EC-funded COALESCE project.

Four speakers representing three SWAFS-19 projects (RETHINK, TRESCA and ENJOI) and COALESCE will address four themes:

- Insights from the COVID-19 pandemic into ways citizen make sense of science
- Characteristics of the complex communication ecosystem online
- Engaging with science through popular media in times of crisis
- Challenges to science journalism in crisis communication

Participants will be invited to prioritise the biggest challenges to effective science communication at times of crisis, discuss how policy should adapt and how science communication should be transformed to enable health crises to be addressed more effectively.

Form of presentation
Debate (min. 3 speakers)

Keywords
Health crisis, science communication, misinformation, pandemic, antibiotic resistance, policy, behaviour change

Bibliography
Weitkamp, E., Milani, E., Ridgway, A., Wilkinson, C. Exploring the Digital Media Ecology: Insights from A Study of Healthy Diets and Climate Change Communication on Digital and Social Media. JCOM. 2021. DOI: https://doi.org/10.22323/2.21040204
Roedema, T.F.L., Rerimassie, V.G, Broerse, J.E.W. and Kupper, J.F.H. (2022). Towards the reflective science communication practitioner JCOM 21(04), A02. https://doi.org/10.22323/2.21040202

Additional information

Information about speakers
Number of speakers: 4 speakers

0326
Abstract number

Navigating the Surge: Regional Disparities, Environmental Influences, Healthcare Accessibility, and the Obesity Epidemic in the Rising Incidence of Gynecological Cancers

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[2] Department of Gynecological Oncology, National Institute of Oncology, Poland

This lecture is divided between to gynecologist oncologist - one working in Silesia at the academic institution, the other working at the National Institute of Oncology.
It delves into the complex landscape surrounding the escalating incidence of gynecological cancers, offering a comprehensive exploration of the varying trends across different regions in Poland, with European perspective. Drawing on the latest research and epidemiological data, the discussion aims to elucidate the multifactorial nature of this surge, examining the interplay between regional disparities, environmental factors, healthcare accessibility, and the pervasive impact of obesity.

The lecture begins by dissecting the regional nuances in gynecological cancer rates, shedding light on disparities that go beyond geographical boundaries. Emphasis is placed on the intricate interplay of cultural, socioeconomic, and demographic factors that contribute to the observed differences, prompting a nuanced understanding of the diverse challenges faced by women in distinct locales. The impact of healthcare accessibility in Poland on gynecological cancer outcomes is explored, emphasizing disparities in screening, early detection, and treatment options. We will seek together the solutions to improve the overall mortality of gynaecological cancers. Participants of the lecture will be employed to share their opinion and brainstorm together.

Form of presentation
TED Speech (max 2 speakers)

Keywords
cancer, epidemiology, solutions to rising incidence

Bibliography

Additional information

Information about speakers
Number of speakers: 2 speakers

0329
Abstract number

Lymphedema as a Neglected Public Health Concern - Advocating for Government and Societal Recognition

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[2] University of Jan Dlugosz in Czestochowa , Poland
[3] Department of Angiology and Internal Medicine, Wrocław University of Medicine, Poland

The debate underscores the prevailing lack of attention and resources devoted to lymphedema within public healthcare systems, placing a spotlight on the glaring gaps in patient support structures. Advocates argue that a collective effort is required to dismantle the existing barriers to awareness, early diagnosis, and comprehensive care, urging the government to prioritize lymphedema on the public health agenda. Lymphedema is a common condition ranging from 25-50% after cancer surgery. Attendees will gain a comprehensive understanding of the physical, psychological, and socio-economic challenges faced by individuals contending with lymphedema, emphasizing the pervasive impact on their quality of life.

We will explore the societal ramifications of neglecting lymphedema, emphasizing the role of education and community engagement in dispelling myths and reducing stigma associated with this condition.

Form of presentation
Debate (min. 3 speakers)

Keywords
lymphedema, reducing stigma, providing structural help, diminishing societal effect

Bibliography

Additional information

Information about speakers
Number of speakers: 3 speakers

0482
Abstract number

Mathematics and Medicine: Bridging Disciplines for Inclusive and Sustainable Healthcare Solutions

Kaouri Katerina[1], Micheletti Alessandra[2], Rottschäfer Vivi[3], Talarico Carmine[4]

[1] School of Mathematics, Cardiff University, United Kingdom
[2] Department of Environmental Science and Policy, Università degli Studi di Milano, Italy
[3] Mathematical Institute , Leiden University, Netherlands
[4] Early Discovery, Dompé, Italy

Four speakers from academia, industry, different countries and genders explore the large impact of Mathematics in Medicine. This interactive debate stems from the collaboration between the European Mathematical Society (Topical Activity Group "Mathematical Modelling for the Life Sciences") and the European Consortium of Mathematics in Industry (ECMI) and aligns with UN SDGs.

Prof. Katerina Kaouri (UK) will outline key open challenges in Mathematical Biology and Medicine. She will also give an example from her research on optimizing In Vitro Fertilization treatments and breaking barriers to reproductive choices (SDG 5 - Gender Equality).

Prof. Alessandra Micheletti (IT), ECMI President, will show how she uses her in-depth statistics expertise to identify good quality data and prevent epidemics. She will also relay her research in drug discovery, in collaboration with pharmaceutical companies (SDG 3 - Good Health and Well-being).

Prof. Vivi Rottschafer (NL) will use her novel models to show how drugs spread in the brain. Also, she will explain how we can model the toxicity of nanoparticle dissolution in nature.

Dr Carmine Talarico (IT, Dompé pharmaceuticals) will relay the fascinating quest for new drugs and how data-driven and AI approaches lead to faster development cycles, reduced costs and more personalised treatments.

The speakers will emphasize the role of Maths and AI in research and innovation and engage in a panel discussion. Then, in a co-creation workshop the participants will explore ethical considerations, societal impact, interdisciplinary collaboration and personalized medicine, fostering inclusivity and sustainability in healthcare solutions (SDG 10 - Reduced Inequalities, SDG 17 - Partnerships for the Goals, SDG 9 -Industry, Innovation, and Infrastructure).

Form of presentation
Debate (min. 3 speakers)

Keywords
Mathematics; Medicine; Academia-industry collaboration; Drug discovery; Healthcare solutions; AI; Innovation

Bibliography

Additional information

Information about speakers
Number of speakers: 4 speakers

0528
Abstract number

Climate change and health - the evidence for action

Haines Andrew[1]

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Climate change is projected to have far-reaching and potentially catastrophic effects on health, with the poor, who have contributed least to emissions, likely to experience the largest impacts. The effects of climate change on health may be direct (e.g. from extreme heat); mediated through ecosystems, such as changes in the incidence of vector –borne diseases, including dengue and malaria, or increased risks of undernutrition; or mediated through complex socioeconomic pathways, such as impoverishment and population displacement. Climate change is already having effects on health, for example a multi-country study, suggested that over 30% of heat -related deaths over recent decades can be attributed to climate change.

While human societies can adapt to climate change, there will be limits to adaptation. Cutting emissions rapidly to achieve the target of the Paris Agreement, to limit global average temperature increase to well under 2°C, is essential to reduce the risks to health. Many policies to cut greenhouse gas emissions can yield near-term health co-benefits, e.g. cutting fossil fuel combustion can reduce ambient air pollution deaths, and walking and cycling can reduce the incidence of diseases related to physical inactivity. Reduced animal product consumption (particularly from ruminants) in high consuming populations, and increased consumption of fruits, vegetables and seeds, can reduce GHG emissions and improve health. Valuing these co-benefits can make such policies more attractive to decision makers and incentivise climate action.

Form of presentation
Lecture (1 speaker)

Keywords
#keynote_speaker

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0535
Abstract number

Either healthy or not at all

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Lifestyle and Heart Diseases

Cardiovascular diseases, primarily ischemic heart disease, are leading global causes of death. Lifestyle factors such as smoking, physical inactivity, and alcohol abuse significantly contribute to cardiovascular morbidity and mortality. Health behavior modification, including major lifestyle changes like diet and exercise, can slow down disease progression and even regress atherosclerotic lesions. Prevention strategies emphasize proper diet, regular exercise, and avoiding stimulants. Our debate will analyze risk factors for heart disease and the impact of health-promoting behaviors on disease progression, supported by statistical data. We'll also discuss the accessibility of solutions promoting a healthy lifestyle.

Stress and Health

Stress is the body's response to challenges or threats, releasing hormones like cortisol. Chronic stress leads to various health issues, including digestive problems, heart disorders, and mental health issues. We'll discuss stress's impact on physical and mental health, lifestyle factors affecting stress levels, and stress management techniques like relaxation, exercise, and therapy. Education about stress and access to support services will be emphasized for better stress management and overall well-being.

Lifestyle and Health

Unhealthy lifestyles contribute to non-communicable diseases, including cardiovascular disease, cancer, and diabetes, leading causes of death worldwide. Adopting a healthy lifestyle, including diet, exercise, and avoiding harmful substances, significantly reduces disease risk and improves quality of life. Lifestyle Medicine focuses on behavior change to improve various aspects of health, offering therapeutic options alongside conventional treatments. We'll explore the importance of Lifestyle Medicine, its Six Pillars, and examples of its application in treating diseases.

Influence of Physical Activity on Health

Physical activity is crucial for health and well-being, reducing the risk of cardiovascular diseases, depression, and anxiety disorders, while enhancing cognitive functioning. It improves various bodily systems, including the circulatory, respiratory, and nervous systems. Physical activity also benefits mental health by increasing serotonin levels and reducing stress. We'll discuss Albert Bandura's theory of social learning in relation to physical activity, the role of education, and the components of determination in shaping and maintaining physical and mental health.

Form of presentation
Debate (min. 3 speakers)

Keywords
lifestyle, health, cardiovascular disease, risk factors, sports

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

Healthy Society

Poster Sessions

0062
Abstract number

How are Polish Universities Supporting Student Psychological Needs? The Role of Staff and Institutional Practices Outside the Classroom.

Henry Rene[1]

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While educational institutions are often focused on achievement, they are, more importantly, contexts for personal development; places where students acquire a sense of competence and a set of identities (Ryan & Deci, 2017). Confidence, self-esteem, and mental health are all affected by whether what happens supports or thwarts student needs in these contexts. Self-Determination Theory (SDT), a theory of human motivation, provides a framework for conceptualizing student needs, noting that one's innate tendencies toward growing, mastering challenges, and integrating new experiences into their self-identity requires ongoing support of the basic psychological needs of autonomy, competence, and relatedness (Ryan & Deci, 2017).

A number of studies have examined how need satisfaction and frustration relates to motivation, well-being, and achievement, but less so on how perceptions of supportive or thwarting practices relate to these (Vansteenkiste et al., 2020). And while many researchers acknowledge that teachers and peers are important sources of support (Gilbert et al., 2021; Leenknecht et al., 2017), expanding this list to other sources outside the classroom will help provide a more comprehensive view of how students experience the higher education climate.

This study takes an in-depth look at the role of staff and institutional practices outside the classroom in supporting the basic psychological needs of university students. Poster will highlight important aspects of SDT for framing student support and feature results of a preliminary study that examined student interactions with their institutions and non-teaching staff, their perspectives on the importance of support from these sources, and interpersonal behaviors that they believe support or thwart their basic needs.

Form of presentation
Poster presentation

Keywords
university students, basic psychological needs, student well-being, academic motivation

Bibliography
Gilbert, W., Bureau, J. S., Poellhuber, B., & Guay, F. Predicting college students' psychological distress through basic psychological need-relevant practices by teachers, peers, and the academic program. Motivation and Emotion, 2021. https://doi.org/10.1007/s11031-021-09892-4

Leenknecht, M. J. M., Wijnia, L., Loyens, S. M. M., & Rikers, R. M. J. P. Need-supportive teaching in higher education: Configurations of autonomy support, structure, and involvement. Teaching and Teacher Education, 2017. https://doi.org/10.1016/j.tate.2017.08.020

Ryan, R. M., & Deci, E. L. Self-Determination Theory: Basic psychological needs in motivation, development, and wellness, 2017. The Guilford Press.

Vansteenkiste, M., Ryan, R. M., & Soenens, B. Basic psychological need theory: Advancements, critical themes, and future directions. Motivation and Emotion, 2020. https://doi.org/10.1007/s11031-019-09818-1

Additional information

Information about speakers
Number of speakers: 1 speaker

0073
Abstract number

Anima Sana In Corpore Sano

Siwiec Andrzej[1], Harabia Arkadiusz[2], Domagalska-Szopa Małgorzata[3], Szopa Andrzej[3]

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[2] Miejski Ośrodek Sportu i Rekreacji w Sosnowcu, Poland
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The project "Anima Sana In Corpore Sano" involves the assessing the physical and mental condition of elementary school students aged 7-9 from Sosnowiec. The aim of the project is to reliably recognize the physical condition of children from Sosnowiec by identifying their body weight and body composition and then classifying them on this basis into 3 categories, i.e. normal, excessive and insufficient body weight; determining the level of their physical fitness using the Eurofit Test and level of physical activity and physical efficiency, as well as determining their mental well-being. On this basis, a report will be created and presented on the level of physical and mental health of children. The obtained results will allow the identification of children at risk of metabolic syndrome, as well as children in mental/emotional crisis, who will be referred for a specialist consultation at the Child and Family Health Center in Sosnowiec. Based on these results, corrective strategies also will be developed such as educational and activation activities, as well as therapeutic activities. Children with a low level of physical activity will be offered appropriate educational activities and appropriate forms of physical activity will be indicated and organized. Children with high levels of motor skills will be offered individual plans for the development of physical predispositions and motor skills. Although the results obtained in the first stage of the project, showed various body weight categories, different level of physical fitness and endurance, as well as mental well-being, they clearly indicate a large percentage of children with excessive body weight and low levels of physical activity. There have also been numerous cases of reduced mental well-being.

Form of presentation
Lecture (1 speaker)

Keywords
Physical activity, mental well-being, body weight composition

Bibliography
1. A. Grzyb, M. Domagalska-Szopa, A. Siwiec, I. Kwiecień-Czerwienec, A. Szopa. Cardiopulmonary capacity in overweight and obese children and adolescents - a cross - sectional study. Front. Physiol.2021: Vol.12, p.1-9, id. art. 671827
2. A. Dobrowolska, M. Domagalska-Szopa, A. Siwiec, A. Szopa. Association between cardiopulmonary capacity and body mass composition in children and adolescents with high body weight: a cross-sectional study. Children-Basel. 2022: Vol.9, No.9, p.1-12
3. A. Ostrowska, A. Grzyb, M. Domagalska-Szopa, M. Lis, A. Koralewska. Assessment of aerobic capacity levels and selected motor skills in children with excessive body weight. Pol.J.Physioter.2020, nr 5, s.72-83

Additional information

Information about speakers
Number of speakers: 1 speaker

0074
Abstract number

Early imitation in newborns as a diagnostic indicator in detecting developmental abnormalities on the autism spectrum - report from own research

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The ability of early imitation is a natural element of proper social, communication and cognitive development Deficits in the social and communication area are characteristic of children on the autism spectrum American psychologist Andrew Meltzoff proved that newborns imitate the facial movements of their caregivers. In turn, based on numerous studies, it was found that the basis of early imitation is the system of mirror neurons, related to empathy, theory of mind and language.
Purpose of the study: to determine whether the lack of early imitation skills in newborns indicates the risk of developing autism spectrum disorders.

Material and method:
children from birth to 36 months of age;
mix metods: combination of quantitative and qualitative method.

Results: Research on early imitation skills in newborns and research on the further development of non-imitative and imitative children at 18 and 36 months of age have shown a connection. When comparing the course of development of children in both groups, differences are noted not only in the area of gross and fine motor skills, auditory and visual perception, but primarily in the area of speech and communication, social behavior and emotions occurring on the autism spectrum.

Conclusions: Identification of children with autism is possible at a very early stage of life. The time of starting early support for children with autism, the type and type are important therapy methods and the predicted effect of therapy.

Form of presentation
Lecture (1 speaker)

Keywords
autism, early imitation, mirror neurons, development, health

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0121
Abstract number

Interactions between particulate matter (PM) and bacterial communities in a polluted ambient air

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There is growing interest in microbial research focusing on bioaerosols in urbanised environments, attracting the attention of researchers in both environmental science and public health. In particular, bacteria show remarkable diversity and abundance in bioaerosols, especially in regions with high levels of urbanisation and pollution. Interactions between particulate matter (PM) and bacterial communities, especially in respirable fractions, may have potential consequences for human health. The aim of this study is to present preliminary findings from a quantitative analysis focused on the adhesion dynamics of airborne bacteria to PM. The study was conducted in the ambient air of Gliwice, Upper Silesia, Poland. It consisted of bacterial aerosol sampling using a 6-stage Andersen cascade impactor, characterised by aerodynamic cut-off diameters of 7.0, 4.7, 3.3, 2.1, 1.1 and 0.65 µm. In parallel, the number concentration of airborne particles was assessed by using a particle counter, which has a particle size range identical to the Andersen impactor.

Preliminary observations reveal characteristic patterns in the size distribution of bacteria. Particularly interesting is the correlation between the concentration of coarse PM in the air and proportion of coarse bacterial particles in the total bacterial aerosol concentration. It seems that the increase in the concentration of coarse airborne solid particles stimulates the increase in the contribution of coarse bacterial particles in the total concentration of bacterial aerosol. This may be due to the adhesion of small, respirable bacteria (< 3.3 µm) to the coarse PMs suspended in the air. However, discovering the exact mechanisms governing adhesion dynamics of airborne bacteria to PM requires further in-depth research.

Form of presentation
Poster presentation

Keywords
Bioaerosols; Public health; Particulate matter (PM); Respirable fractions; Aerosol sampling; Size distribution

Bibliography
1. Haas D., et al. The concentrations of culturable microorganisms in relation to particulate matter in urban air. Atmos. Environ. 2013, doi:10.1016/j.atmosenv.2012.10.031
2. Ruiz-Gil T., et al. Airborne bacterial communities of outdoor environments and their associated influencing factors. Environ. Int. 2020, doi:10.1016/j.envint.2020.106156
3. Happo M.S., et al. Role of microbial and chemical composition in toxicological properties of indoor and outdoor air particulate matter. Particle and Fibre Toxicology 2014, doi:10.1186/s12989-014-0060-6
4. Kim K.H., et al. Airborne bioaerosols and their impact on human health, J. Environ. Sci. 2018, doi:10.1016/j.jes.2017.08.027.
5. Yin X. et al. Analysis of environmental and pathogenic bacteria attached to aerosol particles size-separated with a metal mesh device. Int. J. Environ. Res. Public Health 2022, doi:10.3390/ijerph19095773

Additional information

Information about speakers
Number of speakers: 1 speaker

0195
Abstract number

Antitumor activity of haragoside on triple-negative breast cancer cells

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Breast cancer is one of the malignant tumors with the highest number of deaths. 15-20% of patients are diagnosed with triple negative breast cancer. The treatment of patients diagnosed with TNBC is a significant clinical problem. Numerous studies are being conducted on the possibility of using targeted drugs, and chemoprevention seems to be a particularly promising strategy. The use of non-toxic substances of plant origin to stop or delay cancer development has become a new focus of attention. One of the substances of natural origin, with a potential anticancer effect, is iridoid glycoside – harpagoside - one of the main active substances of Devil's claw (Harpagophytum procumbens DC.). The research task is to determine the effect of harpagoside on the regulation of the cell cycle, proliferative activity, cell death (apoptosis, autophagy) (by flow cytometry and RT-qPCR), invasiveness (by RT-qPCR and matrigel) and sensitivity of TNBC cells of the HCC38, MDA-MB231 lines to doxorubicin.

Form of presentation
Poster presentation

Keywords
triple negative breast cancer, harpagoside, cell cycle, proliferative activity, cell death, invasiveness, sensitivity to doxorubicin

Bibliography
[1] Sporikova Z., Koudelakova V., Trojanec R., Hajduch M.Genetic Markers in Triple-Negative Breast Cancer Clinical Breast Cancer 2018; 18(5): 841-850. doi: 10.1016/j.clbc.2018.07.023.
[2] Garrido-Castro A., Lin N., Polyak K. Insights into Molecular Classifications of Triple-Negative Breast Cancer: Improving Patient Selection for Treatment. Cancer Discovery 2019; 9(2):176-198. doi: 10.1158/2159-8290.CD-18-1177.
[3] Kundu J.K., Mossanda K.S., Na H-K, Surh Y-J. Inhibitory effects of the extracts of Sutherlandia frutescens (L.) R. Br. and Harpagophytum procumbens DC. on phorbol ester-induced COX-2 expression in mouse skin: AP-1 and CREB as potential upstream targets. Cancer Lett. 2005; 218(1): 21–31. DOI: 10.1016/j.canlet.2004.07.029

Additional information

Information about speakers
Number of speakers: 1 speaker

0238
Abstract number

Single and dual systems based on grafted PIL-based copolymers

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Various types of polymeric drug delivery systems (DDSs) are known, where carriers can load the drug depending on the structure of the polymer matrix and the active compound [1]. Particularly noteworthy are micellar ionic conjugates, which are able to transport different types of drugs. The use of choline ionic liquid as a co-monomer is the optimal solution to obtain biocompatible copolymers. Moreover, the ionic structure allows for the anionic drug attachment, resulting in ionic conjugates. In turn, the amphiphilicity of the system allows for self-assembly and encapsulation of the non-ionic drug [2].

The studies were focused on the well-defined graft copolymers containing choline-based IL units in the side chains [3]. The polymer systems were able to transport ionic piperacillin (PIP^-) and non-ionic tazobactam (TAZ). Therefore, the single, i.e. conjuagates with PIP^-, micelles with TAZ; and dual systems, i.e. micellar conjugates bearing PIP^- and TAZ, were obtained. The potential of these three types of DDSs was verified by determination of drug contents and loading efficiencies, in vitro drug release in phosphate buffered saline (PBS, pH=7.4, 37^{o}C), and basic cytotoxicity estimation. In vitro drug delivery studies designated that the release of PIP^- reached 21-81% (2.6-15.0 μg/mL) and encapsulated TAZ attained 47-98% (7.5-10.4 μg/mL). The basic in vitro cytotoxicity studies showed negligible effect of polymer matrices on cell viability at low concentrations on human bronchial epithelial cells (BEAS-2B). These results confirmed that the tested systems are promising systems for both, single and simultaneous drug delivery.

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Form of presentation
Poster presentation

Keywords
drug delivery systems, simultaneous drug delivery, dual drug systems, choline-PIL graft copolymers, micellar ionic conjugates

Bibliography
[1] Dorota Neugebauer, Anna Mielańczyk, Rafał Bielas, Justyna Odrobińska, Maria Kupczak, Katarzyna Niesyto. Ionic Polymethacrylate Based Delivery Systems: Effect of Carrier Topology and Drug Loading. Pharmaceutics 2019, 11, 337, 10.3390/pharmaceutics11070337
[2] Katarzyna Niesyto, Aleksy Mazur, Dorota Neugebauer. Dual-Drug Delivery via the Self-Assembled Conjugates of Choline-Functionalized Graft Copolymers. Materials 2022, 15, 4457, https://doi.org/10.3390/ ma15134457
[3] Katarzyna Niesyto, Dorota Neugebauer. Synthesis and Characterization of Ionic Graft Copolymers: Introduction and In Vitro Release of Antibacterial Drug by Anion Exchange. Polymers 2020, 12, 2159, doi:10.3390/polym12092159

Additional information
Scientific work was financed from budget funds for science under project NCN OPUS (UMO-2017/27/B/ST5/00960).

Information about speakers
Number of speakers: 1 speaker

0249
Abstract number

Ionic Graft Conjugates for Dual Delivery of Anti-tuberculosis Drugs

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The importance of progress in drug delivery techniques is underlined by the complexities of diseases and the potential adverse effects of medications. In modern times, a promising approach to address drug resistance involves the development of dual drug delivery systems capable of simultaneously carrying two drugs to the human body [1]. The focus of this study was to design co-delivery systems transporting antituberculosis drugs.

The commercially available choline methacrylate was biofunctionalized with para-aminosalicylate (PAS) [2], known as a standard tuberculosis drug. The resulting monomer was then copolymerized with methyl methacrylate, producing ionic graft polymer conjugates [3]. The critical micelle concentrations (0.02–0.06mg/mL) of the ionic conjugates were determined using the goniometry method. Due to the self-assembling properties of these PAS-conjugates, another drug commonly used with PAS in combination therapies, i.e., isoniazid (ISO), was encapsulated in 54-68% during nanoparticle formation. The synthesized micelles were further examined using dynamic light scattering, and their sizes varied from 33-234 nm. Moreover, in vitro tests via the dialysis method, including the release of PAS anions by exchange with phosphate anions in a PBS medium (87-94%) and ISO through diffusion from the polymeric matrices (41-54%), were performed. In addition, cytotoxicity studies were conducted using the colorimetric MTT assay at various concentrations of polymer systems on BEAS-2B cell lines and demonstrated low cytotoxicity of systems bearing ISO and PAS.

Obtained carriers contained satisfactory drug contents and enabled the release of substantial quantities of drugs. Therefore, they show promise as co-delivery systems for tuberculosis treatments.

Form of presentation
Poster presentation

Keywords
ionic conjugates, co-delivery systems, graft copolymers, polymeric micelles, para-aminosalicylate, isoniazid

Bibliography
[1] Carbone C, Fuochi V, Zielińska A, Musumeci T, Souto EB, Bonaccorso A, Puglia C, Petronio Petronio G, Furneri PM. Dual-drugs delivery in solid lipid nanoparticles for the treatment of Candida albicans mycosis. Colloids Surf B Biointerfaces. 2020. doi: 10.1016/j.colsurfb.2019.110705
[2] Keihankhadiv, S.; Neugebauer, D. Synthesis and Characterization of Linear Copolymers Based on Pharmaceutically Functionalized Monomeric Choline Ionic Liquid for Delivery of p-Aminosalicylate. Pharmaceutics 2023. https://doi.org/10.3390/pharmaceutics15030860
[3] Mazur, A.; Neugebauer, D. Characterization of Graft Copolymers Synthesized from p-Aminosalicylate Functionalized Monomeric Choline Ionic Liquid. Pharmaceutics 2023. https://doi.org/10.3390/pharmaceutics15112556

Additional information
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Information about speakers
Number of speakers: 1 speaker

0258
Abstract number

Art therapy in health services

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Art therapy as a form of psychotherapy has a long tradition of presence in health care settings, most often in the form of supportive treatment of psychiatric patients. It is increasingly used in preventive health care, creating healthy lifestyles including stress management. Using a mind-body therapy approach, it is possible to observe the reciprocal relationship between somatic experiences and mental state.
The poster presents the results of art therapy workshops and research conducted with groups of young adults. Scientific objective was to compare the ways of visual expression of the somatic experience of two art therapy groups. The problems related to the questions: how do art therapy participants visualise their somatic experiences? what is the relationship between the means of expression used and the clients'/participants' problems? what is the relationship between the client's problem mode of expression insight? The research was conducted in qualitative paradigm using art based research methods; techniques : participant observation, documentary analysis: visual works (non-verbal), verbal statements of the clients; diary notes of the art therapist. The research findings noted: initial slight resistance, surprise with movement exercises, gradual transition to body awareness, discovering the holistic approach and the relationship between somatic experiences, variety of personal experiences (while sharing experiences).
Applied art therapy interventions can be used to raise body awareness, acquiring the ability to understand body signals and changes due to experience and well-being.

Form of presentation
Poster presentation

Keywords
art therapy, health, stress management, mind-body therapy, art. based studies, well being

Bibliography
Rivkah Hetherington & Luna, Power-From-Within: Somatic Art Therapy With an LGBTQIA+ Teenager, Art Therapy, 2023, 40:2, 76-83, DOI: 10.1080/07421656.2023.2186687\\nSherry Kreitman Dansky, The Small Body Outline Drawing and Art Therapy With a Female Substance Use Disorder Patient to Facilitate Mindful Processing of Trauma: A Case, Canadian Journal of Art Therapy, 2022, 35:1, 20-31, DOI: 10.1080/26907240.2022.2030520\\nRivkah Hetherington & Federico Gentile, Healing boundaries: a teenager\\\'s experience of art therapy integrated with Somatic Experiencing, International Journal of Art Therapy, 2022, 27:4, 190-197, DOI: 10.1080/17454832.2022.2080239\\nAlexandra Hanania, A proposal for culturally informed art therapy with Syrian refugee women: The potential for trauma expression through embroidery. Canadian Art Therapy Association Journal, 2018, 31(1), 33–42, DOI:10.1080/08322473.2017.1378516

Additional information

Information about speakers
Number of speakers: 1 speaker

0294
Abstract number

Targeting the Untargetable: Quinazoline and Quinazolinone Compounds against Glioblastoma

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Glioblastoma (GBM) is one of the most aggressive and common forms of primary brain tumor in adults, that poses significant treatment challenges. Current treatment including surgical resection followed by radiotherapy and chemotherapy with temozolomide. Statistical data show that 75% of GBM patients die within 2 years of diagnosis and implementation of intensive treatment regiments, and only about 5% survive five years [1, 2]. The intricate tumor microenvironment, characterized by an extremely selective blood-brain barrier, cellular heterogeneity, and intricate signaling networks, further complicates the efficacy of traditional therapeutic agents.

In response to these challenges, our research group has focused on the development of quinazoline and quinazolinone derivatives with multi-level mode of action, leveraging their potential to inhibit key signaling pathways involved in glioblastoma pathogenesis [3]. These compounds have shown promising results in preclinical models, exhibiting potent anti-proliferative, pro-apoptotic effects and cell arresting properties. Our novel approach involves the structural modification to enhance their specificity and permeability across the blood-brain barrier, thus maximizing their therapeutic index.

Our latest studies have elucidated the mechanisms through which these derivatives modulate cellular signaling is multistep, primarily targeting the PI3K/Akt/mTOR pathway, a critical regulator of cell survival and growth. Additionally, we have explored the possibilities for more effective delivery of these compounds into cells. By bridging the gap between intricate molecular mechanisms and clinical application, our work seeks to pave the way for next-generation therapies that offer hope in the battle against this formidable disease.

Form of presentation
TED Speech (max 2 speakers)

Keywords
glioblastoma multiforme, tumor microenvironment, cancer therapy, novel drugs, quinazolines.

Bibliography
[1] Ostrom Q.T.; Gittleman H.; Liao P.; Vecchione-Koval T.; Wolinsky Y.; Kruchko C.; Barnholtz-Sloan J.S. CBTRUS Statistical Report: Primary brain and other central nervous system tumors diagnosed in the United States in 2010-2014, Neuro Oncol, 19 (2017) v1-v88
[2] Niedbala, M.; Malarz, K.; Sharma G.; Kramer-Marek G.; Kaspera W. Glioblastoma: Pitfalls and Opportunities of Immunotherapeutic Combinations, Onco Targets Ther, 15 (2022) 437-468.
[3] Malarz, K.; Mularski, J.; Pacholczyk, M.; Musiol, R. Styrylquinazoline derivatives as ABL inhibitors selective for different DFG orientations. J Enzyme Inhib Med Chem 2023, 38 (1), 2201410. DOI: 10.1080/14756366.2023.2201410 From NLM Medline

Additional information

Information about speakers
Number of speakers: 2 speakers

0319
Abstract number

PAHs analysis in grilled marshmallows and 1-hydroxypyrene in urine

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Introduction. Marshmallows are confectioneries, very popular among children and teenagers around the world, available in well-known supermarkets, ready for grilling. It turns out that grilled marshmallows may be a source of exposure to harmful compounds, including polycyclic aromatic hydrocarbons (PAHs). In addition, 1-hydroxypyrene concentration in the urine of volunteers eating grilled marshmallows, as a biomarker of exposure to PAHs, has been determined.

Method. The analysis of PAHs in grilled marshmallows included a dilution step, liquid-liquid extraction with cyclohexane and solid phase extraction (SPE columns with silica gel). PAHs fractions were initially analyzed by planar chromatography (HPTLC), and PAHs concentration determinations were made by GC-MS/MS with monitoring of selected reaction monitoring (SRM).

The surveys were performed among approximately 300 children and adolescents regarding the consumption of grilled marshmallows. 1-hydroxypyrene was determined in urine of volunteers after enzymatic hydrolysis using the HPLC/FLD technique.

Results. The results of TLC and GC-MS/MS analyzes indicate that "raw" marshmallows do not contain PAHs. However, survey suggest a lack of awareness of the risks of carcinogenic PAHs from grilled marshmallows. Conclusions. The vast majority of respondents' parents allow their children to grill marshmallows, which indicates their insufficient knowledge of harmful substances present in grilled marshmallows. Consuming grilled marshmallows is popular in Poland, but the consumption frequency is not so high. Higher concentrations of PAHs were determined in multi-colored than in white marshmallows. Very high correlation coefficients indicate the co-occurrence of these most carcinogenic PAHs

Form of presentation
Poster presentation

Keywords
grilling, marshmallows, questionnaire, chromatography, PAHs, 1-hydroxypyrene,

Bibliography

Additional information
This research was funded by the Medical University of Silesia, Katowice, grant number BNW-1-088/K/3/O and part of Maciejczyk's doctorate research.

Information about speakers
Number of speakers: 1 speaker

0368
Abstract number

A modified hydrogel as a promising antifungal drug carrier for the treatment of cutaneous cryptococcosis

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In this study, we characterised hydrogel materials incorporated with the modified antifungal drug DRA4-A. Cryptococcus neoformans infections are a significant challenge for diagnosis and therapy, especially in immunocompromised patients. The Cryptococcal skin changes can range from scab-like to ulcerative, making proper diagnosis and treatment difficult. Moreover, transplant patients, especially those with parenchymal organs, have a higher risk of cutaneous cryptococcosis. Hydrogel dressings integrated with drug are an innovative perspective in the treatment of skin diseases.

They allow direct delivery of the drug to the infected skin areas and controlled release over a specific period of time. Depending on the use of additional components, an optimal drug concentration can be maintained in the infected area, which should potentially improve the efficacy of the therapy. A thermosensitive polymeric nanocarrier was synthesised into which a modified antifungal drug DRA4-A was encapsulated. Next, hydrogel materials based on poly(vinyl alcohol), sodium alginate and Aloe Vera extract were prepared and incorporated with the nanocarrier-drug system. A drug-loaded matrix was also prepared without the use of a thermosensitive polymer carrier.

The obtained hydrogel materials were characterised by physicochemical (degree of swelling, degree of cross-linking), structural (FT-IR analysis), biological, microbiological, degradation and cytotoxicity tests. The release profiles of the drug DRA4-A directly from the hydrogel and additionally from a matrix containing a thermosensitive nanocarrier-drug system were compared. The results show that modified hydrogel materials with high potential to be applied were obtained.

Form of presentation
Poster presentation

Keywords
drug delivery, hydrogel matrix, cutaneous cryptococcosis, hydrogel dressings, antifungal, skin infection, infectious disease, cryptococcus

Bibliography
I. Parker, Z. and Chisholm, C. Cutaneous Cryptococcosis Arising in a Patient with Idiopathic Lung Disease: Related Illnesses or “Ticks and Fleas”. Case Reports in Clinical Medicine, 12, 418-424. 2023 https://doi.org/10.4236/crcm.2023.1210056
II. Huang C, Dong L, Zhao B, Lu Y, Huang S, Yuan Z, Luo G, Xu Y, Qian W. Anti-inflammatory hydrogel dressings and skin wound healing. Clin Transl Med. 2022 Nov;12(11):e1094. doi: 10.1002/ctm2.1094
Katarzyna Bialik-Wąs, Klaudia Pluta, Dagmara Malina, Mateusz Barczewski, Katarzyna Malarz, Anna Mrozek-Wilczkiewicz, Advanced SA/PVA-based hydrogel matrices with prolonged release of Aloe vera as promising wound dressings, Materials Science and Engineering: C, Volume 120, 2021, 111667, ISSN 0928-4931, https://doi.org/10.1016/j.msec.2020.111667.

Additional information

Information about speakers
Number of speakers: 1 speaker

0386
Abstract number

Coffee waste as a source of active substances for dermatological applications

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Plant extracts are a rich source of active substances, which are characterized by positive properties that can be used in medicine, especially in the treatment of skin diseases. Coffee and its waste seem to be an interesting plant raw material, containing significant amounts of polyphenols with antibacterial, antifungal, anti-inflammatory and wound healing properties. Hydrogels have been widely used as dressings for wounds, as well as delivery systems for active and therapeutic substances. Strengthening the positive properties of hydrogels with coffee extract allows obtaining a material with unique properties that will potentially increase the effectiveness of the wound therapeutic process.

The aim of the research was to characterize the biological properties of the coffee waste extract and then confirm its reinforcing properties of the natural polymer.

Based on cytotoxicity analysis, no toxic effect of the extracts on human normal dermal fibroblast cells was found, and some growth-promoting properties were also demonstrated. In order to analyze growth-promoting properties more precisely, a study was carried out on the "wound healing" ability of the extracts, which revealed the ability of the extracts to stimulate wound healing. Finally, the ability of the extracts to reinforce the natural polymer, gelatin, was confirmed. As a result, hydrogel materials in the form of films were obtained, which had better properties than the material without the addition of an extract. The conducted research allowed for the preparation of non-toxic extracts from coffee waste with properties supporting wound healing and skin regeneration, which can also be used as reinforcement in the process of obtaining hydrogel materials with potential dermatological purposes.

Form of presentation
Poster presentation

Keywords
coffee grounds, wound healing, hydrogel, skin regeneration

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0397
Abstract number

The cutting-edge green chemistry sonochemical synthesis for s-triazine derivatives.

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The 1,3,5-triazine core is a prominent motif in various chemical compounds, exhibiting potential bio-activity. It is commonly used in fields of industry such as synthesis/pharmaceutics/cosmetics. Being the main core it has the influence on increasing the activity of them as anticancer, antibacterial, antiviral etc. agents. However, these types of compounds are obtained through a 3 step synthesis method, where the starting substrate is cyanuric chloride. The most unecological and uneconomical stage of production of compounds derived from s-triazines is the third stage of synthesis, especially in the case of production on a larger scale. The synthesis methods presented so far involve carrying out the reaction at high temperatures for hours, which requires the supply of large amounts of energy but also the use of significant amounts of water for cooling. Additionally, the processes described so far use huge amounts of environmentally harmful and expensive solvents, which after the reaction require removal and disposal. Due to the growing interest and use in industry of s-triazine derivatives and the currently used methods of producing, which do not meet the principles of green chemistry, our team decided to focus on developing a more ecological and economical synthesis method. By closely monitoring the third stage of s-triazine derivative synthesis, we developed an efficient ultrasonic method following green chemistry principles, using water as the solvent. Based on the developed method, it is possible to obtain products with up to 90% yield. The use of ultrasound allowed for a 12-fold reduction in the synthesis time. Moreover according to DOZNTM2.0 tool - developed method is 13-times more eco-friendly than conventional heating.

Form of presentation
Poster presentation

Keywords
s-triazines, ultrasound, organic synthesis, green chemistry, anticancer, medicinal chemistry, bio-active compounds,

Bibliography
R. Mattson, et. al., Aminotriazine 5-HT7 antagonists, Bioorganic and Medicinal Chemistry Letters, 2004, (https://doi.org/10.1016/j.bmcl.2004.06.008)
P. Zaręba, et. al., Eco-friendly methods of synthesis and preliminary biological evaluation of sulfonamide derivatives of cyclic arylguanidines, Ultrasonics Sonochemistry, 2022, (10.1016/j.ultsonch.2022.106165)
A. Drabczyk, et. al., Eco-friendly synthesis of new olanzapine derivatives and evaluation of their anticancer potential, RSC Advances, 2023, (10.1039/D3RA03926A)
D. Kułaga, et. al., Aminotriazines with indole motif as novel, 5-HT7 receptor ligands with atypical binding mode, Bioorganic Chemistry, 2020, (10.1016/j.bioorg.2020.104254)

Additional information

Information about speakers
Number of speakers: 2 speakers

0407
Abstract number

CoMPaSS-NMD: Genetic stratification of patients with Hereditary Neuromuscular Diseases for accurate diagnosis and improved life quality

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Hereditary Neuromuscular Diseases (HNMDs) represent a category of heterogeneous genetic disorders characterised by progressive muscle weakening and atrophy, significantly impairing mobility and potentially resulting in extensive disability. Such disabilities can hinder patients' engagement in societal activities, imposing an additional social burden, particularly as HNMDs predominantly affect younger individuals. The consequential loss of independence often necessitates reliance on familial or caregiver support and may result in prolonged institutional care. Currently, a 60% diagnostic uncertainty in HNMDs underscores the urgent need for enhanced diagnostic solutions, leveraging machine learning and Artificial Intelligence to achieve faster, more precise detection. In response, the CoMPaSS-NMD initiative, launched in May 2023 under the Horizon Europe program, is dedicated to crafting computational models to innovate patient diagnosis methods for HNMDs. This multifaceted project includes analysis of the genetic profiles from 4,400 patients across Europe (UK, France, Italy, Finland and Germany), employing unsupervised clustering algorithms to categorise unstructured data into genetically similar patient groups, thereby uncovering common clinical manifestations.

CoMPaSS-NMD seeks to elucidate the complex pathogenesis and transmission dynamics of HNMDs, which remain elusive in clinical diagnostics and prognosis. Beyond refining diagnostic precision, CoMPaSS-NMD is poised to develop evidence-based protocols to advance patient care standards. Its holistic strategy aims to markedly enhance the diagnosis, surveillance, and treatment modalities for neuromuscular conditions, fostering improved patient health outcomes and life quality.

Form of presentation
Poster presentation

Keywords
Hereditary Neuromuscular Diseases, artificial intelligence, unsupervised machine learning, genetics, diagnosis, patient stratification

Bibliography

Additional information
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Information about speakers
Number of speakers: 1 speaker

0420
Abstract number

Have Polish women started getting tested? The epidemiology of breast cancer in Poland in 2015-2021

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[2] Health Promotion and Obesity Management Unit, Department of Pathophysiology, Medical University of Silesia, Poland

The breast cancer remains the most frequent cancer diagnosed among women worldwide. According the GLOBOCAN2020 report the breast cancer was the leading cause of the cancer-related deaths in women in 110 of 185 countries in 2020. The study aimed to present the epidemiology of the breast cancer in Poland in 2015 – 2021 and identifying areas with the highest burden of this disease.

The material for the study was the secondary, depersonalized epidemiological data obtained from the National Health Fund of Poland regarding healthcare services granted for women diagnosed with the breast cancer (C50 according the ICD-10 classification) in 2015-2021 period. The epidemiological analysis was performed by subregions (NUTS-2 units), according to the patients' domicile. For each of the 73 subregions, incidence rates standardized to ESP 2013, annual percentage change and 95% confidence interval were determined.

The incidence rate of the breast cancer is characterized by the clear spatial differentiation. In 2015 the highest incidence rates were noted in the subregions of Leszno, Słupsk, Konin and the cities of Poznań, Łódź and Warsaw. This epidemiological situation remained stable till 2019. Simultaneously the implementation of the national breast cancer screening program has decreased. Subsequently in 2020 when the COVID-19 pandemic occurred, the incidence rates of the breast cancer decreased in all of subregions especially in the southern and the south-east areas of Poland. This was most likely caused by the engagement of the healthcare resources in the fight against the pandemic which resulted in a delay of diagnosis and in a consequence, many patients could get to the healthcare system at a more advanced stage of the disease.

Form of presentation
Poster presentation

Keywords
breast cancer, epidemiology, Poland

Bibliography

Additional information

Information about speakers
Number of speakers: 2 speakers

0421
Abstract number

Impact of the COVID-19 pandemic occurence on the skin hygiene - survey study

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Hand hygiene is an essential procedure in reducing infections and transmission of pathogens, especially in the COVID-19 pandemic era, announced in Poland in March 11, 2020. Therefore, proper hand washing and disinfection are the basic activities protecting against SARS-CoV-2 virus transmission. Each individual has been obliged to comply with the new rules, comply with the bans, maintain the imposed restrictions. In 2022 on the basis of the author's questionnaire, conducted among students of the Faculty of Pharmaceutical Sciences of the Medical University of Silesia in Katowice, the influence of a pandemic on hygienic habits and skin hygiene of respondents was studied.

It was shown that 99.5% of the respondents knew the concept of skin hygiene before the start of the pandemic and at least 75% of the students maintained the hygiene habits they acquired. The second part of study, 2023, was refer to group of adults. It has been proven that over 90% of respondents disinfected their hands.

In the both studies, wearing a protective mask or intensified hand washing and disinfection had a negative impact on the condition of the probands' skin. On the faces of the respondents, eczema in the form of pustules or blisters most often appeared, while on the hands it was dryness.
The responses indicate a satisfactory level of knowledge and awareness among the regarding microbial control and prevention against the spread of the COVID-19 pandemic and despite the end of the pandemic, the habit that remained among the respondents was primarily washing their hands for more than 30 seconds (48%).

Form of presentation
Poster presentation

Keywords
COVID-19, disinfection, hygiene

Bibliography
[1] Brady, M. Covid-19 and the Power of Rules. Hist Philos Life Sci 2021, 43, 11, doi:10.1007/s40656-021-00368-9.
[2] Lytras, T.; Tsiodras, S. Lockdowns and the COVID-19 Pandemic: What Is the Endgame? Scand J Public Health 2021, 49, 37–40, doi:10.1177/1403494820961293.
[3] Teo, W. The “Maskne” Microbiome – Pathophysiology and Therapeutics. Int J Dermatol 2021, 60, 799–809, doi:10.1111/ijd.15425.
[4] Wollina, U. Challenges of COVID-19 Pandemic for Dermatology. Dermatol Ther 2020, 33, doi:10.1111/dth.13430.\\\\n

Additional information

Information about speakers
Number of speakers: 2 speakers

0425
Abstract number

AI-based virtual pathologist for quantitative analysis of H&E stained muscle biopsy images to support efficient diagnosis of muscular dystrophy

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[2] Department of Neurology, Friedrich-Baur-Institute, LMU Klinikum München, Germany
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Hereditary neuromuscular diseases (HNMDs) are slowly progressive genetic disorders resulting in muscle weakness and atrophy that affect mobility and in the long-term determine general disability and early death. Diagnostics for HNMDs include numerous costly investigations which are often only partial or unsatisfactory thus the individual prognosis stays uncertain. The CoMPaSS-NMD project aims to develop novel AI-based stratification methods based on multidimensional genomic, clinical, and histopathological data. Evaluating muscle pathology with AI-based methods is a unique novel direction for NMD patients. Muscle biopsy specimens require fixation and histochemical staining using hematoxylin and eosin (H&E) to improve the distinguishability of tissue-important structures.
To provide standardized images, in which the color variation of the same structures between samples is reduced, we introduced the following steps:

(i) background signal estimation;
(ii) extraction of individual tissue fragments from the whole slide;
(iii) expansion of standard RGB color space using Gaussian Mixture model-based method; and finally
(iv) color quantization by clustering.

The normalized pathology slides together with their descriptors were used to build the hybrid deep learning-based preliminary classification system of HNMD patients.
The analysis of imaging biomarkers allows for the definition of the novel, standard histological, and radiomic-type indicators, tailored for HNMDs. The proposed approach leads to developing cost-effective AI-based applications serving a virtual pathologist for precise clinical characterization and diagnosis of people living with HNMDs and uncovering new patterns present in data that can advance knowledge and patient response prediction.

Form of presentation
Poster presentation

Keywords
neuromuscular diseases, histopathology, H&E staining, biopsy, data standardization, AI-based methods.

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0476
Abstract number

Assessment of the antibacterial properties of wood vinegar from biomass pyrolysis

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[2] Faculty of Natural Sciences, University of Silesia in Katowice, Poland
[3] Faculty of Pharmaceutical Sciences, Medical University of Silesia, Poland

With wide applications of biomass-derived biochars in different areas, pyrolysis liquids require further valorisation as value-added by-products from the pyrolysis processes. Recently, the chemical industry has started looking into using wood vinegar (pyroligneous acid; aqueous phase of pyrolysis liquids) as a natural alternative to synthetic chemicals that can be applied as antibacterial or/and antifungal media. On top of the standard physicochemical characterisation of wood vinegar (from the intermediate pyrolysis process of pine wood pellets at 500 deg. C), the authors focused on its applications as an antibacterial agent in typical households and industrial settings.

To determine the inhibitory effect of wood vinegar on bacterial growth, pure cultures of gram-negative Escherichia coli (ATCC 25922TM) and gram-positive Staphylococcus epidermidis (ATCC 12228TM) were grown in the nutrient broth supplemented with wood vinegar in the concentration range 0.025-0.5% of active substances. Both tested bacterial strains were sensitive to the wood vinegar. The retardation and/or inhibition of E. coli growth was observed at concentrations as low as 0.05%. Concentrations of wood vinegar at 0.2% and higher completely inhibited the growth of these bacteri.

The lowest wood vinegar concentration inhibiting the growth of S. epidermidis at 10% was 0.025%. This study also highlights the safety aspects of using wood vinegar (as an end-product) in low concentrations and prolonged exposure in relation to human health. Preliminary tests included proliferation and survival of various human cell lines (in vitro cultures); anti- and proapoptotic and cell cycle gene expression; cell division, chromosome segregation and the risk of chromosome aberrations.

Form of presentation
Poster presentation

Keywords
biomass; pyrolysis; wood vinegar; antibacterial agents; sustainable engineering; human health; long exposures to chemicals

Bibliography
Dr Aleksandra Zielinska is a lecturer in cytogenetics. Her current research is focused on the in vitro toxicity studies of chemical components on human health.

Additional information

Information about speakers
Number of speakers: 2 speakers

0484
Abstract number

The impact of SLM technology and numerical FEM research in the design and manufacture of an implant for a large mandibular defect

Zorychta-Tomsia Magdalena[1]

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The aim of the work was to develop a methodology for the personal design of extensive mandibular implants and their production from pure titanium using the additive method, for which selective laser melting (SLM) was chosen. In order to verify the thesis of the work, the scope of research was established, which included developing a methodology for testing the transfer of occlusal loads in implant materials and the jaw by means of numerical simulations using the finite element method, optimizing the SLM selective laser melting process for the production of implants, and examining the impact of technological parameters on the structure and material properties. Simulation studies of the influence of modeling conditions on the load-bearing capacity of the implant were performed, and the support conditions and loads crucial for the transfer of occlusal loads were distinguished.

The tests showed a significant underestimation of stresses in the case of optimistic establishment of bone union on the implant/mandibular surface. It has been proven that mandibular implants should be designed to exclude bone/implant adhesion so that the stiffness of the bone screw fixation allows for displacement on the implant/bone surface within the permissible range, which determines the formation of bone union. The key and more important turned out to be the exclusion of support in the joint on the occlusal side, which is closer to physiology and creates more stringent criteria for assessing the load-bearing capacity and strength of the implant material. It should be emphasized that the presented evidence shows a significant underestimation of the loads transferred by the implant and bone tissue.

Form of presentation
Poster presentation

Keywords
Biomechanics, computer simulations, FEM, implant, mandible, strength of materials, SLM.

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0491
Abstract number

Can machine learning reveal hidden subtypes of breast cancer?

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[2] Department of Data Science and Engineering, Silesian University of Technology, Poland

Breast cancer shows large diversity at molecular and clinical levels. However, this heterogeneity is not reflected by the well-established classifications: clinical one which is based on the presence of several markers, and transcriptomic-based molecular one. The advances in molecular biology and machine learning methods can provide more accurate breast cancer characterization to complement the well-recognized subtyping. In this study, we propose the division of breast cancer patients into subpopulations based on the proteomic profiles.

The combination of feature engineering and clustering methods applied to the protein levels allowed us to identify six subpopulations of breast cancer patients. We characterized them demographically, clinically, and molecularly with the proteomic and transcriptomic profiles.

Three of the revealed subpopulations showed great consistency with well-established transcriptomic-based subtypes: basal, HER2-enriched, and luminal B. The remaining three subpopulations corresponded to the luminal A subtype, apparently highly diverse. We found significant differences in survival, even between only the newly proposed luminal subpopulations. One of them presented a similar or even worse prognosis than HER2-enriched and basal cases, generally regarded as the most aggressive breast cancers. On the other hand, another luminal A subgroup showed a highly favourable survival outcome. The subpopulations varied significantly in proteomic and transcriptomic profiles, which allowed the identification of the subpopulation-specific, mainly proteomic, markers.

The revealed proteomic-based subpopulations have the potential to complement the commonly used breast cancer classifications and, with further research, support the development of personalized medicine.

Form of presentation
Poster presentation

Keywords
breast cancer; machine learning; survival analysis; subtyping; proteomics

Bibliography
Joel S. Parker, et al., “Supervised Risk Predictor of Breast Cancer Based on Intrinsic Subtypes”, Journal of Clinical Oncology, 2009, doi:10.1200/JCO.2008.18.1370
Agata Szymiczek, Amna Lone, Mohammad R. Akbari, ”Molecular intrinsic versus clinical subtyping in breast cancer: A comprehensive review”, Clinical Genetics, 2020, doi:10.1111/cge.13900
Joanna Tobiasz, Joanna Polańska, “How to Compare Various Clustering Outcomes? Metrices to Investigate Breast Cancer Patient Subpopulations Based on Proteomic Profiles”, Lecture Notes in Computer Science, 2022, doi:10.1007/978-3-031-07802-6_26
Joanna Tobiasz, Joanna Polańska, “Proteomic Profile Distinguishes New Subpopulations of Breast Cancer Patients with Different Survival Outcomes”, Cancers, 2023, doi:10.3390/cancers15174230

Additional information
This study was supported by European Social Fund grant no. POWR.03.02.00-00-I029.

Information about speakers
Number of speakers: 1 speaker

0520
Abstract number

Algorithm for Clinical Brain Function Disorders in iCFM Monitoring (EEG, CFM, SaO2, Pulse) and Doppler Study of Newborn Cerebral Circulation

Rudnicki Jacek[1]

[1] ELMIKO® biosignals sp. z o.o. , Poland

Introduction: Understanding the timing and sequence of heart, respiratory, and brain disorders is crucial for clinical decisions in neonatal intensive care.

Hypothesis:
It is suggested that simultaneous monitoring of vital functions using iCFM and cerebral circulation assessment by Doppler method, supported by alarm algorithms, can improve medical interventions.

Objectives:
The project aims to create an iCFM device that integrates EEG, CFM trend, pulse oximetry, and rSO2 (NIRS) to monitor the brain, circulation, and respiration. The development of alarm algorithms for critical disorders such as drops in SaO2, bradycardia, or seizures is also planned.

Materials and Methods:
iCFM, a hybrid monitoring vital functions, allows for a quick response to disorders. These disorders can progress rapidly, complicating patient condition assessment. This device enables the evaluation of Doppler flows, essential for assessing brain blood flow, especially in the context of edema. The development of iCFM includes the integration of NIRS recording, which expands monitoring capabilities.

Conclusions:
iCFM, supported by Doppler examination, facilitates clinical decision-making, stabilizing vital functions in newborns. It is a clinically useful tool that allows monitoring the effects of interventions, which is crucial for improving treatment outcomes in neonatal intensive care.

Form of presentation
Lecture (1 speaker)

Keywords
iCFM, CFM, EEG, aEEG, rSO2

Bibliography

Additional information
This study is based on the results of industrial research and development work within the project "Development of an innovative medical device for integrated monitoring of brain function with other vital parameters in newborns" ("Opracowanie innowacyjnego urządzenia medycznego służącego do zintegrowanego monitorowania pracy mózgu z innymi parametrami życiowymi nowo narodzonych dzieci").
The project was carried out as part of the Regional Operational Programme of the Silesian Voivodeship for the years 2014-2020, under the priority axis: I. Modern Economy, action: 1.2. Research, development, and innovation in enterprises.

Information about speakers
Number of speakers: 1 speaker

Changes Within Scientific Excellence

Lectures, Panels, and Short Presentations

0032
Abstract number

A New European Framework for Research Careers

O'Neill Gareth[1], Lebhardt Fleur[1]

[1] Technopolis Group, Belgium

The European Council has recently adopted a new European Framework for Research Careers [1]. The framework aims to improve research careers and attract and retain research, innovation, and entrepreneurial talents in Europe. The framework consists of 44 recommendations for countries and organisations across 8 key pillars for research careers. The recommendations highlight key areas for improving research careers and are a first step towards defining concrete policies and practices. The recommendations are thus relatively high level and do not provide concrete actions to interpret and implement the framework at research-performing (RPOs) and research-funding organisations (RFOs). The SECURE project [2] aims to develop coordination and support measures to create and trial a research career framework to improve research careers and reduce precarity. The project will analyse the new European Framework for Research Careers and interpret and refine the framework so that it can be practically implemented at RPOs and RFOs. This session will openly discuss the new European Framework for Research Careers adopted by the European Council and benefit from insights from the SECURE project. Key stakeholders and experts on the framework and research careers will lead the discussion with the audience on the implementation of the framework and tenure track-like models. The session will involve a short introduction to the framework by key speakers, roundtable discussions with the audience, and a closing panel discussion with open audience Q&A.

Form of presentation
Debate (min. 3 speakers)

Keywords
Research Careers; Tenure Track; Researcher Precarity

Bibliography
[1] European Council (2023) Council Recommendation on a European Framework to Attract and Retain Research, Innovation, and Entrepreneurial Talents in Europe. Link: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023H01640&qid=1705402899867.

[2] Website of SECURE project. Link: https://secureproject.eu.

Additional information
Speaker travel costs will be mainly covered by the SECURE project (Grant # 101094902)

Information about speakers
Number of speakers: 6 speakers

0079
Abstract number

Fostering the emergence of new research data careers

Garbuglia Federica[1], Berghmans Stephane[1], Refsum Jensenius Alexander[2]

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[2] University of Oslo, Norway

Equipping future graduates, researchers and society at large with the skills needed to support the digital transition is becoming a priority on European, national and institutional agendas. Research data management (RDM) and FAIR data are part of this skillset and research data careers are increasingly in demand in both the public and private sectors.

At organisational level, the availability of staff with data competencies is crucial to support the implementation of FAIR RDM practices and, ultimately, to foster the transition towards Open Science. Data collected by the European University Association show for example how universities are creating dedicated research data support services and hiring specific support staff, but significant disparities exist between countries and institutions. RDM responsibilities still fall to existing members of staff. In many cases, technical skills are only partially available and new dedicated staff is required. Universities who have hired specific research data support roles may still have problems meeting the growing demand for research data expertise. Within this context, a major challenge is represented by the absence of a shared recognition and definition of research management professional profiles, despite recent progress being made at European level through ERA Action 17 on research management.

This session will address needs, challenges and opportunities related to the emergence of new research data careers, including the identification of key skills, clear career paths and their integration into research assessment systems. It will do so by showcasing best practices and reflecting on ways forward with a panel of experts representing different actors, i.e. university leaders, research data practitioners and policymakers.

Form of presentation
Debate (min. 3 speakers)

Keywords
Scientific visibility, scientific policy, open science, open research data

Bibliography
Morais, R., Saenen, B., Garbuglia, F., Berghmans, S., Gaillard, V. (2021), From principles to practices: Open Science at Europe's universities 2020-2021. EUA Open Science Survey results. EUA (2022), EUA Open Science Agenda 2025.

Additional information
This session will be organised as a panel discussion. Each speaker will be given 5 minutes for a short, introductory remark and the rest of the time will be dedicated to a Q&A session with the participants. Of note, Alexander Refsum Jensenius, Professor at the University of Oslo and Chair of the EUA Expert subgroup on FAIR data will moderate this session.

Information about speakers
Number of speakers: 5 speakers

0093
Abstract number

Building Capacity in Research Excellence: Seeking Mutual Benefits for ERA Advanced and Widening Countries

Kolman Michiel[1], Watson Steve[2], Trzonkowska Natalia[3], Plater-Zyberk Anna [4], Agostinho Marta [5]

[1] Senior Vice President, Research Networks, Elsevier, Netherlands
[2] Vice President, Research Networks, Elsevier, Netherlands
[3] International Center for Cancer Vaccine Sciences, University of Gdańsk, Poland
[4] Office of International Cooperation, Polish Academy of Sciences, Poland
[5] EU-LIFE, Spain

Building research excellence is a top priority for academic leaders; however, only 56% express readiness to meet associated challenges, as revealed by a recent Elsevier-Ipsos survey. This priority intersects with key components such as talent attraction and international collaboration, where increasing pressures from funding and the geopolitical environment hinder success. With the EU allocating over €47 billion in post-COVID recovery funds for research and innovation projects supporting ERA actions, including €5.68 billion for the "Widening of Excellence," there is a concerted effort to build research excellence capacity through collaboration between more advanced regions and widening countries. This panel will explore the perspectives of leaders representing both established, research-intensive institutions and widening countries on building scientific excellence. It will delve into their definitions of "excellence" and discern their views on increasing capacity for excellence in Europe versus global initiatives. Considering China's successful investment strategies in building research excellence, the panel will question whether similar approaches could be applicable in the European context. With participation from leaders across various European regions and organizations, this panel seeks to provide practical insights and stimulate dialogue on effective strategies for building scientific excellence. It will address questions concerning the opportunities of a unified "Team Europe" and the necessary regulatory and infrastructural frameworks for excellence to thrive. Key questions addressed will include: How can institutions maximize the benefits of the ERA widening program in tandem with their institutional strategies?

Form of presentation
Debate (min. 3 speakers)

Keywords
Research Excellence; ERA (European Research Area); Widening of Excellence; Institutional Strategies; Capacity Building; International Collaboration.

Bibliography

Additional information

Information about speakers
Number of speakers: 4 speakers

0114
Abstract number

"Research integrity & ethics – what is needed?"

Pillay Vinny[1], Smith Carthage[2]

[1] International Cooperation, South African Department of Science & Innovation, South Africa
[2] Global Science Forum (GSF), OECD, France

STI can help build a basis for a knowledge-based society and a prosperous economy, but it can also cause harm. Responsible research and innovation are the key to promote effective and innovative research initiatives.

Questions remain as to which mechanisms need to be put in place to encourage and promote the issue of research integrity. What roles do governments, institutions, academia, the private sector and researchers have to foster an enabling environment? This panel will discuss the current state-of-play and what more is needed to facilitate this, as well as publishing in a world of open data. We will highlight some of the principles, codes of conduct, frameworks and research integrity policies countries are adopting, and the need for better integration in various institutional mechanisms. Speakers will also highlight the need for ethical collection and use of data. As we navigate to new skills and labour markets, are we prepared for the next wave of digital interface which brings new ethical dimensions.

The issue of communication and training: are we training the next generation of young and emerging researchers to be able to navigate these issues optimally in the emerging discourse of the digital drivers that influence the fundamentals of science, research and innovation?

Perspectives from various speakers from diverse geographic regions will participate in this panel discussion, including a perspective from South Africa, the OECD, the European Commission, the National Research Foundation as as well UNESCO. The panel will engage with the issues of integrity and ethics across data collection, analysis and dissemination, the frameworks in place, the ethics of communication of science as well as various country/institution specific viewpoints.

Form of presentation
Debate (min. 3 speakers)

Keywords
Research integrity; research ethics; communication of science

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

0116
Abstract number

Are new technologies reshaping fundamental principles in research ethics and integrity?

Gaillard Vinciane[1], Cimmperman Reda[2], Karatzas Isidoros[3], Lanzerath Dirk[4], Łuków Paweł[5], Wienand Isabelle [6], Berghmans Stephane [1]

[1] European University Association (EUA), Belgium

[2] Ombudswoman for Academic Ethics and Procedures, Lithuania

[3] Research Ethics and Integrity Sector , European Commission , Belgium

[4] University of Bonn, German Reference Centre for Ethics in the Life Sciences (DRZE),European Network of Research Ethics Committees (EUREC), Germany

[5] Committee for the Ethics in Science of the Polish Academy of Science, University of Warsaw, European Group on Ethics in Science and New Technologies (EGE),, Poland

[6] University Ethics Committee, University of Basel, Switzerland

Ethics and integrity in research and innovation are fundamental pillars of good science. They notably contribute to ensuring the responsible pursuit of knowledge and innovation within research performing organisations. The rise of species-affecting technologies such as genome editing (e.g. CRISPR-Cas9) and artificial intelligence presents complex ethical challenges. In particular, technologies are emerging faster than their ethical considerations can be weighed. In this debate, panellists will first consider to what extent new technologies used in research are impacting the fundamental principles of research integrity: reliability, honesty, respect and accountability.

They will also address the challenges and opportunities of innovative approaches to research ethics and integrity for emerging technologies, by engaging in the innovation process itself, under the umbrella term of "anticipatory technology governance" proposed by the OECD. The session will include considerations for both training programmes and policies, based on practical examples.

Form of presentation
Debate (min. 3 speakers)

Keywords
scientific ethics, AI in science, social impact of research, scientific policy

Bibliography

OECD Science, Technology and Innovation Outlook 2023: Enabling Transitions in Times of Disruption, 2023,https://doi.org/10.1787/0b55736e-en

OECD Science, Technology and Innovation Outlook 2018: Adapting to Technological and Societal Disruption, 2018, https://doi.org/10.1787/sti_in_outlook-2018-15-en

Additional information

Information about speakers
Number of speakers: 5 speakers

0122
Abstract number

The Artifical Intelligence Turn in Research: Reflections on the Impact of AI in Funding, Policy, and Academia

Salinas Claire[1], Arranz David [2], Hasgall Alexander[3], Lewandoska Alexandra[4]

[1] Science Europe, Belgium
[2] DG RTD -- Industry 5.0 and AI in Science, European Commission , Belgium
[3] Swiss National Science Foundation, Switzerland
[4] EuroDoc, Poland

Artificial intelligence (AI) has become a hot topic. It influences both the quality and impact of research and its organisation. AI can therefore promise to make research both more impactful and simpler, allowing focus on the content and practice of research while simplifying administrative processes. For funders, AI is already having an impact on work processes, for instance by providing algorithms for the selection of panel members, the clustering of thematic areas, or for drafting and evaluating research proposals.

The potential of these technologies, however, presents challenges that ultimately affect the entire scientific community. How can the responsible use of AI be reconciled with the need for impact and efficiency? Can regulatory oversight and good practice guidelines be effective as the use of AI in research – e.g., generative AI tools to produce content; the use of algorithms to assess research – rapidly increases? More generally, how will AI fundamentally change the way researchers, funders, and other players in the landscape approach research, and how should they react to this? Which is the role that organisations should play and how they can better support researchers in this transition?

This panel will bring together stakeholders from research-funding organisations, the European Commission, and early-career researchers to discuss the widening impact of the technology.

Form of presentation
Debate (min. 3 speakers)

Keywords
Artificial intelligence, research, funding, regulation, policy, evaluation, ethics

Bibliography

Additional information

Information about speakers
Number of speakers: 4 speakers

0184
Abstract number

Fostering Brain Circulation: The Impact of Research Diasporas in Advancing Scientific Excellence

Gawda Agnieszka[1], Ceran Olga[2], Weryńska Karolina[3], Santos Alicja[4]

[1] Executive, Polonium Foundation, Poland
[2] Advisory, Polonium Foundation, Netherlands
[3] Executive, Polonium Foundation, Switzerland
[4] Executive, Polonium Foundation, United States

Brain drain, the migration of educated and highly skilled individuals from their home countries to seek opportunities abroad, is a topic of extensive discussion, particularly in the context of scientific mobility. While acknowledging the benefits of mobility in advancing scientific careers, concerns arise as many countries fear the irreversible loss of their intellectual capital, leading to social and economic consequences.

Research reveals a rather nuanced perspective. It demonstrates that even those who do not return home after pursuing opportunities abroad often express a keen interest in maintaining connections with their countries of origin. Many are actively engaged in organized initiatives to contribute to the scientific and socio-economic development of their home nations.

This panel focuses on one such form of participation: research diaspora organizations.

By examining examples such as the Polonium Foundation, Network of Associations of Spanish Researchers and Scientists Abroad, and others, this panel will highlight the role played by research diasporas in advancing scientific excellence in their countries of origin. These organizations not only facilitate the circulation of brains, emphasizing physical mobility, but also actively contribute to the exchange of ideas and best practices from their host countries. We will delve into how they foster scientific excellence through knowledge transfer and initiatives such as mentoring or fellowships. By serving as bridges between international research communities, they facilitate the seamless flow of expertise, research methodologies, and innovative practices. This dynamic interaction not only enriches the scientific landscape but also accelerates progress by integrating global perspectives into national practices.

Form of presentation
Debate (min. 3 speakers)

Keywords
brain drain, brain circulation, research diaspora, scientific excellence

Bibliography
Polonium Foundation (2018) Report Beyond recognition: Polish scientific diaspora as a source of social capital

Additional information

Information about speakers
Number of speakers: 5 speakers

0188
Abstract number

The European Universities Initiative – new ways of strengthening international cooperation and connecting researchers

Kosciuszko Agnieszka[1], Lenkauskaite Edita[2], Garcia Fernàndez Jordi [3]

[1] RE-EURECA-PRO, Montanuniversität Leoben, Austria

[2] Klaipeda University, Lithuania

[3] Vice-Rector, CHARM European University, Universitat de Barcelona, Spain

Europe is facing major challenges and strong, interconnected higher education institutions (HEIs) have been identified as a key instrument in "shaping sustainable and resilient economies and making the European Union greener, more inclusive and more digital" (European Commission, 2022). To enable universities to contribute to achieving these goals, the European Commission has launched several ambitious initiatives. At the centre of these efforts is the European Universities Initiative (EUI), which supports the creation of strategic transnational alliances of higher education institutions. In this round table discussion executive directors and lead project managers of the European Universities Initiative and HORIZON Science With and For Society (SWAFS) projects will discuss how participation in the EUI has changed their universities and the way researchers collaborate in this forward-looking form of international cooperation. As practitioners working daily within this new framework of scientific and administrative collaboration they will give the audience an insight into the challenges and opportunities of long-term strategic cooperation between European universities.

They will discuss how institutional changes and educational transformations have been prompted by the EUI initiative at their home universities and how societal knowledge transfer, research career development, the visibility of science and research excellence have been fostered as a result of these transnational collaborations. The round table discussion will also present new ways of effectively reaching diverse communities of stakeholders and share examples of concrete actions targeting young audiences.

Form of presentation
Debate (min. 3 speakers)

Keywords
European Universities Initiative, university alliances, transnational collaboration, scientific excellence, scientific visibility, social impact of research, citizen science, scientific policy

Bibliography
Anna Budzanowska, Agata Zygmunt-Ziemianek, Paweł Poszytek and Katarzyna Trynda, "Uniting Diversity: European Universities Initiative Case" in Building an Academic Community: Challenges for Education Quality Management, eds Justyna M. Bugaj et. al, Brill, 2024, pp. 51-68.https://doi.org/10.1163/9789004689060_004European Commission, "European Strategy for Universities", 2022. https://education.ec.europa.eu/sites/default/files/2022-01/communication-european-strategy-for-universities-graphic-version.pdf Agata Lambrechts, Marco Cavallaro and Benedetto Lepori, "The European Universities initiative: between status hierarchies and inclusion", Higher Education, 2024. https://doi.org/10.1007/s10734-023-01167-w

Additional information

Information about speakers
Number of speakers: 3 speakers

0193
Abstract number

Open Science and research data management at universities – experiences from members of the T4EU alliance and their joint strategy

Slavec Ana[1], Bisaga Maciej[2], Gieseler Karolin[3], Nuccio Filippo Alberto Edoardo[4], Milčiuvienė Saulė [5], Petrauskaitė Rūta[6]

[1] Faculty of mathematics, natural sciences and information technologies, University of Primorska, Slovenia
[2] University of Silesia in Katowice, Poland
[3] Department of psychology, University of Saarland, Germany
[4] Jean Monnet University, France
[5] Vytautas Magnus University, Lithuania
[6] Department of Lithuanian Language, Vytautas Magnus University, Lithuania

Open Science is crucial for ensuring the transparency and reproducibility of scientific research. The core principles of open science include open access to publications, data, methodologies, software, and infrastructures, and are supported by changes in research assessment and investment in staff-capacity building. Raising awareness, knowledge, and motivation among researchers is also integral to the implementation of these principles.

In practice, many organisations face challenges due to a lack of personnel with Open Science skills and the need for extensive training and recruitment of new Open Science related professions, in particular data stewards, curators, and librarians. Moreover, it should be considered that specific skills are needed depending on the field of research and the type of research data.

In this session, we will share experiences on how universities within the Transform4Europe (T4EU) alliance, one of several European Universities Alliances, are addressing these issues. One of its initiatives is to formulate and implement a unified Open Science strategy, which involves collaborative efforts in training personnel related to Open Science and research data management.

A panel of Open Science coordinators from participating universities will present the challenges they face in promoting open science practices among researchers from various scientific disciplines at their respective organisations, and how knowledge exchange is facilitated through collaboration within the T4EU alliance. They will also provide recommendations for other organisations with similar ambitions and outline plans for future activities.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Open science, Research Data Management; Staff Capacity-Building, European Universities Alliances

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

0213
Abstract number

Rethinking scientific excellence to improve research culture

Sapcariu Sean[1], Kaczmarek Leszek[2], Philipp Tobias [3], Dahle Sebastian [4], Castellano Irene [5], Stroobants Karen[6], Morris James[7]

[1] Luxembourg National Research Fund, Luxembourg
[2] European Research Council, Belgium
[3] Swiss National Science Foundation, Switzerland
[4] EURODOC, Belgium
[5] Marie Curie Alumni Association, Belgium
[6] CultureBase Consulting, United Kingdom
[7] Science Europe, Belgium

“Excellence” is a term that appears throughout our research systems. Despite its ubiquity, the meaning of excellence in science varies according to scope, level of employment, geography, and many other factors. Research assessment processes and practices play a key role in setting excellence targets, often included as high-level criteria in processes designed to allocate research funding and decide which researchers to hire or promote.

The past years have seen an increased focus on understanding how research is done, captured in the term “research culture”. This concept is an umbrella term that seeks to link shared values at the heart of our research systems with how research is performed and communicated, as well as how research is assessed and the implications this has on which researchers are enabled to pursue their projects. This has included discussions on the meaning of excellence, investigation of the utility of the excellence rhetoric and attempts to redefine or rethink excellence to various degrees.

The objective of this session is to explore how ongoing discussions are reshaping definitions and models of excellence and what this means for the excellence rhetoric in research assessment approaches as they undergo reform in Europe and globally. Speakers at the forefront of the discussion will be invited to join us and we will be using a live online polling tool (Mentimeter) to gather inputs from the in-person audience as well as those watching the livestream.

Form of presentation
Debate (min. 3 speakers)

Keywords
Research Culture, Scientific Excellence, Scientific Quality, Research Assessment, Diversity, Equality, Inclusion

Bibliography

Additional information
Speakers listed have not yet been invited but will be approached if this abstract is selected for inclusion in the ESOF2024 programme.

Information about speakers
Number of speakers: 6 speakers

0221
Abstract number

Assessing excellence: debating the roles of qualitative evaluation and the responsible use of quantitative indicators in response to CoARA commitment 2

Morris James[1]

[1] Science Europe, Belgium

CoARA has provided significant momentum to the international reform of research assessment and reinforces ideas developed and debated over the past decade on the need for a broader understanding of research quality and excellence. The qualitative assessment of narrative-based descriptions of research contributions and competencies has become a good practice example that has animated developments, as reflected in the 2nd commitment of the Agreement for Reforming Research Assessment. This commitment, however, also mentions the 'responsible use of quantitative indicators' as a supporting tool.

Now in its 2nd year, CoARA member organisations are beginning to develop processes and tools to address the shared commitments. It is, then, timely to reflect upon the different and (seemingly) divergent approaches that can be taken to addressing each commitment. It is also important that, in the spirit of a community-based coalition, these different approaches are debated together with a view to establishing more coherence across approaches, built on the experiences and expertise of many.
In this session, examples of qualitative evaluation, the use of responsible quantitative indicators, and institutional approaches to CoARA commitment 2 will be presented. The pros and cons of each approach will be debated (supported by live audience polling), potential use cases according to assessment types will be scrutinised, and questions will be raised as to how these approaches can be combined and balanced as part of joint efforts to better capture and evaluate research quality and excellence. The objective of the session will be to collectively imagine model evaluation practices that are "based on qualitative evaluation, supported by the responsible use of quantitative indicators".

Form of presentation
Debate (min. 3 speakers)

Keywords
Research Assessment / Research Assessment Reform / CoARA / Quantitative Evaluation / Qualitative Evaluation / Research Culture / Research Quality / Research Excellence

Bibliography
https://coara.eu/agreement/the-agreement-full-text/

Additional information
4 out of 5 speakers have confirmed their interest in the session proposal. The Dutch Research Council (NWO) have also confirmed their interest but at the time of submission have not identified the speaker that they will propose.

Information about speakers
Number of speakers: 5 speakers

0228
Abstract number

SCIENCE DIPLOMACY AS AN INSTRUMENT TOWARDS ADDRESSING GLOBAL CHALLENGES

Pillay Vinny[1], du Toit Daan[1]

[1] International Cooperation, South African Department of Science & Innovation, South Africa

Science knows no borders, a multitude of actors are active in the promotion of science diplomacy. Through Government international cooperation, philanthropy, multilateral engagements, all contribute to the challenges of our time.

Given the multitude of challenges, health; climate change; energy or food security, collective action is needed. This panel will engage with leaders of philanthropy, Governments and Multilateral organizations provide a perspective on how science diplomacy is contributing solutions.

Speakers will include the Science Diplomacy Capital for Africa; the Hungarian Academy of Sciences; the Bill and Melinda Gates Foundation; Square Kilometre Array Observatory, Geneva Science and Diplomacy Anticipator (GESDA) ;the South African Government and the European Commission.
The Science Diplomacy Capital for Africa will highlight science collaboration across Africa towards leveraging and connecting technology innovation with humanity.

The BMGF will provide insights on how some of its work has served as engines of change in Governments through collaboration.

The Hungarian Academy of Sciences will share learnings from the World Science Forum and how this platform has contributed to science diplomacy.
Research infrastructures are endeavors in scientific research, pushing forward the boundaries of discovery. However, they also bring together a myriad of actors that coalesce to work together to solve a specific challenge. The SKAO will speak to some of the work done across partnerships that are being defined by the project and also contributing to the science diplomacy endeavor. GESDA hosts the Geneva Science and Diplomacy Anticipation Summit as well as provides science diplomacy training and will share how this interface has grown into a global community.

Form of presentation
Debate (min. 3 speakers)

Keywords
Science Diplomacy, Philanthropy, Partnerships for Impact

Bibliography
N/A

Additional information

Information about speakers
Number of speakers: 6 speakers

0244
Abstract number

Open Science practices – drivers for democracy

Billgren Askwall Cissi[1], Fleetwood Anna Maria[1], Irwin Alan[2], Manners Paul[3], Arias Rosa[4], Kleidt Cordula[5]

[1] the Swedish Research Council, Sweden
[2] Department of Organization , Copenhagen Business School, Denmark
[3] National Co-ordinating Centre for Public Engagement, United Kingdom
[4] Science for Change, Spain
[5] German Federal Ministry of Education and Research, Germany

Advances in levels of democracy over the last decades across the globe have been wiped out. Seven out of ten people live in autocracies, according to measurements by the Varieties of Democracy Institute. Conflicts, climate change, scarce and unevenly distributed resources add to the grand challenges the world is facing.

Science is key to finding sustainable solutions for society. How can we ease and broaden accessibility to research-based knowledge and make it available to everyone who needs it?

How are research and democracy connected? How can Open Science strengthen democratic developments and research-informed decisions, as well as counter ambiguous claims and disinformation? AI developments come with new challenges, but also with new opportunities.

Let's discuss how to make research an even more useful tool for democratic societal development, learn about relevant research and inspiring Open Science practices in different countries. And welcome to contribute with your own ideas and experiences!

Form of presentation
Debate (min. 3 speakers)

Keywords
Open Science, Democracy, Public Engagement, Citizen Science, Citizen Involvement, Responsible Research and Innovation, Co-creation

Bibliography
Evie Papada, David Altman, Fabio Angiolillo, Lisa Gastaldi, Tamara Köhler, Martin Lundstedt, Natalia Natsika, Marina Nord, Yuko Sato, Felix Wiebrecht, and Staffan I. Lindberg. 2023. Defiance in the Face of Autocratization. Democracy Report 2023. University of Gothenburg: Varieties of Democracy Institute (V-Dem Institute).

Additional information
The venue should ideally be equipped with round or square tables, each with 6-8 seats. After an introduction by the facilitator Cissi Askwall, five speakers will share their perspectives, followed by table discussions among participants. A host at each table will facilitate the discussion and make sure that the main points made will be submitted through mentimeter.com. In a plenary wrap up, the facilitator will share the mentimeter input, followed by final remarks by all speakers. The session will be documented and all participants will receive a copy. The results will also inform an ongoing Mutual Learning Exercise on Public Engagement in Research & Innovation.

Information about speakers
Number of speakers: 6 speakers

0245
Abstract number

Elevating Excellence: Navigating Practical Dimensions of Open Science

Galica Natalia[1], Ashley Kevin[2], Irima Alina[3], Kaczmarek Leszek[4], Morris James [5], Pałys Marcin [6], Athenodorou Andreas[7], Dietrich Mark [8], Marek Jiří [9], Ignatiuk Dariusz [10], Wilk Roksana[11], Pazik-Aybar Aneta[1]

[1] National Science Centre Poland, Poland
[2] Digital Curation Centre UK/Skills4EOSC , United Kingdom
[3] UEFISCDI/ Council for National Open Science Coordination, Romania
[4] European Research Council Scientific Council , Belgium
[5] Science Europe, Belgium
[6] European University Association, Belgium
[7] The Cyprus Institute/NI4OS Europe , Cyprus
[8] EGI Foundation, Netherlands
[9] EOSC CZ; Masaryk University, Czech Republic
[10] University of Silesia in Katowice; Polish Polar Consortium , Poland
[11] Cyfronet AGH University of Krakow, Poland

Open Science (OS) is defined as "a set of principles and practices that aim to make scientific research from all fields accessible to everyone for the benefit of scientists and society as a whole" (UNESCO, 2021). When life changes science, as seen in the case of the COVID-19 pandemic, OS aims to increase the responsiveness and impact of science through the provision of FAIR scientific outputs, enabling immediate, equitable, accessible, and reusable scientific evidence. Ultimately, promoting OS enhances the right to share scientific advancement, as stated in the Universal Declaration of Human Rights and the UN SDGs. Since the Budapest Initiative (2002), the transition of science into the open model has been underway. The EU is one of the driving forces behind this process, recognizing the need for comprehensive structural change at the level of supranational entities and states, as well as within the practices and attitudes of individual researchers (CoEU 2016, 2023). Both dimensions are essential to foster a new—open and transparent—research culture.

The goal of the panel is to provide a comprehensive view of the implementation process of Open Science, encompassing perspectives from various stakeholders, including EU institutions, governments, research funding and implementing organizations, and scientists. It will emphasize the impact of OS on scientific excellence, assessment, and its broader implications. Additionally, it will address the challenges posed to academia by digital transformation to the open model. The panel will attempt to answer the question of how to elevate scientific excellence by navigating the practical dimensions of Open Science, critically analysing the challenges and opportunities of the process.

Form of presentation
Debate (min. 3 speakers)

Keywords
Open Science, EOSC, FAIR, open data, Open Access, Citizens Science, research assessment, digital transformation

Bibliography
UNESCO Recommendation on Open Science (2021); Council Conclusions on the Transition towards Open Science System (2016); Council Conclusions on Research Assessment and Implementations of Open Science European Strategy for Data (2022); Polityka Naukowa Państwa (2022); European Research Council Guidelines on Implementation of Open Access to Scientific Publications and Research Data (2017);

Additional information

Information about speakers
Number of speakers: 6 speakers

0246
Abstract number

Trustworthiness of science and trust in science

Turska-Kawa Agnieszka [1], Galica Natalia[1]

[1] Social Sciences , University of Silesia in Katowice, Poland

The need for trustworthy and reliable science becomes evident when addressing both the long-term UN Sustainable Development Goals and unforeseen events, like COVID-19. The evidence-based decisions are increasingly expected in public and private spheres. Academia, with its focus on generating and disseminating of knowledge, places a responsibility on researchers to enhance society through scientific excellence, characterised with integrity, reproducibility, and reliability. However, the efficacy of existing research assessment systems is being questioned. The academic community is torn between meeting societal demands and quantitative metrics of scientific evaluation. These circumstances have led to an unprecedented scientific expansion, evidenced by 16.08 million research articles published in 2021 (ISI 2022). However, the rapidly increasing volume of research outputs raises concerns about their quality, as predatory journals, fraudulent publications, paper mills, and data misconduct continue to plague scholarly publishing worldwide. In 2023, this resulted in the retraction of 10,000 articles (Nature 2023). Unreliable peer-review processes and predatory journals further exacerbate the issue. Stabsel (FT 2023) claims that in China, publishing fraud may be estimated at a level between 2 and 20%. However, the problem also affects the universities in the US and the EU (FT 2023a). This compromises the reliability of research, eroding trust in science and the adequacy of scientific responses to life's challenges. It also inhibits the progress of science. The panel will present findings from the World Value Survey and European Social Survey on trust in science, followed by a discussion on addressing fraudulent practices to restore scholarly credibility and trust.

Form of presentation
Debate (min. 3 speakers)

Keywords
research assessment, research integrity, research reliability, research ethics, trustworthiness, trust in science, public trust

Bibliography
Noorden von R. (2023) Nature 624, 479-481 (2023) accessed online at: https://www.nature.com/articles/d41586-023-03974-8 Institute for Scientific Information accessed online at https://clarivate.com/the-institute-for-scientific-information on the 12th August 2023
Andrew J. (2023) Open science' advocates warn of widespread academic fraud. Financial Times, 1st August 2023, accessed online on the 01.08.2023 at https://on.ft.com/3Sig1BK.

Additional information
All panelists have already accepted the invitation to participate in the debate.

Information about speakers
Number of speakers: 4 speakers

0271
Abstract number

Fostering Scientific Excellence: Advocating the Integral Role of Technicians

Harris Catrin[1], Vere Kelly[1]

[1] Engineering, The University of Nottingham, United Kingdom

Advancements in scientific research and innovation emerge through collaborative endeavours, as teams of individuals with varied specialist knowledge and expertise work together to tackle complex challenges. These teams are not limited to academics, a whole community is vital to enabling and conducting research. Technicians, who hold fundamental technical knowledge and skills, play a pivotal yet often overlooked role. Their contributions to research are broad, from managing supplies, fixing equipment, and ensuring compliance with health and safety to preparing samples, running experiments and analysing data. Technicians' multifaceted contributions lay the groundwork for research and these tasks often cannot be completed by other members of the team.

Despite the pivotal role technicians fulfil in research, their contributions have historically been overlooked and unrecognised, often leading to them feeling invisible. This oversight can lead to limited opportunities and recognition for them, meaning they cannot always thrive in research environments. More broadly than their experiences in research environments, a loss of technical skills and expertise could be disastrous for research and so the challenges that technicians face need addressing.

The UKRI-funded TALENT Programme, the UK's Technician Commitment and the recently founded UK Institute for Technical Skills and Strategy are working to support technical staff through sector change initiatives and research. In this session, researchers will showcase these initiatives and present some of the key research themes, including the technical population, research culture, health and safety, and strategic technical leadership.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
Technicians; Innovation; Collaboration; Research; Team Science; Excellence; Culture; Skills; Recognition; Policy

Bibliography

Additional information

Information about speakers
Number of speakers: 3 speakers

0273
Abstract number

CoARA National Chapters – benefits and challenges of networking for the advancement of research assessment on a national level

Györffi Miklós[1], Kistryn Stanislaw [2], Balla Andrea[3], Dominguez Elena[4], Szepesvári Krisztina[1], Bolliger Isabel[5]

[1] HUN-REN HQ, Hungary
[2] Jagiellonian University, Poland
[3] Hungarian Academy of Sciences, Hungary
[4] Spanish National Research Council (CSIC), Spain
[5] Swiss National Science Foundation, Switzerland

The Coalition for Advancing Research Assessment (CoARA) Agreement is a European initiative with global ambition to change the assessment practices for research, researchers and research performing organisations. The development of new approaches, tools and methods are realized by members joining the work of one or more of the 10 CoARA working groups. In addition members have the opportunity to formulate a network based on nationality: the National Chapters (NC).

The activity of the NCs is one of the pillars of CoARA, together with the Working Groups, cascade funding and institutional action plans.

Any CoARA NC should represent at least half of the member organisations from the same country, and only one NC approved per country. NCs should define their own goals and tasks to be realised in two years. CoARA Secretariat supports NCs by publishing information on their missions, work plan and membership, also by disseminating their results and enhancing communication between different stakeholders of the group.

The diversity of the CoARA members is precisely reflected in the composition of NCs.
The aim of the session is to provide a roundtable debate on the benefits identified and challenges emerged during the process of the establishment of the NC, what aims these NCs have set, how they would integrate within the general targets of CoARA and NCs can support these targets, what activities they develop and envisage to plan, what perspectives can be identified at national level, as well as what subject coverage might add to the activity of CoARA Working Groups.

Form of presentation
Debate (min. 3 speakers)

Keywords
CoARA, National Chapter, reform, research assessment, networking

Bibliography
Coalition for Advancing Research Assessment
https://coara.eu/agreement/the-agreement-full-text/

Additional information

Information about speakers
Number of speakers: 4 speakers

0371
Abstract number

The 2022 Manifesto for Early Career Researchers and its impact

Andler Martin[1]

[1] Initiative for Science in Europe, France

In September 2022, following the June 2022 Gago Conference, ISE published the Manifesto "Europe supports early research careers and stimulating research workplaces" calling for a major initiative on research careers. The Manifesto was endorsed by 28 European, 32 national organisations and hundreds of individual researchers.

It was handed over to Commissioner Gabriel on 10/01/2023. It made four main recommendations:

1. implementing a Europe-wide monitoring of young researchers' situation,
2. improving research careers and working conditions in Research Performing Organisations, Research and Technology Organisations and in Higher Education Institutions,
3. enhancing research careers in the third sector, including NGOs and governmental organisations,
4. involving national funding agencies in cooperation with the European Commission.

What is at stake is the capacity to attract and retain in the EU the best talent in research careers, including women and researchers from EU-15 and associated countries, and hence Europe's capacity to hold its rank as a top knowledge and innovation society.

The European Council adopted on December 8, 2023 a European framework to attract and retain research, innovation and entrepreneurial talents in Europe; it included an update of the existing "Human Resources Strategy for Researchers" as well as a plan to establish a "Research and Innovation Careers Observatory" (ReICO) through an agreement with the OECD. ISE welcomed both the Recommendation and the REICO plan, but indicated that they had shortcomings.

The goal of the proposed debate session is to discuss the issues that were the focus of the Manifesto, the recent policy initiatives by the Commission and the involvement of stakeholder organisations to improve researchers' careers.

Form of presentation
Debate (min. 3 speakers)

Keywords
Research Careers, Early Career Researchers, Precarity, Mental Health, EU attractivity, Manifesto

Bibliography
Impact of precarity on researchers' mental health, REMO Cost Action, 2023
Reducing The Precarity of Academic Research Careers, OECD Policy Papers, May 2021 No. 113.
The aftermath of the pandemic for early career researchers in Europe, Eurodoc report, 2020.
MCAA 2020 Survey on Covid 19 impact
Edyta Swider-Cios, Katalin Solymosi, Mangala Srinivas, Why science needs a new reward and recognition system. (2021) Nature 595 (7869) 751-753.
Jean-Pierre Bourguignon, Act Now or Face a Lost Generation, December 2021

Additional information

Information about speakers
Number of speakers: 6 speakers

0419
Abstract number

How to achieve impactful science engagement? Findings from the Nordic-Baltic Region

Pilt Ebe[1], Hagardt Maria[2], Lahtonen Suvi[3], Wikström Janne[4], Karlsson Jonni[5]

[1] Faculty of Social Sciences, University of Tartu, Estonia
[2] Vetenskap & Allmänhet, Sweden
[3] The Committee for Public Information, Finland
[4] HanaAcademy, Hanaholmen, the Swedish-Finnish Cultural Centre, Finland
[5] Open Science secretariate, The Finnish Learned Societies, Finland

Increased involvement and engagement of societal actors in research may help to strengthen the exchange between science and society and combat mistrust and disinformation. Knowledge on how to engage society in science is therefore crucial to build a science literate society. But how do science and researchers successfully engage with the public, and how are the values and interests of the society taken into account? This roundtable session will share insights of scicomm, public attitudes to research and best practices of public engagement activities across the Nordic-Baltic region.

The aim is to increase the understanding and relevance of science society exchanges and to help researchers, policy makers and science communication professionals to develop and design effective science engagement activities and initiatives, thus building trust in society. Further, we want to enable discussions with the participants on how to implement public engagement as a tool to enhance research, increase scientific excellence and to strengthen trust between science and society.

Short introductory presentations on recent industry reports, innovative citizen science and scicomm activities will be followed by open round table discussion where the participants will be actively invited to share experiences and viewpoints from their contexts: What kind of guidelines exists? Which are the best practices? What is further needed to increase the science - society exchange ? The findings will be discussed in plenary and collated to create a guideline with key factors for impactful science engagement to spur trust in science.

Form of presentation
Debate (min. 3 speakers)

Keywords
scientific excellence, scientific visibility, social impact of research, citizen science, scientific policy, open science

Bibliography

Additional information

Information about speakers
Number of speakers: 5 speakers

0445
Abstract number

Navigating the science for policy landscape: insights, collaboration, and societal impact

Gawda Agnieszka[1], Melchor Fernandez Lorenzo[2], Gadzina-Kołodziejska Agnieszka[2], Piirsoo Marko [3]

[1] Research & Policy, Polonium Foundation, Poland

[2] Science for Democracy and Evidence Informed Policy Making Unit, European Comission's Joint Research Center, Belgium

[3] Estonian Research Council, Estonia

In a world where policymakers impact millions of Europeans, how can they ensure laws enhance well-being, and where can they find reliable information? This session, organized by the Polonium Foundation and the European Commission's Joint Research Centre (JRC), aims to explore these questions, providing insights into national Science-for-Policy ecosystems and the impact of science on society.
The JRC is committed to making European policies grounded in science, through independent, evidence-based knowledge, and an active role in the EU policymaking process. Yet the JRC also supports EU Member States building their capacity for evidence-informed policymaking with the analysis of their national science-for-policy ecosystems and suggestions for national reforms.

The Polonium Foundation, a non-profit dedicated to facilitating brain circulation and strengthening the Polish research ecosystem, underscores the importance of international collaboration in bridging the gap between science and policy.

Following the December 2023 Council Conclusions on the role and impact of science in policy, this session is timely to share how to build institutional capacity to strengthen evidence-informed policymaking and increase democratic resilience. We will discuss the successful integration of science for policy through key reforms in France, Estonia, and the Czech Republic, facilitated by the JRC. Finally, the Foundation will provide a brief for Polish institutions, summarizing the discussion and recommendations.
The session aims to elevate public awareness, inform policymakers and scientists, and inspire the creation of boundary organizations that integrate science and policymaking. Through better science for policy, science can increase its societal impact in tackling global challenges.

Form of presentation
Debate (min. 3 speakers)

Keywords
science for policy, science impact, global challenges, evidence-based decision

Bibliography

Additional information
If possible, we kindly ask the organizers to consider scheduling this session for the 12th or 13th in the morning due to the panelists availability

Information about speakers
Number of speakers: 6 speakers

0447
Abstract number

Personal and systemic responsibility for developing resilience in research workplaces

Cahill Brian[1], Solymosi Katalin[2], Lewandowska Aleksandra[3], Kismihók Gábor [4], Metcalfe Janet [5], Björnmalm Mattias[6], Day Emma[5]

[1] Learning and Skills Analytics / Governing Board, Leibniz Information Centre for Science and Technology / EuroScience, Germany

[2] Eötvös Loránd University / Young Academy of Europe, Hungary

[3] Board Member| Research Assistant and Ombudsperson for Doctoral Candidates Rights, EURODOC | Uniwersytet w Białymstoku, Poland

[4] Leibniz Information Centre for Science and Technology, Germany

[5] Vitae, United Kingdom

[6] General Secretary, CESAER, Belgium

Recent studies have indicated a higher likelihood of early-career researchers developing mental illnesses compared to their peers. Completion rates of PhD programs in many European countries are notably low. The ReMO COST Action has increased awareness of mental health issues within academia, evaluated the evidence base for best practices, and successfully advocated for the inclusion of mental health in the recently approved European Charter for Researchers. The Human Resources Strategy for Researchers (HRS4R) will now incorporate mental health services into the accreditation process necessary for obtaining EU research funding. This session will examine which best practices can serve as a model for research institutions in Europe.

Addressing researcher mental health often involves a stronger emphasis on personal responsibility and training to assist individuals in addressing personal development issues and adopting professional work practices. While these efforts are valuable, it is insufficient to solely rely on individuals to develop the resilience needed to cope with and overcome systematic threats to their mental well-being. There is a clear need for research institutions, research funders, and policymakers to assess their ability to facilitate systemic change in our research workplaces. This may include ensuring sustainable academic career paths, reforming research assessment processes, implementing best practice guidelines (such as those pertaining to supervision, bullying, research integrity, and whistleblowing), reducing the stigma surrounding mental health, and enhancing levels of professional supervision within the research environment. This session will explore how we can ensure that doctoral education provides greater value for all stakeholders.

Form of presentation
Debate (min. 3 speakers)

Keywords
mental health, mental wellbeing, resilience, supervision, research careers, doctoral education, best practices, academia

Bibliography
Katia Levecque, Frederik Anseel, Alain De Beuckelaer, Johan Van der Heyden, Lydia Gisle. 2017. Work organization and mental health problems in PhD students. Research Policy 46 (4) 868-879. https://doi.org/10.1016/j.respol.2017.02.008.

Gábor Kismihók, Brian Cahill, Stéphanie Gauttier, Janet Metcalfe, Stefan T. Mol, Darragh McCashin, Jana Lasser, Murat Güneş, Mathias Schroijen, Martin Grund, Katia Levecque, Susan Guthrie, Katarzyna Wac, Jesper Dahlgaard, Mohamad Nadim Adi, & Christina Kling. (2021). Researcher Mental Health and Well-being Manifesto. https://doi.org/10.5281/zenodo.5559806

Kismihók, Darragh McCashin, Stefan T. Mol, Brian Cahill. (2022). The well-being and mental health of doctoral candidates. European Journal of Education, 57(3), 410-423.

Additional information

Information about speakers
Number of speakers: 5 speakers

0524
Abstract number

The digital future of science and higher education – the cutting-edge solutions developed by experts at the National Information Processing Institute (OPI PIB)

Cieślikowski Krzysztof[1]

[1] People of Science, Poland

This session explores the latest advancements in the digital transformation of Polish science and higher education. It focuses on the role of the state acting as the supplier and regulator of digital services for the science and higher education sectors, with the use of management systems for scientific information (CRIS) and education support. The presentations to be delivered at the session highlight OPI PIB's initiatives to ensure high standards of digital services. Challenges, such as data security, availability, equality of access, and integration of digital technologies with the teaching and learning processes, will also be discussed. The exploration of best practices will grant participants a more profound insight into the array of models and approaches to ensure digital services for education and to identify potential pathways for development.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
digital future, science, higher education

Bibliography

Additional information

Information about speakers
Number of speakers: 4 speakers

0527
Abstract number

Open science in Poland – an OPI PIB's analysis and presentation of the RAD-on system

Łobodzińska Anna[1]

[1] OPI, Poland

This session focuses on the research findings related to open science practices from the perspective of scientific institutions and on the role of the RAD-on portal in the implementation of the open science concept. Researchers at the National Information Processing Institute on the role of and tasks assigned to the open science staff – a new group of experts who develop new solutions and participate in processes and initiatives for open science. At the session, accomplishments and challenges pertaining to the implementation of the open science concept in Poland will also be discussed. The presentations scheduled for the session will not only highlight achievements but also help identify areas that require further action for the effective development of the open access policy in Poland.
Additionally, experts will present RAD-on, a system that provides reliable data on science and higher education in Poland. They will discuss how government, research institutions, and nongovernment organisations could utilize RAD-on in decision-making processes. By examining institutional representatives' experiences with open access and by demonstrating the capabilities of the RAD-on portal, participants will gain insights into the current landscape and challenges related to the implementation of open access rules for scientific knowledge in Poland.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
open science, RAD-on system

Bibliography

Additional information

Information about speakers
Number of speakers: 3 speakers

0531
Abstract number

Science for policy: in the service of society

Sierra Leonor[1]

[1] Ciencia en el Parlamento, Spain

Evidence-informed policy-making is widely discussed across Europe and upheld as an ideal to work towards. By taking into account evidence and science, we hope to support the decision-making process and develop public policies that serve citizens better. But how do we go about creating structures and mechanisms that allow for the input of evidence to policy-makers? How do we ensure that these processes do indeed serve society-at-large? We will also discuss how do we involve society to both inform the creation of these mechanisms and also voice why science for policy is not something that matters only to policy-makers and scientists.

Form of presentation
Debate (min. 3 speakers)

Keywords
science for policy, society, policy-making, science

Bibliography

Additional information

Information about speakers
Number of speakers: 4 speakers

0532
Abstract number

The importance of rewarding good research practices

Susi Toma [1]

[1] University of Vienna & Coalition for Advancing Research Assessment, Austria

Open Science has been recognized as a crucial means to improving the transparency, reproducibility and reusability of research. Current forms of research assessment have however become the defining problem for academia, with a whole host of detrimental effects. For the global research system, this fuels the crises of reproducibility, hinders the much-needed transition to open science, and upholds a costly and outdated publishing system. On an individual level, the pressure to conform to one-sided and metricized forms of assessment contributes to stress, burnout and, most tragically, to disvaluing of the varied talents and contributions that people could bring to research. Although these problems have been long recognized, the systemic nature of the dilemma has stymied reform – until the Coalition for Advancing Research Assessment (CoARA). Now, diverse research communities finally have a real opportunity to re-evaluate what they reward, to focus on what is truly important, and to ensure that the incentives for individuals are aligned with what is good for research as a whole. As a key component to these reforms, Open Science is simply better science, and it needs to be recognized as such.

Form of presentation
Lecture (1 speaker)

Keywords
#keynote_speaker

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0534
Abstract number

The Multiple Lives of Excellence: Diversifying Open Science

Leonelli Sabina [1]

[1] University of Exeter, United Kingdom

Open Science is often presented as a solution to the multiple problems afflicting contemporary scientific practices, ranging from lack of reproducibility to dubious review procedures, inefficient communications and lack of transparency around methods and circumstances of research. Much of the debate around Open Science and how it should be implemented verges, however, on the natural sciences – and particularly physics and biomedicine – as a reference point and model for research practice. In this talk, I challenge this assumption, propose an alternative understanding of the ideas of openness and transparency, and suggest ways to value a much wider diversity of research settings and domains – including agricultural research, marine and environmental science, and the humanities, arts and social sciences - as key interlocutors and precious models for Open Science implementation.

Form of presentation
Lecture (1 speaker)

Keywords
#keynote_speaker

Bibliography
Leonelli, S. (2023) Philosophy of Open Science. Cambridge University Press, available Open Access. https://www.cambridge.org/core/elements/philosophy-of-open-science/0D049ECF635F3B676C03C6868873E406

Additional information

Information about speakers
Number of speakers: 1 speaker

0537
Abstract number

Research with Ukraine – best practice for more intensive cooperation

Girod Matthias[1]

[1] EuroScience, France

Following the 'Ukraine Recovery Conference 2024' on 12 June in Berlin, which will be attended by Federal Minister Stark-Watzinger and Minister Wieczorek, this panel will identify best practices for strengthening cooperation.
Russia's aggression against Ukraine is also affecting Ukrainian science with increasing force. Germany and Poland stand firmly on Ukraine's side. Both Germany and Poland support Ukraine in its transformation into a modern, research-intensive scientific system through targeted cooperation projects. In this way, both countries are making an important contribution to the reconstruction of Ukraine.
With regard to Ukraine, there is also great potential for cooperation between Germany and Poland.

Four thematic areas are of particular importance:

- The best possible reception for Ukrainian students and scientists.
- Building a close partnership for integration with the EU so that Ukraine is more integrated in cross-border knowledge flows and finds its place in the European Research Area.
- Supporting the reconstruction of the Ukrainian science system to overcome the effects of the war, increase opportunities and create better framework conditions for research and innovation.
- Deepening of scientific cooperation so that we can jointly address global challenges in regards to climate, energy and health.

Form of presentation
Debate (min. 3 speakers)

Keywords
tbc

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

0538
Abstract number

Life changes Katowice – Katowice challenges science

Budzanowska Anna[1]

[1] Uniwersytet Śląski w Katowicach, Poland

The history of Katowice and Silesia has been told many times. There have been tales of a mining region, of people resilient to myths, and of a nation of hard work. Today, we can retell this story once again, uncovering new facts.

The pretext is the celebration of the European City of Science 2024 – a prestigious title that extracts from the prevailing blackness of coal a steel color of modern machines, pale blue laboratory test tubes, reforested green areas, forged from human passions and dreams.

The authorities of Katowice, the academic community of Silesian universities, and the residents will showcase how they are seizing their opportunities, becoming the heart of the most modern industrial part of Central Europe. In Europe, it has been recognized above all that in Katowice, science and education have become a new local industry, without radically breaking with the mining and industrial identity. On the contrary – the legacy of technical thought and respect for the culture of work have already built an innovation culture that attracts the most talented.

The idea of the opening panel of the ESOF2024 conference is a discussion on further strengthening social and economic transformations through science. And its goal is to promote information about the city's innovative potential and interest the international community in local challenges.

Form of presentation
Debate (min. 3 speakers)

Keywords
tbc

Bibliography

Additional information

Information about speakers
Number of speakers: 3 speakers

0539
Abstract number

The Path to Scientific Excellence - in search of an ERC Grant

Daszykowski Michał [1], Matuszek Dawid [1]

[1] University of Silesia in Katowice, Poland

This session will focus on a discussion with the recipients of the prestigious ERC (European Research Council) grants. The aim of the session is to introduce the participants of the conference to the specifics of scientific research that leads to obtaining this distinction, as well as to present the key elements of a scientific biography that are conducive to success in ERC competitions.

Form of presentation
Debate (min. 3 speakers)

Keywords
ERC, European Research Council, grants, Science funding

Bibliography

Additional information

Information about speakers
Number of speakers: 4 speakers

0540
Abstract number

The future of European universities

Pietrzykowski Tomasz[1], Pawełczyk Marek [2], Matusz Patrycja [3], Sawicka Zofia [4], Jurkowska-Zeidler Anna [5]

[1] Uniwersytet Śląski w Katowicach, Poland
[2] Silesian University of Technology (EURECA-PRO), Poland
[3] University of Wrocław (Arqus), Poland
[4] Polish National Agency of Academic Exchange, Poland
[5] University of Gdańsk (SEA-EU), Poland

European universities play a key role in the European Commission's efforts to strengthen the dimension of European research and higher education. The alliances aim to develop and share common, long-term, structured, sustainable, and systemic cooperation in education, research, and innovation and to create European inter-university campuses where students, staff, and researchers can enjoy seamless mobility and share new knowledge. According to European Commission documents, alliances have two main goals:

1. Promoting common European values and identity by building a new generation of Europeans who can collaborate and work in a multicultural and multilingual environment across borders and academic disciplines and
2. Significantly improving the quality, performance, attractiveness and international competitiveness of European higher education institutions through the use of innovative methods of teaching. It has been five years since the European Commission started encouraging universities to build European academic unions to remove barriers to the flow of students, employees, and ideas. It is time to question the future of European universities and their role in the changing world.

Form of presentation
Debate (min. 3 speakers)

Keywords
European Commission; research, education, universities

Bibliography
Daniela Craciun, Frans Kaiser, Andrea Kottmann, Barend van der Meulen, The European Universities Initiative: first lessons, main challenges and perspectives, European Union, 2023;\\\\\\\\\\\\\\\\nDominik Antonowicz, Marta Jaworska, Jarosław Domalewski, Krzysztof Wasielewski, Anna Pokorska, Rafał Muster, Anna Budzanowska, Agnieszka Anielska, Alicja Gołata, Polskie uczelnie w Uniwersytetach Europejskich, Fundacja Rozwoju Systemu Edukacji, Warszawa 2024.

Additional information

Information about speakers
Number of speakers: 4 speakers

0545
Abstract number

The Coalition to Advance Research Assessment National Chapter Poland roundtable debate

Budzanowska Anna[1], Zawadzka Danuta[2], Kristyn Stanisław[3]

[1] University of Silesia, Poland
[2] TU Koszalin, Poland
[3] UJ, CoARA National Chapter, Poland

The Coalition to Advance Research Assessment (COARA) is an initiative to reform research assessment practice in Europe. COARA task forces have been set up in Poland to promote best practices. The meeting aims to deepen the discussion on the involvement of stakeholders: universities, research institutes, funding organisations researchers, etc. The aim is to develop policy recommendations and guidelines for scientific and educational institutions in CEE based on COARA principles by analysing and improving new evaluation methods at selected universities.

The organisers of the meeting focus on cultural change and openness to CoARA reform processes.

Form of presentation
Debate (min. 3 speakers)

Keywords
evaluation, new approach, assessment, higher education and science

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

0546
Abstract number

Balancing public mission and participation: The role of higher education in effective public policy

Budzanowska Anna[1]

[1] University of Silesia, Poland

Higher education and science are a natural ecosystem for shaping effective public policies imbued with important social values and democratically legitimized solutions that create a "common knowledge". The main objective of the panel is to identify the place and role of participation in the process of generating ‘generalized knowledge through the higher education and science sector’, which forms the basis for the design and implementation of public policy goals. The panel will also show to what extent the participation of representative bodies is used in the processes of shaping and implementing public policy in Poland. The basic hypothesis assumes that without a balance between the public mission and knowledge participation in the production of ‘communitized knowledge', the quality of public policy will dramatically decrease both in terms of economically understood efficiency and civic legitimacy.

Form of presentation
Debate (min. 3 speakers)

Keywords
Higher Education and science, Public Policy, Participation, Democratic Legitimacy

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

0547
Abstract number

The human being in the world of the algorithm and new worlds - fears and hopes for the future

Mazurek Maria [1]

[1] Holistic Think Tank , Poland

Can artificial intelligence and space be a threat to humanity? How can we remain human in a world full of machine technologies and new worlds? And what exactly distinguishes us from robots? A panel discussion about humanistic values in a changing world. We will reflect on what the development of artificial intelligence means for medicine, art and education and - in a broader sense - for society. We will discuss fears and hopes for the future and what we can do to avoid worst-case scenarios. We will discuss the question of social responsibility, honesty and morality in the context of the technological revolution. And finally, we will try to answer the question: What does it mean to be human today? And what will it mean tomorrow?

Form of presentation
Debate (min. 3 speakers)

Keywords
humanism, AI, space, education, science, man, society, life

Bibliography
“Myślenie. Podręcznik użytkownika”, Bartosz Brożek, Copernicus Center Press, 2016 \\\\n“Pień mózgu. Przybliżenie aspektów medycznych dzięki modelowaniu biocybermedycznemu”, Wydawnictwo Naukowego Uniwersytetu Mikołaja Kopernika, 2017 \\\\n“Sieci neuronowe. Włodzimierz Duch, Ryszard Tadeusiewicz”, Akademicka Oficyna Wydawnicza Exit, 2000 \\\\n“Kod kreatywności. Sztuka i innowacja w epoce sztucznej inteligencji”, Copernicus Center Press, 2022 \\\\n“Wartości w życiu i edukacji człowieka”, Janusz Gajda, wydawnictwo Adam Marszałek, 2013\\\\n\\\\n

Additional information

Information about speakers
Number of speakers: 6 speakers

0551
Abstract number

Mapping science: by humans, by AI, and in cooperation

Lamża Łukasz[1]

[1] University of Silesia, Poland

When humans attempt to map scientific knowledge, the result is invariably organized and well-ordered, but highly unrealistic. In the past 30 years, owing mostly to the migration of science to the Internet, algorithms are increasingly used to map science. These, in turn, usually lead to realistic, but chaotic graphs, difficult to grasp by humans. Is there a third way? Most importantly, can recent advances in natural language processing lead to a map of science which is both realistic and human-friendly?

Form of presentation
Lecture (1 speaker)

Keywords
scientometrics; big data; scientific disciplines; citation analysis; philosophy of science

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

Changes Within Scientific Excellence

Poster Sessions

0132
Abstract number

Connecting key actors (government, university, industry, society) in order to obtain significant results in engaging early career researchers - BetterLife for all communities

Andrejevic Panic Andrea[1], Mulic Danica[1], Racic Gordana[2], Jesic Jelena[1]

[1] Faculty of business economy, University Educons, Serbia
[2] Faculty of ecological agriculture, University Educons, Serbia

Examining the university's role as a catalyst for community engagement, knowledge dissemination, and awareness campaigns to promote sustainable practices beyond the campus borders. With a numerous network of contacts with local self-governments, the industry, and civil society, the University Educons has been strengthening and expanding the network for more than a decade that forms an ecosystem for supporting young researchers, and conducting basic and applied research, improving conditions in local self-governments and civil communities. The general objective of the project from Horizon Europe “Bringing Excellence to Transformative Engaged Research in Life Sciences through Integrated Digital Centres” — short BETTER Life — is to establish the EU Digital Centre of Excellence for Socially Engaged Research in Life Sciences (hereinafter EU BETTER Life Centre). The Centre will be an inter-institutional support structure for developing capacities of early career researchers (PhD students and researchers not yet fully independent) (hereinafter ECR) aiming to foster socially engaged research (SER) to tackle societal challenges in their surrounding ecosystems while consolidating the EU BETTER Life Centre as a world reference in planning, supporting, and implementing SER in life sciences. EU BETTER Life Centre addresses the issue of research engagement and collaboration as a key element to generate wide impact in the surrounding ecosystems and diverse stakeholders. EU BETTER Life Centre addresses the issue of research engagement and collaboration as a key element to generate wide impact in the surrounding ecosystems and diverse stakeholders.

Form of presentation
Poster presentation

Keywords
early career researchers, knowledge management, quadruple helix model, sustainable development, innovation management

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0185
Abstract number

AN OVERVIEW OF ENGLISH MEDIUM-INSTRUCTION (EMI) IN HIGHER EDUCATION IN POLAND. STUDENTS' AND ACADEMIC TEACHERS' PERSPECTIVE

Papaja Katarzyna[1]

[1] Institute of Linguistics, University of Silesia in Katowice, Poland

The requirements of 21st Higher Education created within the framework of Bologna Process and the importance of the English language in the global market led to the internationalization of Higher Education (HE). In recent years, Universities have been introducing English as the language of teaching and learning, stressing the importance of quality teaching and effective practice.

The main aim of the presentation is to present the overview of EMI in Higher Education in Poland. Secondly, it aims at discussing the findings of the study concerning perceptions of EMI held by Polish students and teachers at the university level who are involved in this type of education. The investigation involved 94 students and 41 teachers from IHEs in different parts of Poland. The data were collected by means of a questionnaire that included four open-ended items that were the same for the student and teacher participants, with minor differences in wording reflecting their respective roles.

The findings provided a number of interesting insights into the reasons for choosing EMI environments (e.g., language- or career-related issues), the benefits (e.g., development of language skills) and drawbacks of such programs (e.g., teachers' inadequate preparation to deliver content in a foreign language) as well as the ways in which they could be improved upon.

Form of presentation
Lecture (1 speaker)

Keywords
EMI, Higher education, students\\\' perspective, academic teachers\\\' perspective, quality education, benefits, drawbacks

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0345
Abstract number

Urban Labs: Cross-sectoral cooperation and scientific institutions involvement in addressing contemporary urban challenges through penta helix conception

Malicka-Skrzek Sara[1], Verešová Dominika[1]

[1] Faculty of Architecture, Politechnika Śląska, Poland

Urban lab is an umbrella term for a city tool dealing with the research and testing of solutions to urban issues. Its operation should consist of 4 basic phases; namely research of urban issues and challenges, development of solutions, small scale solution testing and implementation of already tested solutions into real practice. The functioning of urban labs is based on the concept of penta helix as a model for cross-sectoral cooperation, which includes, among others, scientific institutions. The result of such cooperation should be innovative solutions responding to contemporary urban challenges.

As part of the systematic literature review, a list of urban labs was created. Based on the data collected from a short questionnaire sent to these urban labs, we obtained valuable information about projects' participants and their intersectoral collaboration. In order to support the obtained information with concrete examples, we present case studies from polish urban labs. Based on the knowledge gained and the data collected, we pose provocative questions: Could penta helix urban lab conceptions really work in the context of addressing contemporary urban challenges? Is there a role for academic institutions in this model of cooperation?

Form of presentation
Poster presentation

Keywords
urban laboratory, urban lab, scientific institutions, cross-sectoral cooperation, concept of penta helix cooperation, contemporary urban challenges, participation

Bibliography
B. Piziak , M. Bień , W. Jarczewski , K. Ner, 2023. Exploring Urban (Living) Labs: A Model Tailored for Central and Eastern Europe’s Context, Sustainability, vol. 15(16), 12556. DOI: 10.3390/su151612556
C. Scholl, M. Agger Eriksen, N. Baerten, E. Clark, T. Drage, M. Essebo, T. Hoeflehner, J. de Kraker, N. Rijkens-Klomp, A. Seravalli, A. Wachtmeister, & P. Wlasak, 2017. Guidelines for Urban Labs.
Calzada, 2020. Democratising Smart Cities? Penta-Helix Multistakeholder Social Innovation Framework Smart Cities 3, no. 4: 1145-1172. DOI: 10.3390/smartcities3040057

Additional information

Information about speakers
Number of speakers: 2 speakers

0381
Abstract number

Empowering Researchers: Navigating Career Uncertainties

Guerth Marion[1], Boehm Sally[1]

[1] Career Service & Alumni Relations, DKFZ German Cancer Research Center, Germany

Navigating the plethora of career options for Early Career Researchers (ECR) within academia and beyond can be overwhelming, especially as new opportunities emerge, evolve, and disappear at a rapid pace. It is easy to feel adrift in this sea of change, losing sight of core values and motivations. Without a clear compass, ECR risk being swept along passively, rather than charting their own course proactively. This also potentially affects their mental health, resulting in feelings of stress and uncertainty.

Recognizing this challenge, we offer a structured approach involving an interplay of an online tool CareerCheck [1], individual career guidance and micro-mentoring through our Alumni Network. This comprehensive support is tailored to each individual's needs, helping them maintain clarity and direction in their career paths while mitigating negative impacts on wellbeing. CareerCheck utilizes Alumni career paths for insights and offers self-assessment and planning tools, encouraging ECR to proactively drive their careers. Mentorship does play a vital role, including Alumni's contribution as guides for diverse career paths. We emphasize micro-mentoring through informational interviews, supporting ECR in exploring various career options while staying aligned with their personal values.

We recognize the role of Alumni networks in research organizations, impacting beyond mentoring to enhance visibility, reputation, and societal influence. Committed to nurturing these networks in line with LeNa [2], we see our Alumni as vital ambassadors, extending our reach in scientific, industrial, and political spheres. By actively engaging, we align career development with overall sustainability, aiming to foster discussions on sustainable scientific career advancement within society.

Form of presentation
Poster presentation

Keywords
scientific excellence; scientific visibility; social impact of research; brain drain; rankings of higher education institutions; mentoring; careers; mental health; education; alumni network

Bibliography
[1] Cheong, C., Gürth, M., Janssens, B. Best Practice Example of Career Support Platform for Early Career Researchers. Personal in Hochschule und Wissenschaft entwickeln 2, 2022, http://tinyurl.com/5fa84dmk

[2] LeNa Nachhaltigkeitsmanagement für außeruniversitäre Forschungseinrichtungen http://tinyurl.com/47rt828f

Additional information

Information about speakers
Number of speakers: 2 speakers

0389
Abstract number

From Vision to Action: Alliance4Life's Path to Closing the R&I Gap

Jarour Ester[1]

[1] Director´s Office, CEITEC Masaryk University, Czech Republic

Alliance4Life is a bottom-up initiative of twelve leading life science institutions and universities from eleven countries of Central and Eastern Europe that aim at closing the divide in European health research and innovation.
Large-scale ESIF investments into the life science infrastructure alone could not close the R&I gap in Europe so far, financial support needs to be complemented by measures on research and innovation strategy at institutional and national levels. Institutions gathered in this Alliance believe that improving governance and managerial practices as well as transforming institutional culture will enhance efficiency and increase the return on investment
Members of the Alliance4Life joined forces in 2017 and successfully implemented their first H2020 project in 2018 and 2019. The members are currently finishing their second project financed by Horizon Europe focusing on investing in the career development of researchers, cultivating a supportive working environment to attracting global talent. The members have embraced the imperative of knowledge sharing at both national and international levels, with the aim to drive positive change accross the research landscape in the CEE region.
The members of the Alliance4Life contribute also to science policy and to shaping priorities at national and EU levels, especially with insight suggestions on how to increase participation in the Framework Programme, by providing recommendations and feedback on the new ERA and WIDENING programme.
This session should reflect our achievements, share insights gained from our collective experiences and inspire others to foster research excellence in Central and Eastern Europe.

Form of presentation
Lecture (1 speaker)

Keywords
research, life sciences, innovation, widening, collaboration, culture change, excellence, innovation gap, training, skills development, knowledge sharing

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

Cultural Identity and Societal Transformation

Lectures, Panels, and Short Presentations

0014
Abstract number

Literature as a (safe) site of transcultural encounters

Drong Leszek[1]

[1] Institute of Literary Studies, University of Silesia in Katowice, Poland

Literature as a (safe) site of transcultural encounters

What all the speakers share is a keen interest in the potential of literary narratives, including fiction and non-fiction, to induce transformations in various communities, including target readerships of regional or national literatures. As deans, vice-presidents or research directors, most of the speakers have also held significant executive positions in their academic institutions. Therefore, the debate will provide us with an opportunity to discuss the role of those institutions in promoting cultural values and shaping the literary cultures in the regions, cities or states the speakers come from.

The debate will approach literary narratives as identity projects created in various contexts of nationality, regional identity, ethnic minorities, borderland identities and their manifestations. The key question we will address concerns conditions and opportunities to effect transformations in our ideas of who we are and how we relate to our immediate social environment. We will cover several interrelated contexts: borderland literature and culture, minority issues reflected in regional fiction and egodocuments, collective memory and counter-memory in historical novels, othering and transcending one's identity in contact with alien cultures and literatures (i.e., Irish studies). Each of the speakers will highlight the above-mentioned issues with reference to their own areas of expertise to arrive, eventually, at general conclusions concerning transcultural encounters enabled by literary representations of reality and their effect on our attitudes and performances as members of what Benedict Anderson calls 'imagined communities.'

Form of presentation
Debate (min. 3 speakers)

Keywords
social impact, regional literature, borderland identities, transculturality, ethnic minorities

Bibliography
1. Welsch, V. (1999), 'Transculturality – the Puzzling Form of Cultures Today' in M. Featherstone and S. Lash (eds.), Spaces of Culture: City, Nation, World. London: Sage, 194-213.
2. Burke, P. (2009), Cultural Hybridity. Cambridge: Polity Press.
3. Furedi, F. (2021) Why Borders Matter: Why Humanity Must Relearn the Art of Drawing Boundaries. New York: Routledge.
4. Kramsch, O., K. Aparna and H. Degu (2015), 'Languaging the Borders of Europe', Social Sciences, vol. 4, no. 4: 1-22.
5. Scott, J. W. (2012), 'European Politics of Borders, Border Symbolism and Cross-Border Cooperation' in T. M. Wilson, and H. Donnan (eds.): A Companion to Border Studies. Chichester: Wiley-Blackwell, 83-99.

Additional information

Information about speakers
Number of speakers: 5 speakers

0160
Abstract number

The impact of green transition on the labour market

Milivinti Alice[1], Ahi Jülide Ceren [1], Gürcan Önder [1], Andersen Henrik Lindegaard[1], Drobniak Adam[2], Polko Adam[3]

[1] Health and Society, NORCE Norwegian Research Centre AS, Norway
[2] Strategic and Regional Studies, Uniwersytet Ekonomiczny w Katowicach, Poland
[3] Spatial and Environmental Management, Uniwersytet Ekonomiczny w Katowicach, Poland

NORCE, Norwegian Research Centre, presents a series of related speeches on the impact of an ageing population and green transition on the labour market. The session will explore how we can build evidence for supportive policies for a just and inclusive transition centred on social well-being and resilience. The panel will first set the scene through a history of how work has been intertwined with social and technological change. Research on the intrinsic meaning of work, skills development, and retirement as the nature of work undergoes profound changes in a landscape of accelerated transformation will be presented. Then, we will walk through the importance of interlinkages between work and health for a social well-being economy for Europe. Aspects such as age demographics and productivity, retirement age, mental health and unemployment will be covered. This will lead to a discussion that will focus on behavioural, social, and cultural change necessary to push forward the Green Deal capitalizing on conducive labour market legislation and workforce. Here, we will attempt to link age demographics and acceptance levels of taxation, labour market and green transition regulations for an insight into factors that need to be considered in policymaking. Finally, a digital social twin framework under development in Norway will be presented as a decision-making tool for policy development that may be adapted to a Polish context, especially in the Silesian region.

The panel will be co-moderated by Prof. Adam Drobniak and Prof. Adam Polko, Uniwersytet Ekonomiczny w Katowicach. The session will address SDGs 3, 8, 10 and 11.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
social well-being economy
labor market
green transition
digital social twin

Bibliography

Additional information

Information about speakers
Number of speakers: 6 speakers

0179
Abstract number

Reusing of post-mine infrastructure as a solution for mine regions just transition

Lutyński Marcin[1], Kołodziej Konrad[1]

[1] Geoengineering and Natural Resources Extraction, Silesian University of Technology, Poland

Mining has been the backbone of industrialization in Europe, contributing to the development of cities and regions. Mining industry spawned across European continent creating new centers of industrial revolution. Since the end of the XX century a decrease in mining activity is observed, particularly in the coal sector. This resulted in an inevitable transition of regions which often was far from being just and sustainable. On the other hand, post-mining infrastructure can be used for other purposes. In this TED speech we will show many extraordinary examples of how underground excavations can be used for unconventional applications such as mushroom growing, cheese maturation, parking and industrial spaces or research laboratories. Conversion of post-mining infrastructure for other purposes contributes to the just transition and provides many opportunities for the local communities that often suffer from unemployment and lack of viable alternatives. This presentation will give a brief outlook on the potential possibilities for mining regions that can benefit from the post-mining infrastructure and heritage that is part of its history.

Form of presentation
TED Speech (max 2 speakers)

Keywords
post-mining infrastructure, mines, coal regions, just transition

Bibliography
M. Lutyński. An overview of potential benefits and limitations of Compressed Air Energy Storage in abandoned coal mines. IOP Conference Series: Materials Science and Engineering, nr 268, 2017, DOI:10.1088/1757-899X/268/1/012006

Additional information
The presentation was created as a result of the project: Hybrid energy storage system using post-mining infrastructure (HESS) The project is implemented with the support of EU funds from the European Commission under the Coal and Steel Research Fund Programme. (nr 101112380, RFCS-2022)

Information about speakers
Number of speakers: 2 speakers

0187
Abstract number

Determinants of institutional trust: Shaping the Future of Poland, Europe and the World

Batko Kornelia[1]

[1] Institute of Political Science, University of Silesia in Katowice, Poland

In a world marked by rapid transformation and evolving societal dynamics, understanding determinants of institutional trust is crucial for Polish, European and the global community. Trust in institutions, a key to stable governance, reflects various aspects of the social fabric, including religious, cultural, and media influences, and the role of local communities.
Our panel delves into the diverse factors shaping institutional trust. Key areas of discussion include:

1. Religious Influences: We will examine how religious values, leadership, and practices impact institutional trust and the role of religious bodies in fostering societal trust.
2. Cultural Factors: We will explore the effect of cultural norms, traditions, and diversity on public trust, analyzing cultural foundations that either build or erode institutional trust.
3. Media and Trust: We will discuss the intricate link between media, information spread, and institutional trust, particularly relevant in the digital age and amidst misinformation challenges.
4. Local Communities' Role: Strategies for trust-building at grassroots levels will be explored, recognizing local communities and organizations' vital part in nurturing trust.

As Europe and the world navigate significant changes, grasping the determinants of institutional trust is vital for policymakers, scholars, and citizens. Our expert panelists will exchange ideas, research, and practical insights.

The session aims to identify factors influencing institutional trust and devise methods to enhance it, aiming for stability, inclusiveness, and resilience in societies. Participants are invited to engage actively, posing questions and contributing to this important discourse.

Form of presentation
Debate (min. 3 speakers)

Keywords
institutional trust, religious determinants of trust, cultural determinants of trust, trust in the media, local communities

Bibliography

Additional information

Information about speakers
Number of speakers: 5 speakers

0229
Abstract number

BEHIND THE DECLINE IN VISIBILITY AND TRUST IN SCIENCE: A SEMIOTIC AND NARRATIVE REFRAMING

Wasilewski Jacek[1], Muszyński Krzysztof [2], Mita Charise[3]

[1] Journalism, Information and Bibliology, University of Warsaw, Poland
[2] Research Agency, Narrative Impact, Portugal
[3] Interdepartmental program in Language & Cognitio, Nortwerstern University , United States

The System of Trust has changed. Since before the global pandemic, a shift has been happening in who and how people trust to get relevant information about anything in their lives whether science, history, medicine, money, food, politics, etc. The nearly infinite knowledge available on the internet has empowered people, especially self-proclaimed 'experts,' to believe they have the answers. The 2024 Edelman Trust Barometer indicates that the authority of search engine answers are now considered on par with scientists (!). In contrast, government officials and journalists are seen as vulnerable to manipulation by political, corporate, or other powers.

For the public, there is no sense of social fabric holding things together when it seems there is polarization in every field. The criterion of truth becomes emotional consistency and coherence, displacing the rational scientific method. The public intuitively trusts the people, companies, institutions they feel are "someone like me." Dark stories from pop culture about scientists and their vulnerability to corruption are validated in the echo chambers of internet platforms/portals/social media, giving such stories an aura of universality.

In our presentation, we will show how applied semiotics and narrative studies can reveal the mechanisms of this shift. We will present our model of suspicion and trust layered with social psychology categories of certainty/uncertainty and distance "close to me/far from me." The effect is a functional framework that helps us map the powerful shift of trust to peers. We will offer insights to help scientists better position and express themselves in public discourse where science is at work for the common good so that scientific facts are better accepted by the public.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
#trusttoscience #criteriaoftruth #semiotics #narrative #makesciencegreatagain

Bibliography
Main data resources:
Edelman Trust Barometer 2024 (28 countries)
American Trust in Scientists Positive Views of Science Continue to Decline", PEW RESEARCH CENTER
Popculture Narratives Narrative Impact Semiotic Research

Additional information

Information about speakers
Number of speakers: 3 speakers

0231
Abstract number

How can the interaction between humans and animals contribute to a greater awareness of nature?

Poks Malgorzata[1], Heincke Maren[2], Lenz Malwine[3], Lootens Dominiek[4], Quirmbach Jan[4]

[1] Faculty of Humanities , University of Silesia in Katowice, Poland
[2] Zentrum Gesellschaftliche Verantwortung , Germany
[3] Goethe University, Germany
[4] Centre for Dialogue at Campus Riedberg, Germany

The "unique selling point" of humans should always be viewed with self-reflection. From a purely biological point of view, we humans are also animals. Our genes differ from mice by only around 5% and from chimpanzees by only 1%. In this session we look at human-animal relations from a Western educational perspective, a global animal ethics perspective and from a postcolonial literary studies perspective.

Interdisciplinary studies from the last few decades have shown that various educational programs involving animals have a positive effect. Students can benefit from direct interaction with animals. In the UK, there is a program in which secondary school students read to dogs. It has been proven that reading fluency was increased compared to reading aloud to the teacher. Dogs therefore seem to change the school or classroom environment.

From an animal ethics perspective, which also takes into account the living conditions of the so-called global South, a good relationship between humans and animals also plays an important role with farm animals, which has a positive effect on animal health.

From a postcolonial literary studies perspective, readers of poetry are invited to move beyond the binary between humans and animals that characterizes Western culture, toward a position that transcends and accommodates oppositions. Such a "third space" simultaneously liberates a person and inscribes him/her in a "democracy of fellow creatures".

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
animals humans interaction; education; schools, literature; poetry; animal ethics; global South, Postcolonial Studies

Bibliography

Additional information
To make sure, that our team is complete, we ask if we can offer our session on Saturday. June 15.

Information about speakers
Number of speakers: 5 speakers

0292
Abstract number

New Media Art as the Laboratory of the Future Society

Maj Anna[1], Kaliski Ksawery[2], Oslislo Marian[2], Makles Karol[3], Strojecki Tomasz[2], Ceglarek Piotr[2]

[1] Faculty of Humanities, University of Silesia in Katowice, Poland
[2] Chair of New Media, Academy of Fine Arts in Katowice, Poland
[3] Silesian Museum in Katowice, Poland

New media art is an area of creative exploration at the intersection of art, science and technology. These explorations involve using digital media from their beginnings, and artistic concepts change along with technologies. By analyzing examples of artistic practices from various areas of new media art (including interactive art, performance art, participative art, VR and animation, bio art, hybrid art, robotic art, and AI art) and curators' strategies, this area of activities can be perceived as creating an agenda for the pro-technologic social discourse and the laboratory of cultural practices for the society of the future.
By presenting examples of several artists from the field of media art - both operating on the global and European art market (i.a., Ars Electronica) and representing our region (i.a., Chair of New Media of the Academy of Fine Arts in Katowice) - analyzing their creative approach and examples of works using new technologies in various ways as well the practices of curating media art (i.a. Silesian Museum in Katowice), we would like to start a debate on the changes in the role of the artist and the possibilities and limitations of co-designing social discourse and cultural practices by cultural institutions such as artistic schools and museums.
What is particularly interesting here is the perspective of AI art, which uses artificial intelligence as a tool in various areas (including visual and musical arts) but presents (and promotes) it as a co-creator equal to humans.

Form of presentation
Debate (min. 3 speakers)

Keywords
new media art, cyber arts, robotic art, AI art, AI and creation, agenda setting, future society, art & social discourse, Ars Electronica Festival, The Academy of Fine Arts in Katowice

Bibliography
Anna Maj: Media art in the Face of Political, Identity and Technological Transformation. Redefining Upper Silesia by Means of Video and Digital Media. „TRANSFORMACJE" 2 (117) 2023, pp. 35-60, ISSN: 1230-0292, e-ISSN 2719-7158.\\\\nKsawery Kaliski: Digitalall vs. Werniksall, w: Digitalne_dotknięcia. Teoria w praktyce / Praktyka w teorii. Red. Piotr Zawojski. Digitalia 2010, Wyd. 13 muz, Szczecin 2010, s. 153-158. \\\\nMarian Oslislo: Letter & sign,\\\\\\\\"Kwartalnik Konteksty\\\\\\\\", ISBN / ISSN: ISSN 1230-6142, Publication date: 2014, Pages, Volume 2: pp. 153-163.

Additional information
We propose a series of related short presentations and then a debate.

Information about speakers
Number of speakers: 6 speakers

0542
Abstract number

Europe's Growth Champion. Lessons from Poland's Economic Miracle and the Way Forward

Piatkowski Marcin[1]

[1] Kozminski University in Warsaw, Poland

The lecture will focus on (i) explaining why Poland and the rest of Central and Eastern Europe has been economically underdeveloped for most of its history, (ii) analyzing the drivers of Poland's economic success after 1989, during which it has more than tripled its GDP per capita PPP and became the fastest growing economy in Europe and in the world among countries with a similar level of income, (iii) discussing future challenges and opportunities for Poland's further development, and (iv) proposing a set of policy recommendations that could help sustain Poland's economic success and allow it to become one of the economic leaders of Europe.

Form of presentation
Lecture (1 speaker)

Keywords
tbc

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0548
Abstract number

Making music-making work for us: how ‘musicking’ can help build and sustain healthy and resilient communities

Procter Simon[1]

[1] Karol Szymanowski Academy of Music in Katowice, Poland

In this presentation I will share stories of collaborative music-making as a means of people experiencing health and sustaining their identity and relationships. This is understood as an example of music-in-action. Increasing attention is being paid to the physiological and psychological “effects” of music on individuals and hence its potential usefulness as part of clinical care. But less attention is paid to music-making as shared social action, including the active role that people who are not trained as musicians can play in this. I will draw on literature from music therapy, from music sociology and from community health studies to provide frameworks for thinking about musicking’s role in helping people and their communities to live more fulfilled, healthier lives. I will also ask how this can help us to think more generally about the value of music-in-action within our society.

Form of presentation
Lecture (1 speaker)

Keywords
collaborative music-making, health, relationships, music-in-action

Bibliography
Procter, S. (2023) ‘Music, Health, Society: The development of Nordoff Robbins education in the UK’. In K. Goodman (ed.) Developing Issues in World Music Therapy Education and Training: A Plurality of Views. Springfield, IL: Charles C Thomas
Procter, S. & DeNora T. (2022) ‘Musical care in adulthood: sounding our way through the landscape’. In Spiro, N. & K.R.M. Sanfilippo (eds) Collaborative Insights: Interdisciplinary Perspectives on Musical Care Throughout the Life Course. Oxford: Oxford University Press
Procter, S. (2016) \'Playing with distinction? Music therapy and the affordances of improvisation\'. Music and Arts in Action 5(1): 52-69

Additional information

Information about speakers
Number of speakers: 1 speaker

0549
Abstract number

The Carbon Atlantis or what can we learn from the slag heaps

Kowalski Adam[1]

[1] Metallurgical Museum in Chorzów, Poland

The area of the former Brandenburg coal mine in Ruda is a re-naturalised space in the very heart of the district. Once the most industrialized area of the city nowadays looks like a ruins of the lost civilization conquered by the forces of nature. This new surprising combination brings some non-obvious reflections on what is human and not-human. It enables new approaches, strategies, artistic, cultural and intellectual attitudes towards the man-nature relations in post-industrial communities.

Form of presentation
Lecture (1 speaker)

Keywords
region, heritage, nature, art, culture, Silesia, coal-mine

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

0550
Abstract number

What if Monument Could Speak?

Wodiczko Krzysztof[1]

[1] Harvard Graduate School of Design / Academy of Fine Arts in Warsaw, Poland

The well-being of the democratic process depends on the communicative and discursive vitality of the public space.
Such vitality depends on the creation of psychosocial and cultural and technological conditions for the people to open-up and fearlessly speak in public, as well as on devising the aesthetic and media means for their speech transmission, and public reception.

My work seeks to create such conditions through the participatory and media appropriation of city symbolic structures, such as monuments, facades, and statues, as historically charged 'screens' onto which the meaning can be inscribed and re-inscribed, and thus exchanged.

In such communicative projects the priority should be given to these city residents, whose voice has been least heard and whose existential experience, and critical needs have been least known and publicly acknowledged. In building better life for everyone, the voice of marginalized and neglected people must be heard first.

Blank facades and blind eyes of lofty civic monuments face speechless and estranged city residents living in their shadows. It is my belief that many city residents- these silent monuments to their own trauma-as well as many historic city monuments- themselves speechless and traumatized by the injustice they witness- should be given a chance to join each other, break their silence, regain their voice, and speak.

In my presentation, I will elaborate on the social, psychological, technological, aesthetic, and design aspects of my projections, installations and instrumentations developed with the less privileged city dwellers who for the sake of the amelioration of their own lives, lives of others, and by extension the society at large, have made use of such projects to appear, speak, and be heard in the public space.

Form of presentation
Lecture (1 speaker)

Keywords
democracy, well-being, art, public space, aesthetic, city, civic monuments

Bibliography

Additional information

Information about speakers
Number of speakers: 1 speaker

Cultural Identity and Societal Transformation

Poster Sessions

0171
Abstract number

Virtual models, card games as a tool in urban design and planning research and education

Bradecki Tomasz[1]

[1] Faculty of Architecture, Silesian University of Technology, Poland

The development of research in spatial planning and urban design is polarised. On the one hand, it is becoming increasingly complex and professional and involves specialists from other fields, while on the other hand, it is becoming less and less comprehensible to the public, who should be the beneficiaries of scientifically developed solutions.

The public's awareness of the possibilities of spatial development of urbanised areas derives from the interface between public knowledge, the results of scientific research and education in this field. Particularly important seems to be knowledge in the field of changes and shaping of the living environment in times of growing population, and escalating urbanisation in various forms (intensive and extensive) and scales. Reconciling the different points of view and their common understanding seems to be important in view of the fact that space is a finite resource and the type of land use has a key role in the further sustainable development of society.

The paper presents original solutions for research and educational and teaching activities using 3D models and innovative card games: The settlement game and the metropolis game. The games structure knowledge, support scientific discourse, and are used in didactics and public participation. The presented experiments of game-based workshops can be seen as examples of the use of image-shifting tools in the shaping of cities and regions.

Form of presentation
Series of related speeches - flash presentatnion (min. 3 speakers)

Keywords
spatial planning, 3D models, card games, tools for spatial planning education, tools for public participation

Bibliography
Bradecki T. Dymarska N. Sanigórska M. (2023) Gra w osiedle, gra urbanistyczna, gra w karty, Housing estate game, urban card game, Wydawnictwo Politechniki Śląskiej ISBN 978-83-7880-887-9, doi:10.34918/85849 https://delibra.bg.polsl.pl/Content/76315/download/

Bradecki T., Wskaźniki, parametry i modele w kształtowaniu intensywnej wielorodzinnej zabudowy mieszkaniowej, 2021, Wydawnictwo Politechniki Śląskiej

Additional information
www.housingestategame.polsl.pl

Information about speakers
Number of speakers: 1 speaker

0247
Abstract number

ACTIVE OR PASSIVE, PARTICIPANT OR OBSERVER – THE COAL MINING MUSEUM IN ZABRZE IN TERMS OF TRANSITION

Zawadzka Łucja[1]

[1] Deputy Director for Development, Muzeum Górnictwa Węglowego w Zabrzu / The Coal Mining Museum in Zabrze, Poland

The Upper Silesian Region still is one of the most densely dotted with industrial plants in the whole Poland. But that situation is changing before our eyes. The cultural landscape, social and economical situation are changing.
In 2049 the last coal mine in Poland should be closed, what is of course motivated by the environmental status, but it adversely affects cultural and social situation in the region. And now we could rise the question – how the museum should react?

We see the role of the museum as an animator, a moderator and involved institution in a process of gathering oral histories and family keepsakes. It involves miners and their families, and make them active, sharing memories and let feel part of participation and social inclusion process. We are attracting the society to participate and consider the museum as a partner and supporter.
It seems to be obvious that taking a back seat is not the option. And we are aware that our situation is unique and only now we could try to maintain the culture, tradition, identity and monuments (i.e. tangible and intangible heritage of miners) of the region. That is why we are focusing all our activities on that: we established in the museum' structure centre dedicated to documentation and digitalisation of the heritage. That centre is responsible simultaneously for scanning of mining properties and collecting documents. Activities of this body are such unique, and innovative on a worldwide scale. Everything what we are doing is uncomparable to nothing, which was done on that field till now.
Thanks to all these activities, we are members of the process of participation, cross-generation transformation and protection of witnesses of passing world for our descendants.

Form of presentation
Lecture (1 speaker)

Keywords
coal, mines, heritage, participation, cross-gender transformation, mining culture, museum

Bibliography
Macdonald S., Krainy pamięci. O dziedzictwie i tożsamości we współczesnej Europie. Kraków, 2021
Tilden F., Interpretacja dziedzictwa., Poznań, 2019
Heritage and development [e-book], Kraków, 2023
Sztolnia Królowa Luiza w Zabrzu ... Zabrze, 2020

Additional information

Information about speakers
Number of speakers: 1 speaker

0268
Abstract number

Emakumeak Zientzian - An exerience on gender equality Networking and Outreaching

Mugica Mendiola Idoia[1]

[1] Comunication and Scientific Culture, Centro de Física de Materiales (CFM), Spain

We have been warning for years about the systematic gender inequalities that modern society suffers from. The technical scientific environment is no exception.
Among other institutional actions, the United Nations General Assembly decided, in 2016, to proclaim February 11 as the International Day of Women and Girls in Science in order to achieve full and equal access and participation in science for women and girls.

In this context, Emakumeak Zientzian-Women in Science arises with specific objectives: To make visible the activity of women in science, to break with the typically male roles attributed to scientific-technical activities, and to encourage the choice of scientific careers among girls and adolescents.

To this end, it promotes, organizes, develops, presents and executes a broad program of activities around February 11. In 2024, 32 entities representing the network of the Basque Country participate as organizers of the initiative, reaching more than 10.000 attendees (data from 2023).

But beyond the activities, in this session we want to share the experience of creating an active, inclusive and supportive group that has become a network in which women scientists have their own name, know each other and share ideas, frustrations and plans for the future. We are already more than 300 people working side by side, ensuring no white washing from our institutions.

Among the milestones achieved to establish this community is the organization of the international congress "in 2023 "Equality, science and technology. For a paradigm shift" by the hand of the Basque Government Department of Equality, which provided a much needed space to share good practices and make a constructive criticism of the system.

Form of presentation
Lecture (1 speaker)

Keywords
GENDER EQUALITY
SORORITY
NETWORKING
PARADIGM SHIFT

Bibliography

Additional information
congress: https://www.berdintasunazientzian.eus/?lang=en
EMAKUMEAK ZIENTZIAN: https://emakumeakzientzian.eus/

Information about speakers
Number of speakers: 1 speaker

0272
Abstract number

Art and art therapy activities in the service of peace. On discovering the value of art in activities based on international exchange

Nieduziak Edyta Maria[1]

[1] Faculty of Social Sciences, Institute of Pedagogy, University of Silesia, Poland

International student exchange programmes contribute to greater mobility of young adults, help them to learn about the world and other cultures. They educate towards tolerance and openness to difference, especially cultural difference. The outbreak of war in Ukraine has given a new context to this exchange, which, in addition to its function of promoting mobility, has also begun to serve the function of creating an asylum for those fleeing the danger of war. The new circumstances have shed new light on the tasks that academic education can play in constructing positive relations between students representing countries with different cultures including different political systems.

Art and especially art therapy activities can play a special role in such exchange and education. However, never before has educational practice had the opportunity to create such culturally diverse groups, so it is worth noting the potential that not only student exchange, but also the building of a constructive international society can have through activities using art and artistic expression. All the more so when their aim is to shape personalities.

In addition to education, art-based research revealing the social potential of artistic activities, artistic expression and art therapy paves the way for such endeavours.

I will present the activities I carried out in international student groups at the University of Silesia in Katowice. The aim of the research was to search for pacifist meanings and senses in the art and art therapy works and activities of students representing different nationalities. Qualitative art base study and case study methodologies were used. The contents of the works revealed the pacifist potential and the possibilities of such activities for building.

Form of presentation
Poster presentation

Keywords
art therapy, art based studies, peace, international student exchange, art activities, peaceful societies

Bibliography
Sofie de Smet, Cécile Rousseau, Christel Stalpaert, Lucia De Haene, “It will always be Temporary”: A qualitative study of Syrian young adults expressing histories of collective violence and forced displacement in participatory theatre. Transcultural Psychiatry, 2024 DOI:10.1177/13634615231213840\\nSinaria Jabbar & Amy Betawi, Children express: war and peace themes in the drawings of Iraqi refugee children in Jordan, International Journal of Adolescence and Youth, 2019, 24:1, 1-18, DOI:10.1080/02673843.2018.1455058 \\nCécile Rousseau, Aline Drapeau, Louise Lacroix, Déogratias Bagilishya, Nicole Heusch, Evaluation of a Classroom Program of Creative Expression Workshops for Refugee and Immigrant Children. Journal of Child Psychology and Psychiatry, 2005 46(2), 180–185. DOI:10.1111/j.1469-7610.2004.00344.x

Additional information

Information about speakers
Number of speakers: 1 speaker

0321
Abstract number

Donostia International Physics Center, Basque Film Archive, and San Sebastian International Film Festival organize the Cinema and Science Cycle since 2018. Their goal is to transmit cinematic and scientific culture.

Arregui Amaia[1], Vega de Seoane Marta[1], Azcune Itxaso[1], Rodriguez Valentina[1]

[1] Outreach and Communication Department, Donostia International Physics Center, Spain

Donostia International Physics Center (DIPC), the Basque Film Archive and the San Sebastian International Film Festival (SSIFF) have been organizing since 2018 the Cinema and Science Cycle with the aim of transmitting cinematographic and scientific culture to the Basque society.

The screenings consist of a selection of approximately 10 films that are presented weekly by expert scientists and inspire the scientific gaze of the public. The presentations and colloquiums invite reflection and update our knowledge with the latest scientific advances. The program is completed with successful special sessions for schoolchildren.

Between January and March the complete program can be enjoyed in Tabakalera, Donostia / San Sebastian and the Museum of Fine Arts in Bilbao, and Artium Museum in Vitoria - Gasteiz as the new headquarters of the Basque Film Library. In addition, commercial cinemas such as Cinéma Le Sélect (Saint Jean-de-Luz) and Cines Golem (Pamplona) have joined the cultural project offering film and science in their cities as well.

The themes and invited scientists of the cycle always vary in the search for new connections with different branches of knowledge. If the inaugural Interstellar (Christopher Nolan, 2014) celebrated general relativity and the recent discovery of gravitational waves, La guerre du feu (Jean-Jacques Annaud, 1981) open the debate on the violent or supportive nature of humans, Gorillas in the Mist (Michael Apted, 1988) paid tribute to the impressive life and work of pioneering primatologist Diane Fossi, and Soylent Green (Richard Fleischer, 1973) created debate around the issue of cultured meat. In total, 21102 people have participated in the six editions held to date.

More information: https://dipc.ehu.eus/en/science-society/ciclo-de-cine-y-ciencia

Form of presentation
Poster presentation

Keywords
Scientific Culture
Cinema
Education
Art and Science
Film Festival
Basque Country

Bibliography

Additional information

Information about speakers
Number of speakers: 2 speakers

List of speakers

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List of ESOF2024 speakers

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8	Innovative strategies for prevention and treatment of severe human diseases	Joaquin	Silvestre-Albero	Prof. Dr.
		Igor V.	Komarov	Prof. Dr.
14	Literature as a (safe) site of transcultural encounters	Leszek	Drong	professor
		Astrid	Fellner	Professor
		Marisol	Morales-Ladron	professor
		Karolina	Pospiszil-Hofmańska	PhD
		Frank	Ferguson	
15	The role of machine learning and artificial intelligence in digital transition	Fosca	Giannotti	
		Dirk	Helbing	
		Claartje	ter Hoeven	
		Andrea	Ganna	
		Valeri	Croce	PhD
16	Communicating to consumers with low socioeconomic status about healthy & sustainable eating: challenges and opportunities	Katerina	Palascha	PhD
18	Artificial intelligence methods in water systems research	Dominika	Dąbrowska	PhD
22	IMPROVING QUALITY OF SOLID BIOMASS FUELS: "PL-US BIO" – POLAND'S INNOVATIVE CERTIFICATION PROGRAM	Agnieszka	Drobniak	
23	The future of healthcare is digital	Davide	Montesarchio	MSc
		Liesbet	Geris	Professor
		Wouter	Huberts	Assistant professor
		Cristina	Curreli	Researcher
		Zita	Van Horenbeeck	PhD student
24	Light-activated Surface Acoustic Wave sensor platform for warfare agent simulant (DMMP) detection	Wiesław	Jakubik	prof SUT
25	Investigation of the origin of polycyclic aromatic hydrocarbons (PAHs) in the Katowice area using a multi-component integrated calibration method	Paweł	Świt	Ph.D. Eng.
29	Energy Storage for Net Zero Energy Transition Challenges	Yulong	Ding	Professor
31	The role of "high-risk/high-gain" research in EU energy transition. Electro-intrusion FET Proactive project: transforming undesired vibrations and waste heat into electricity via nanoconfined fluids	Yaroslav	Grosu	

32	A New European Framework for Research Careers	Gareth	ONeill	
		Dario	Capezzuto	
		Luisa	Henriques	
		Clare	Viney	
		Silvia	Gomez Recio	
		Sebastian	Dahle	
33	Research on fabrication and characterization of dual purpose flexible sensor based on cellulose and graphene oxide to sense temperate and moisture contents in the air	Muhammad Ome	Farooq	
36	Mon-ISO-CO2: Insights from the last year of the atmospheric CO2 measurements in the urban atmosphere in Gliwice	Barbara	Sensuła	dr hab inż.
37	Innovative Approaches to Sustainable Resource Management: Bridging Science and Industry	Gabriele	Mulas	prof.
		Iakovos	Yakoumis	PhD
		Albert	Bartroli	PhD
40	Improving society's health by scientific influencing	Joana	Smirnovienė	PhD
41	Rethinking domestic food waste campaigns and empowering policymakers for change	Andy	Ridgway	Senior Lecturer
42	Tracking invisible contaminants: sources and fate of micropollutants	David	Gallego Torres	Dr.
		Eystein	Jansen	Prof.
		Matti	Rissanen	Dr.
		Martin	Schultz	Prof.
		Monica	Passananti	Dr.
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53	Gardens of the Lost Worlds: exploring and protecting the botanical treasures of the Guiana Highlands	Mateusz	Wrazidlo	M.Sc.Eng.
54	Proposed practical resolution of the closed loop coal-firing derived fly ash case study in big-volume construction materials production	Lidia Natalia	Trusilewicz	PhD
56	Biodegradable micronutrients, fertilizers of controlled release, and biostimulants	Nikodem	Kuźnik	PhD
62	How are Polish Universities Supporting Student Psychological Needs? The Role of Staff and Institutional Practices Outside the Classroom.	René	Henry	Master
65	The bridge between AI and my therapist	Francisco	Valente Goncalves	PhD
71	Narratives and Visuals in Science Communication: Engaging Minds, Bridging Gaps	Cristina	Juesas	Master
72	Skills4Wind: Boosting the wind energy sector through interdisciplinary and intersectoral training	Vanessa	Magnanimo	Professor
		Luke	Prendergast	Associate Professor

		Stefan	Ivanell	Professor
		Jon	Sampedro	PhD
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84	The Green Hydrogen tour throughout Europe: an interactive session to discuss the impacts & advantages of green hydrogen across Europe	Pau	Farràs	
		Leyre	Flamarique Pérez	
		Suraj	Gupta	
85	Who wants to be a millionaire?: An interactive session to learn about a greener way of producing medicines thanks to mechanochemistry	Evelina	Colacino	Prof
		Juan José	Sáenz de la Torre	
88	The Role of Universities to Achieve Climate-Neutral Cities	Max	Voegler	
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		Konstantina	Topouridou	
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		Pawel	Lukow	Prof
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124	Coal's Legacy, Green's Future. Reclaiming Post-Mining Areas in Upper Silesia Amid the Challenges of Sustainable Development	Michał	Stangel	Profressor
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144	Brain hackers	Katarzyna	Krukiewicz	Associate Professor
145	Travel Mode Choice Prediction and Influencing Factors Analysis Using Multinominal Logit and Machine Learning Models – Promoting Sustainable Transportation System	Mujahid	Ali	mgr. Eng.
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		Marcin	Dreger	Ph.D.
158	Polymer-Based Materials for Removal of Organic Pollutants from Water – Review	Tomasz	Fronczyk	MSc. Eng.
160	The impact of green transition on the labour market	Alice	Milivinti	PhD
		Jülide Ceren	Ahi	PhD
		Henrik Lindegaai	Andersen	PhD
		Önder	GÜRCAN	PhD
		Adam	Drobniak	Professor
		Adam	Polko	Professor
163	New plasticizers for poly(vinyl chloride) based on environmentally friendly bio succinic acid	Patryk	Dziendzioł	Master Engineer
164	Making agriculture more sustainable and more profitable through circular, biobased value chains.	Emma	Needham	BA honours
167	The role of animals in modern families - psychological and legal aspects	Małgorzata	Lubelska-Sazanów	PhD
168	Permeability of Carbon Nanotube-Based Buckypaper and its Effects on Biofuel Cell Development	Muhammad	Saad	Ph.D.
		Katarzyna	Krukiewicz	Prof.
		Serge	Cosnier	Prof.
169	Media Literacy: Navigating the Depths of the Media Ocean	Monika	Frania	PhD
171	Virtual models, card games as a tool in urban design and planning research and education	Tomasz	Bradecki	PhD. arch. assoc. profe
176	Protecting the last line of defense - reserve antibiotics in the environment	Sylwia	Bajkacz	Prof.
177	Air quality – current challenges	Marcin	Sajdak	Ph.D., D.Sc.
		Wioletta	Przystaś	Prof.
		Barbara	Kozielska	Prof.
		Anna	Mainka	Prof.
		Kamila	Widziewicz-Rzońca	Dr Eng.
		Ewa	Zabłocka-Godlewska	Prof.
178	Studies on the influence of selected allelopathic compounds on cereal metabolism	Marianna	Kostina-Bednarz	MSc
179	Reusing of post-mine infrastructure as a solution for mine regions just transition	Marcin	Lutyński	Professor, DSc, PhD, E
		Konrad	Kołodziej	MSc, Eng.
180	Sustainable production in a circular economy	Tomasz	Suponik	Associate Professor
		Muammer	Kaya	Professor

		Dawid	Franke	PhD Student
		Iwona	Wagner-Gajewska	Master of Science
		Paweł	Friebe	PhD Student
		Umut	Kar	MSc. Eng.
184	Fostering Brain Circulation: The Impact of Research Diasporas in Advancing Scientific Excellence	Karolina	Weryńska	PhD
		Javier	Pardo	PhD
		Viktoria	Hurochkina	PhD
		Fernando	Colmenares	PhD
		Alicja	Santos	PhD
185	AN OVERVIEW OF ENGLISH MEDIUM-INSTRUCTION (EMI) IN HIGHER EDUCATION IN POLAND. STUDENTS' AND ACADEMIC TEACHERS' PERSPECTIVE	Katarzyna Lidia	Papaja	PhD
186	The aesthetics of thrift - the most sustainable way of landscape design.	Krzysztof	Rostański	Prof.
187	Determinants of institutional trust: Shaping the Future of Poland, Europe and the World	Kornelia	Batko	Ph.D.
		Małgorzata	Myśliwiec	Assoc. Prof.
		Damian	Guzek	Assoc. Prof.
		Dawid	Tatarczyk	Ph.D.
		Emilie	Szwajnoch	MSc
188	The European Universities Initiative – new ways of strengthening international cooperation and connecting researchers	Jordi	Garcia Fernandez	Prof.
		Edita	Lenkauskaite	PhD candidate
		Agnieszka	Kościuszko	MA BA
192	Nature-based solution for the efficient and long-lasting ecosystem mozaic re-establishment in the urban industry landscape	Gabriela	Woźniak	PhD
193	Open Science and research data management at universities – experiences from members of the T4EU alliance and their joint strategy	Rūta	Petrauskaitė	PhD
		Karolin	Gieseler	PhD
		Filippo A. E.	Nuccio	PhD
		Maciej	Bisaga	PhD
		Ana	Slavec	PhD
		Saulė	Milčiuvienė	PhD
197	Advantages of Vegetable Tanning Process over Chrome-tanning for the Sustainable Leather Industry	Mohammad	Azim	MSc
198	Frontier research, concrete outcomes for European ecosystems conservation	Kris	Verheyen	Professor

		Joana	Gaspar de Freitas	Dr
		Gabriel	Singer	Dr
		Jasper	de Groeij	Dr
		Noelie	Auvergne	
199	Extraction of reserve antibiotics from liquid samples: a first step in preserving efficacy, monitoring environmental presence and mitigating resistance	Joanna	Wilk	MSc eng
202	Co-occurence of posttraumatic stress disorder (PTSD) and food addiction among Polish women and men: Psychological and health consequences	Monika	Stojek	PhD
203	Retraction and its Significance for Scientific Excellence	Tomasz	Kubalica	
206	Escaping the tragedy of the commons? Motivating policies for global emissions reductions through local improvements in air quality.	Andrea	Pozzer	Ph.D.
		Susana	Romao	Ph.D. MBA
		Pallavi	Pant	Ph.D.
207	Lifestyle medicine in academia	Aleksandra	Lewandowska	
		Joanna	Smolarczyk	PhD MD
		Aleksandra	Mroskowiak	
209	Mine waters - a pinch of salt in the water, an ocean of problems	Sławomir	Borymski	PhD
		Agnieszka	Nowak	PhD
210	Is risk communication prepared for AI?	Leonor	Sierra	PhD
		Felix G.	Rebitschek	
		Ulrika	Björkstén	
		Carlos	Hernández-Echevarría	
		Agnieszka	Gadzina-Kołodziejska	MA
211	New formulations of slow-release fertilizers containing biologically active micronutrients	Ryszard	Grzesik	Mgr. inż.
212	From pandemics to antibiotic resistance: can science communication really save the day in the face of existential threats?	Andy	Ridgway	Dr
		Tessa	Roedema	
		Charlotte	Bruns	Dr
		Giulia	Bonelli	
213	Rethinking scientific excellence to improve research culture	Maria	Leptin	
		Cameron	Neylon	
		Ottoline	Leyser	
		Marta	Łazarowicz	

		Karen	Stroobants	
		Sean	Sapcariu	
216	Experimental animal research: a sensitive issue for both scientists and society	Jaap	van Milgen	PhD
218	Converting mine shaft into Compressed Gas Energy Storage – basic guidelines	Konrad	Kołodziej	MSc Eng.
		Marcin	Lutyński	Prof. DSc, PhD, Eng.
		Grzegorz	Smolnik	PhD
219	The future belongs to deskilling and unlearning	Jakub	Vanek	Mr
221	Assessing excellence: debating the roles of qualitative evaluation and the responsible use of quantitative indicators in response to CoARA commitment 2	James	Morris	Dr.
		Gareth	ONeill	Dr.
		Erzsebet	Toth Czifra	Dr.
		Miklós	Györffi	Dr.
		Dutch Research	NWO	
223	Preserving soil health and improving soil literacy across Europe	Dobrivoje Lale	Erić	MA
		Joanna	Morawska	Phd
		Daniel	Jianu	MBA
		Marta	Kuhnová	PhD
		Norbert	Steinhaus	Eng.
224	Tourism and climate change: adaptation pathways	Rodolfo	Baggio	PhD
228	SCIENCE DIPLOMACY AS AN INSTRUMENT TOWARDS ADDRESSING GLOBAL CHALLENGES	Daan	du Toit	LLB
		Ndumiso	Cingo	PhD
		Simon	Berry	PhD
		Gergely	Bohm	
		Sally	Stansfield	
		Marie Sophie	Müller	
229	BEHIND THE DECLINE IN VISIBILITY AND TRUST IN SCIENCE: A SEMIOTIC AND NARRATIVE REFRAMING	Jacek	Wasilewski	PhD
		Krzysztof	Muszyński	PhD
		Charise	Mita	PhD
231	How can the interaction between humans and animals contribute to a greater awareness of nature?	Malgorzata	Poks	Prof Dr

		Maren	Heincke	Dr.
		Malwine	Lenz	PhD Student
		Dominiek	Lootens	PhD
		Jan	Quirmbach	Master
233	Is the post-mining infrastructure a viable option for energy storage?	Marcin	Lutyński	Prof., DSc, PhD, Eng.
		Adam	Smoliński	Prof., DSc, PhD, Eng.
		Sebastian	Waniczek	PhD, Eng.
		Lukáš	Adámek	
		Łukasz	Bartela	DSc
234	Ethical and legal aspects of research involving humans with a special focus on personal data protection and AI	Monika	Jagielska	prof. US
		Mariusz	Jagielski	prof. US
237	Noise-Controlling Casings	Stanislaw	Wrona	prof.
238	Single and dual systems based on grafted PIL-based copolymers	Katarzyna	Niesyto	MSc.
239	Open Science during the COVID pandemic: Temporary boost or durable contribution to a more open world?	Daniel	Spichtinger	Magister and M.A.
241	SME 5.0 - Why Digital Transformation is an Enabler for Sustainable Development within Industry 5.0	Erwin	Rauch	Prof
244	Open Science practices – drivers for democracy	Cissi	Billgren Askwall	
		Anna Maria	Fleetwood	
		Alan	Irwin	Professor
		Paul	Manners	
		Rosa	Arias	
		Cordula	Kleidt	
245	Elevating Excellence: Navigating Practical Dimensions of Open Science	Sabina	Leonelli (tbc)	prof
		Aneta	Pazik-Aybar	PhD
246	Trustworthiness of science and trust in science	Turska-Kawa	Agnieszka	Professor
		Christian	Welzel	Professor
		Natalia	Letki	Professor
		Michał	Kotnarowski	Professor
247	ACTIVE OR PASSIVE, PARTICIPANT OR OBSERVER – THE COAL MINING MUSEUM IN ZABRZE IN TERMS OF TRANSITION	Łucja	Zawadzka	Master
249	Ionic Graft Conjugates for Dual Delivery of Anti-tuberculosis Drugs	Aleksy	Mazur	M.Sc. Eng.

250	Slow Release Fertilizers with biodegradable coatings	Ryszard	Grzesik	Mgr. inż.
251	Biochemistry for a greener world: how enzymes can transform the chemical industry and help create sustainable consumer products	Aurelio	Hidalgo	Professor
		Manuel	Ferrer	Professor
		Javier	Pérez	Bsc
		Gro	Bjerga	Professor
		Manfred	Kircher	PhD
253	The use of plant growth-promoting bacteria to enhance phytoremediation of polluted areas	Magdalena	Noszczynska	PhD
		Magdalena	Pacwa-Płociniczak	PhD
		Tomasz	Płociniczak	PhD
255	Organo-Mineral Ferilizers Based on Ammonium Nitrate and Urea – Pot and Field Experiments	Ryszard	Grzesik	Mgr. inż.
257	Specialty NPK Fertilizers for special tasks	Ryszard	Grzesik	Mgr. inż.
258	Art therapy in health services	Edyta	Nieduziak	PhD
261	Energy research at CERIC - Synchrotron light-based complementary techniques offered by a European Research Infrastructure Consortium	Marcello Maria	Turconi	PhD
		Alexey	Maximenko	PhD
		Giuliana	Aquilanti	PhD
		Francesco	d Acapito	PhD
268	Emakumeak Zientzian - An exerience on gender equality Networking and Outreaching	Idoia	Mugica Mendiola	PhD
271	Fostering Scientific Excellence: Advocating the Integral Role of Technicians	Catrin	Harris	
		Hannah	Noke	Dr
		Ian	Hancox	Dr
272	Art and art therapy activities in the service of peace. On discovering the value of art in activities based on international exchange	Edyta	Nieduziak	PhD
273	CoARA National Chapters – benefits and challenges of networking for the advancement of research assessment on a national level	Miklós	Györffi	PhD
		Stanislaw	Kistryn	Professor
		Elena	Domínguez Cañas	PhD
		Andrea	Balla	PhD
274	"Forever Chemicals"– monitoring of poly- and perfluoroalkyl substances (PFAS) in aquatic environments	Magdalena	Zarębska	MSc Eng.
277	The „Jesters Turing Test“ for personal resilience – Why laughter boosts your personal health and how AIs invent jokes :-)	TeeKay	Kreissig	
281	Social discount rate for the appraisal of intergenerational investments – estimates for CEE EU member countries	Rafał	Buła	Ph.D.

		Monika	Foltyn-Zarychta	Prof.
282	Legal framework for local energy communities	Mateusz	Żaba	Ph.D.
		Jakub	Kmieć	MA
		Artur	Tyński	MA
		Bartłomiej	Kupiec	MA
		Justyna	Kanas	MA
		Maciej	Gacki	MSc
286	Nanotechnology and environmental and fire safety	Anna	Rabajczyk	Prof.
291	Is the Silesian language possible in the 21st century? Silesian as a linguistic monument and a means of daily communication	Daria	Socha	
292	New Media Art as the Laboratory of the Future Society	Anna	Maj	Prof.
		Ksawery	Kaliski	Prof.
		Marian	Oslislo	Prof.
		Karol	Makles	PhD
		Tomasz	Strojecki	PhD
		Piotr	Ceglarek	MA
294	Targeting the Untargetable: Quinazoline and Quinazolinone Compounds against Glioblastoma	Patryk	Rurka	MSc
		Katarzyna	Malarz	PhD
295	Accelerator mass spectrometry for determination of bio-based carbon	Natalia	Piotrowska	Prof.
298	Building a Healthy and Sustainable Urban Environment: Insights from East Asian Planning and Data Analytic Approaches	Hugo Wai Leung	MAK	PhD
304	Decoding Science for Policy: Engaging decision-makers and creating policy impact	Alessandro	Allegra	
		Chloe	Hill	
306	Predicting Our Climate Future: Why we need to rethink our approach to climate change science	David	Stainforth	Professor
309	Development of the automotive industry from the perspective of energy transformation	Janusz	Cebulski	PhD Eng
		Dorota	Pasek	PhD Eng
		Maria	Sozańska	Prof. PhD. Eng.
311	Shaping the Future of Teaching AI: Exploring Key Considerations for Discussion	Agnieszka	Nowak-Brzezińska	associate professor
		Michał	Baczyński	Full Professor
		Michał	Kłosiński	Associate Professor
		Michał	Krzykawski	Associate Professor

		Dariusz	Szostek	Associate Professor
319	PAHs analysis in grilled marshmallows and 1-hydroxypyrene in urine	Krystyna	Tyrpień- Golder	Prof.
320	Stress management strategies, a sense of perceived stress and the assessment of depression risk in a group of students of the “Borderland University”	Łukasz	Kwadrans	PhD.
321	Donostia International Physics Center, Basque Film Archive, and San Sebastian International Film Festival organize the Cinema and Science Cycle since 2018. Their goal is to transmit cinematic and scientific culture.	Amaia	Arregui	PhD
		Marta	Vega de Seoane	
323	Artificial intelligence as a helping hand in bringing change into university programme.	Dagmara	Gałajda	PhD
		Kamil	Wałczyk	
326	Navigating the Surge: Regional Disparities, Environmental Influences, Healthcare Accessibility, and the Obesity Epidemic in the Rising Incidence of Gynecological Cancers	Iwona	Gabriel	dr hab.n.med.
		Agnieszka	Rychlik	
328	Evolution of Vocational Education: Reclaiming skills and competences together with GETES Foundation	Karol	Jędrasiak	PhD
329	Lymphedema as a Neglected Public Health Concern - Advocating for Government and Societal Recognition	Iwona	Gabriel	dr hab.n.med
		Marek	Paul	dr hab.n.med., prof. UJ
		Andrzej	Szuba	Prof. dr hab.n.med.
331	City, deaf space and cultural sensorium	Dagmara	Stanosz	Master
		Michał	Justycki	PHD
332	Qualitative teaching in home education schools on the example of School in the Cloud in Poland.	Natalia	Maksymowicz Mróz	Ph.D.
334	Environmental and climate change assessment based on stable carbon isotopes of tree rings	Sławomira	Pawełczyk	PhD
336	Distance or traditional learning? The impact of the teaching mode at the academic level-case of accounting subjects	Bartlomiej	Lisicki	PhD
337	Modelling the evolution of AI technologies: a balance of future benefits and risks	Andrzej M.J.	Skulimowski	Prof. dr. hab.
345	Urban Labs: Cross-sectoral cooperation and scientific institutions involvement in addressing contemporary urban challenges through penta helix conception	Dominika	Verešová	M.Sc. Eng. Arch
		Sara	Malicka-Skrzek	M.Sc. Eng. Arch
347	Degradation of petroleum pollutants present in post-fire water	Anna	Rabajczyk	
348	Structural lifetime extension – a way to sustainable transport	Andrzej	Katunin	PhD, DSc, Associate p
349	ENERGETIC project: Safer, Smarter Batteries through Advanced BMS and Artificial Intelligence	Franco	Giustozzi	
		Christopher	Vagg	
		Reiner	Kriesten	
		Bruno	Jamet	

		Matthias	Jousseaume	
352	Probing the Multifarious Attributes of Bacillus spp. for Plant Growth Stimulation and Anti-phytopathogenicity	Izzah	Shahid	PhD
357	ENERGETIC project: Safer, Smarter Batteries through Advanced BMS and Artificial Intelligence	Franco	Giustozzi	
360	Local particularism in the visual identification of cities and communes in the Silesian Voivodeship	Anna	Adamus-Matuszyńska	PhD
		Piotr	Dzik	PhD
361	Contributions of Green Roofs to the Formation of Sustainable Urban Environments	Szymon	Dawczyński	PhD
366	GENAI, SCIENCE AND THE EUROPEAN DIGITAL AGENDA: HOW CAN WE LEAP AHEAD?	Simon	Pickard	
		David	Arranz	
		Tomasz	Trzciński	
		Alexander	Hasgall	
		Federica	Rosetta	
368	A modified hydrogel as a promising antifungal drug carrier for the treatment of cutaneous cryptococcosis	Kacper	Odziomek	
371	The 2022 Manifesto for Early Career Researchers and its impact	Fernanda	Bajanca	PhD
		Jean-Pierre	Bourguignon	Professor
		Sebastian	Dahle	PhD
		Carolina	Cañibano Sanchez	PhD
		Claire	Morel	
		Mona	Simion	Professor
375	Ammonia has revolutionised agriculture. Will it also change the energy market?	Jarosław	Zuwała	Prof. dr hab. inż.
376	Water in the City	Ewa	Łupikasza	prof.
		Szymon	Malinowski	prof.
		Stanisław	Krusz	
		Damian	Absalon	dr. hab.
		Stephan	Treuke	dr.
		Quoc Bao	Pham	dr.
379	Is artificial intelligence a game-changer for research ethics?	Mihalis	Kritikos	PhD
		Toon	Calders	Prof.
		Zuzanna	Warso	
		Alessandro	Mantelero	Prof.

		David	Arranz	BA/MA
381	Empowering Researchers: Navigating Career Uncertainties	Marion	Guerth	Dipl. biol.
		Sally	Boehm	BA
386	Coffee waste as a source of active substances for dermatological applications	Paulina	Sapuła	
387	Analysis of the relationship between EU investment in sustainable innovation and business performance	Joana	Lapkovskaja	
388	EdTech Talents - Academic talents in the service of educational technology. Boosting cross-sectoral talent circulation and academia-business collaboration.	Janika	Leoste	Associate Professor
389	From Vision to Action: Alliance4Life's Path to Closing the R&I Gap	Ester	Jarour	
392	From Digital Screens to Virtual Spaces: Reimagining Academic Conferences in the Age of Social VR	Jan	Waligórski	PhD Candidate
		Aleksandra	Cząstkiewicz	BSc
393	Cultural Identity and Societal Transformation How schools can adapt to migration and globalisation by improving Education for newcomers.	Farah	Nikijuluw	MSC MA
395	Opportunities for Reducing Emissions of Harmful Particles into the Atmosphere During 3D Printing in Home Environments	Kamil	Paprota	BsC
		Aleksander	Iwaniak	Dr
397	The cutting-edge green chemistry sonochemical synthesis for s-triazine derivatives.	Anna	Drabczyk	MSc. Eng.
		Julia	Chrzan	eng.
405	Is a beverage tax really a healthy start? Worldwide analysis	Aleksandra	Wendorf	Master
		Ignacy	Rogoń	Master of Science
407	CoMPaSS-NMD: Genetic stratification of patients with Hereditary Neuromuscular Diseases for accurate diagnosis and improved life quality	Aleksandra	Suwalska	Ph.D.
408	Empowerment of the frail. Social transformation of care	Hanna	Kelm	dr
411	Creative forms of social activism: Art as an expression of urban chaos - Frenzy, frenzy, frenzy.	Nycolle	Xavier	
419	How to achieve impactful science engagement? Findings from the Nordic-Baltic Region	Ebe	Pilt	MA
		Maria	Hagardt	MA
		Suvi	Lahtonen	MSc, MA
		Janne	Wikström	MSocSc
		Jonni	Karlsson	MA
420	Have Polish women started getting tested? The epidemiology of breast cancer in Poland in 2015-2021	Piotr	Choręza	PhD
		Aleksander	Owczarek	Prof
421	Impact of the COVID-19 pandemic occurence on the skin hygiene - survey study	Elżbieta	Chełmecka	dr hab.
		Aleksandra	Zorychta	MPharm

422	Introducing nuclear energy sources to the Polish energy mix - selected technical, environmental and safety aspects	Tomasz	Bury	PhD
425	AI-based virtual pathologist for quantitative analysis of H&E stained muscle biopsy images to support efficient diagnosis of muscular dystrophy	Michal	Marczyk	PhD
426	Ensuring scientific excellence: hopes, opportunities, barriers and threats	Grzegorz	Wegrzyn	Prof.
435	The capture of carbon dioxide as a useful gas stream in a hybrid, adsorption-membrane process for the separation of flue gas and biogas	Aleksandra	Janusz-Cygan	PhD
437	WHITE-ROT FUNGI-MEDIATED CYTOSTATIC DRUGS DETOXIFICATION	Marcelina	Jureczko	PhD Eng
445	Navigating the science for policy landscape: insights, collaboration, and societal impact	Agnieszka	Gadzina-Kołodziejska	MSc
		Agnieszka	Gawda	MSc
		Anna	Plater-Zyberk	PhD
		Ladislav	Frühauf	PhD
		Marion	Bardy	PhD
		Liina	Eek	PhD
446	Studying the invincible force of nature - How plant-microbiome interactions influence growing in harsh conditions and contaminated soils?	Małgorzata	Pawlik	PhD
		Kinga	Bondarczuk	PhD
447	Personal and systemic responsibility for developing resilience in research workplaces	Brian	Cahill	Dr.
		Katalin	Solymosi	Prof.
		Emma	Day	
		Aleksandra	Lewandowska	M.A.
		Gábor	Kismihók	
448	"Integrating AI-Generated Content within Digital Pedagogies: Transformative Approaches to Education in the Digital Era"	LAMA	AL HAFFEI	Ph.D
453	How a functional coating on titanium implant improve quality of life?	Kazek-Kęsik	Alicja	PhD Doc Associate Pr
455	Sustainable thermal energy storage materials to revolutionize clean energy future	Karolina	Matuszek	PhD
		Alina	Brzęczek-Szafran	PhD
463	Multi-functional bio-inspired and metal-free organic dyes for advanced bioimaging and optoelectronic applications	Piotr	Ślęczkowski	Ph.D.
464	AImost perpetuum mobile	Andrzej	Truszczyński	PhD
465	Biochar for the benefit of city and town environments and local economies	Daniel J.	Nowakowski	PhD
466	Humanoid robots are reshaping the business	Ida	Skubis	PhD
468	Urban voids	Agnieszka	Majorek-Gdula	PhD
471	VAMOXID – technology for the utilization of ventilation air methane (VAM)	Anna	Pawlaczyk-Kurek	

472	Micro- and nanoplastics determination in postmortem human tissues	Ewelina	Grabias-Blicharz	PhD
476	Assessment of the antibacterial properties of wood vinegar from biomass pyrolysis	Aleksandra	Zielinska	PhD
		Daniel J.	Nowakowski	PhD
481	Changes in the surface urban heat island between 1986 and 2021 in the polycentric Górno´sląsko-Zagłębiowska Metropolis, southern Poland	Aleksandra	Renc	Ph.D candidate
482	Mathematics and Medicine: Bridging Disciplines for Inclusive and Sustainable Healthcare Solutions	Katerina	Kaouri	Prof.
		Alessandra	Micheletti	Prof.
		Vivi	Rottschäfer	Prof.
		Carmine	Talarico	Dr
484	The impact of SLM technology and numerical FEM research in the design and manufacture of an implant for a large mandibular defect	Magdalena	Zorychta-Tomsia	Dr. Eng.
487	Analysis of the possibilities of process heat recovery on a model hot-dip galvanizing technological line - an example of the functioning of material technology in the aspect of achieving sustainable development goals.	Aleksander	Iwaniak	Ph.D., Eng.
491	Can machine learning reveal hidden subtypes of breast cancer?	Joanna	Tobiasz	PhD
492	Training a new generation of ahistorical history-makers: the case for more entrepreneurial scientists!	Rajiv Vaid	Basaiawmoit	PhD
493	PASSENGER – For Sustainable and efficient rare-earth-free magnets	Stefania	Vitale	
495	Adapting Education to the Digital Revolution: Meeting the Demands of the IT Sector in Poland	Dominika	Kansy	M. Sc.
499	SCIENCE ZEN in practice - or how to improve the wellbeing of scientists and researchers within the digital chaos?	Anna	Kalinowska-Balcerzak	PhD
503	Sorbents for recovering uranium from seawater based on MOF material or oxide containing uranium complexing ligandss	Agnieszka	Gładysz-Płaska	dr hab
517	National culture and entrepreneurial orientation of startups - cross culture study	Katarzyna	Szczepańska-Woszczy	Assoc. prof.
518	Energy transition - Novel ecosystem development in the urban industry areas as the prerequisite of the modern economy	Gabriela	Woźniak	PhD
		Jan	Frouz	prof
		Roman	Dyczkovskyi	prof
		Zbigniew	Pawlak	MSC
		Wojciech	Bryś	mgr
520	Algorithm for Clinical Brain Function Disorders in iCFM Monitoring (EEG, CFM, SaO2, Pulse) and Doppler Study of Newborn Cerebral Circulation	Jacek	Rudnicki	Prof.
522	Digital transition as a stimulator of changes in the science system	Jara	Pascual	
524	The digital future of science and higher education – the cutting-edge solutions developed by experts at the National Information Processing Institute (OPI PIB)	Krzysztof	Cieślowski	
		Łukasz	Błaszczyk	
		Jarosław	Protasiewicz	

		Marek	Michajłowicz	
525	Effects of source specific PM2.5 on acute health outcomes in New York State	Philip	Hopke	
527	Open science in Poland – an OPI PIB's analysis and presentation of the RAD-on system	Anna	Łobodzińska	PhD
		Agata	Frankowska	PhD
		Aldona	Tomczyńska	PhD
528	Climate change and health - the evidence for action	Andrew	Haines	Professor
531	Science for policy: in the service of society	Eduardo	Oliver	
		David	Schley	
		Agnieszka	Gadzina-Kołodziejska	
		Janusz	Bujnicki	
532	The importance of rewarding good research practices	Toma	Susi	
534	The Multiple Lives of Excellence: Diversifying Open Science	Sabina	Leonelli	
535	Either healthy or not at all	Weronika	Nowakowska	mgr
		Barbara	Hall	dr
		Anita	Gralak	dr
		Katarzyna	Szmaglińska	dr
		Magdalena	Dobrowolska	dr
		Piotr	Rodak	mgr
537	Research with Ukraine – best practice for more intensive cooperation	Matthias	Girod	
		Florian	Frank	
		Stefan	Henkel	
		Malgorzata	Mysliwiec	
		Olena	Suzdaleva	PhD
		Anton	Panteleimonov	
538	Life changes Katowice – Katowice challenges science	Anna	Budzanowska	dr
539	The Path to Scientific Excellence - in search of an ERC Grant	Michał	Daszykowski	
		Magdalena	Winiarska	
		Isto	Huvila	
		Artur	Obłuski	

540	The future of European universities	Tomasz	Pietrzykowski	Prof.
541	LATEST DIGITAL SOLUTIONS FOR SUPPORTING SMES PROCESSES	Janusz	Michałek	
		Dariusz	Mrozek	
		Shahid	Mumtaz	
		Artur	Pollak	
		Karol	Jędrasiak	
542	Europe's Growth Champion. Lessons from Poland's Economic Miracle and the Way Forward	Marcin	Piątkowski	PhD
545	The Coalition to Advance Research Assessment National Chapter Poland roundtable debate	Alicja	Józkowicz	Prof.
		Katarzyna	Nawrot	Prof.
		Wiesław	Laskowski	Prof.
		Zbigniew	Kąkol	Prof.
		Marcin	Krużel	Prof.
		Marta	Łazarowicz-Kowalik	PhD
546	Balancing public mission and participation: The role of higher education in effective public policy	Maria	Mrówczyńska	Prof.
		Celina	Olszak	Prof.
		Marcin	Pałys	Prof.
		Kazimierz	Karolczak	
		Stanisław	Mazur	Prof.
		Anna	Budzanowska	PhD
547	The human being in the world of the algorithm and new worlds - fears and hopes for the future	Ryszard	Tadeusiewicz	Professor
		Aleksander	Nawrat	Porfessor
		Kris	Wojewodzic	phd
		Magdalena	Sroka	
		Mikołaj	Stryja	
		Maria	Mazurek	
548	Making music-making work for us: how ‘musicking’ can help build and sustain healthy and resilient communities	Simon	Procter	PhD
549	The Carbon Atlantis or what can we learn from the slag heaps	Adam	Kowalski	
550	What if Monument Could Speak?	Krzysztof	Wodiczko	Prof.
551	Mapping science: by humans, by AI, and in cooperation	Łukasz	Lamża	PhD