

## Supplementary data

### **Electrochemical oxidation of organic pollutants for the wastewater treatment: direct and indirect processes**

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**Table S1** Direct anodic oxidation of organic compounds (anode materials listed in alphabetical order)

**Table S2** Indirect anodic oxidation of organic compounds (anode materials listed in alphabetical order)

**References**

**Table S1** Direct anodic oxidation of organic compounds (anode materials listed in alphabetical order)

Anode	Pollutant	<i>J, I or E</i>	Efficiency	Removal efficiency	Comments	Metabolites	Ref.
3D carbon felt	nitroaromatic waste	500-1000 A/m <sup>2</sup>		10-50% COD removal	H <sub>2</sub> SO <sub>4</sub> from 50-96%, T=25-40 °C	2-methyl quinoxaline, 2,3- dimethyl quinoxaline, quinoxaline	158
Au	benzoquinone	10 mA/cm <sup>2</sup>		46% (after 48 h)	V=50 ml, [benzoquinone]= 50 ml stock solution, [stock solution]=100 mg/l	hydroquinone, resorcinol, p-benzoquinone, pyrocatechol, formic, acetic, maleic, succinic, malonic, fumaric, acetic acids	80
Au	penta-chlorophenol						99
BDD	isopropanol	30 mA/cm <sup>2</sup>	85%	90%	1 M H <sub>2</sub> SO <sub>4</sub> , transport limitations	acetic, oxalic and formic acids	125
BDD	herbicides	I=100-450 mA	ACE=8-12 %	40% (1h), 70-90%(3h)	pH=3, 0.5 M H <sub>2</sub> SO <sub>4</sub> , [herbicide]=100mg/l	4-chlorophenol, 4-chloro-o-cresol, maleic and oxalic acids	126
BDD	maleic, formic and oxalic acids	30 mA/cm <sup>2</sup>	ICE=0.2-0.8, carboxylic acid- and concentration- depended	90%	H <sub>2</sub> SO <sub>4</sub> /Na <sub>2</sub> SO <sub>4</sub> , pH= 2, T=20 °C	CO <sub>2</sub>	148
BDD	phenol	15-60 mA/cm <sup>2</sup>	100-50% (5Ah/l) and >50% (after 5Ah/l)		[phenol]= 350-1500 mg/l, T=25 °C	hydroquinone, benzoquinone, maleic, fumaric and oxalic acids	150
BDD	phenol	5 mA/cm <sup>2</sup>	ICE=0.5	90%	HClO <sub>4</sub> 1 M, T=25 °C, [phenol]=20 mM	hydroquinone, benzoquinone, catechol, maleic, fumaric and oxalic acids	130
BDD	phenol	300 A/cm <sup>2</sup>	33% CE	90%	HClO <sub>4</sub> 1 M, T=25 °C, [phenol]=20 mM, pH=2, charge loading 4.5 Ah/l	hydroquinone, benzoquinone, catechol, maleic, fumaric and oxalic acids	130
BDD	acetic acid	30 mA/cm <sup>2</sup>	90%	98%	1 M H <sub>2</sub> SO <sub>4</sub> , T=30 °C	oxalic acid and CO <sub>2</sub>	124
BDD	formic acid	30 mA/cm <sup>2</sup>	90%	100%	1 M H <sub>2</sub> SO <sub>4</sub> , T=30 °C	CO <sub>2</sub>	124
BDD	oxalic acid	30 mA/cm <sup>2</sup>	70%	90%	1 M H <sub>2</sub> SO <sub>4</sub> , T=30 °C, transport limitations	CO <sub>2</sub>	124
BDD	polyacrylates	0.1-0.3 A/dm <sup>2</sup>	37-100%	99%	HClO <sub>4</sub> 1 M, T=30-60 °C	hydroquinone, benzoquinone, catechol, maleic, fumaric and oxalic acids	151
BDD	2-naphthol	15-60	ICE=100% (8 Ah/l)	90%	[2-naphthol]= 2-9 mM	polimerization and CO <sub>2</sub>	140

BDD	phenolic compounds	mA/cm <sup>2</sup> 153-510		90%		[phenolic comp.]=100-500 mg/l, Re number= 3500-15000	hydroquinone, benzoquinone, maleic, aliphatic acids	120
BDD	chloranilic acid	mA/cm <sup>2</sup> 6.3-50	GCE=0.7-0.4	90%		H <sub>2</sub> SO <sub>4</sub> , T=25-60 °C	hydroquinone, ketomalonic and oxalic acid	12
BDD	multicomponent mixtures (phenol, phenyl-methanol, 1-phenyl-ethanol and m-cresol)	mA/cm <sup>2</sup> 100-300	approx. 100%	COD removal 5000 – 300 ppm		Na <sub>2</sub> CO <sub>3</sub> 0.1 M supporting electrolyte, pH=7.0 using H <sub>2</sub> SO <sub>4</sub> 5% v/v		117
BDD	penta-chlorophenol	E=0.9 V	96% CE	80%		buffer pH=5.5, [penta-chlorophenol]=5.0x10 <sup>-5</sup> M	2, 3, 4, 5, 6 - pentachloro- 4- pentachloro- phenoxy- 2, 5- cyclohexadienone, p-chloranil, hydroquinone	132
BDD	penta-chlorophenol	E=2.0 V	90% CE	86%		buffer pH=5.5, [penta-chlorophenol]=5.0x10 <sup>-5</sup> M	2, 3, 4, 5, 6 - pentachloro- 4- pentachloro- phenoxy- 2, 5- cyclohexadienone, p-chloranil, hydroquinone	132
BDD	penta-chlorophenol	E=3.0 V		95%		buffer pH=5.5, [penta-chlorophenol]=5.0x10 <sup>-5</sup> M	2, 3, 4, 5, 6 - pentachloro- 4- pentachloro- phenoxy- 2, 5- cyclohexadienone, p-chloranil, hydroquinone	132
BDD	benzoic acid	I=1.5 A	ICE=100% initial times	90% COD		0.5 M HClO <sub>4</sub> , [benzoic acid]=several concentrations	salicylic acid, 2, 5-dihydroxybenzoic acid and hydroquinone	127
BDD	polyhydroxy benzenes	mA/cm <sup>2</sup> 15-60	ICE= 100% from 4000-2000 COD concentrations, and decrease ICE from 1800 to 100 COD concentrations	90% COD		T=15-60°C, initial concentration 1.1-36 mmol/l, pH=2 and 12, transport limitations	aliphatic compounds	144
BDD	Kodak® 6 first developer	1000 A/m <sup>2</sup>		73% COD		initial COD=32500 mg/l, V=30 ml, I=0.31 A, electrolysis time 6.25 h		131
BDD	Kodak® E6 color developer	1000 A/m <sup>2</sup>		80% COD		initial COD=19050 mg/l, V=30 ml, I=0.31 A, electrolysis time 4.75 h		131
BDD	phenol solution	1000 A/m <sup>2</sup>		94% COD		initial COD=3570 mg/l,		131

BDD	hydroquinone solution	500 A/m <sup>2</sup>		97% COD	V=60 ml, I=0.31 A, electrolysis time 18 h initial COD=23530 mg/l, V=60 ml, I=0.15 A, electrolysis time 38 h		131
BDD	CN <sup>-</sup>	360 A/m <sup>2</sup>	41% CE	95% [CN <sup>-</sup> ] removal	1 M KOH		135
BDD	isopropanol	300 A/cm <sup>2</sup>	> 95%	< 90% conversion	[isopropanol]= 0.17 M	CO <sub>2</sub>	118
BDD/ Electro-Fenton	herbicides	I=100-450 mA	ACE=8-12 %	60% (1h), 80-99% (3h)	pH=3, 0.5 M H <sub>2</sub> SO <sub>4</sub> , [herbicide]=100 mg/l	4-chlorophenol, 4-chloro-o-cresol, maleic and oxalic acids	126
Carbon anode	cyanide	E=3-5 V	approx. 100% CE	50%, CN removal depending flow of solution	catalyzed by copper, T=19-25 °C		159
Carbon felt	chlorophenols	2.5-17 mA/cm <sup>2</sup>	faradic efficiency 30%	80%	elimination of cyclic chlorinated compounds, pH= 2.5	aliphatic acids, consist mainly oxalic acid	67
Ebonex/ PbO <sub>2</sub>	phenol	CV method, -0.5-2.0V vs. NHE			1 M H <sub>2</sub> SO <sub>4</sub> , [phenol]=5 mM	partial destruction of phenol	109
Ebonex®	trichloroethylene	E=2.5-4.3 V	high value, 32%, Ea=2.5 V	10-70% potential-depended	pH=7, [trichloroethylene]= 1 mM, faster reaction kinetics	chlorine-containing products	115
Ebonex®	phenol	CV method, -0.5-2.0V vs. NHE			1 M H <sub>2</sub> SO <sub>4</sub> , [phenol]=5 mM	inactive oxidation	109
Glassy carbon	benzoquinone	10 mA/cm <sup>2</sup>		100% (10 h)	V=50 ml, [Benzoquinone]= 50 ml sol.stock, [sol. Stock]=100 mg/l, carbon particles degradation	hydroquinone, resorcinol, p-benzoquinone, pyrocatechol, formic, acetic, maleic, succinic, malonic, fumaric, acetic acids	80
Glassy carbon	benzene	E=1.6-2.2 V, approx. 0.1-2.5 mA		90% of transformation to benzoquinone	0.5 M H <sub>2</sub> SO <sub>4</sub> , T=25 °C	p-benzoquinone, hydroquinone, phenol, 1-ethynyl, 4-methyl benzene	157
Glassy carbon	Penta-chlorophenol					polymerization	99
Glassy carbon	phenol	E1.7-2.3 V	5-100%, CE depending on the experimental	50-100%, [phenol]- and temperature- depended. For high potential a low	different experimental parameters: concentrations, temperature and potentials	hydroquinone, benzoquinone, catechol, maleic and oxalic acids	59

			conditions	efficiency is achieved and vice versa			
Granular graphite	phenol	0.03-0.32 A/m <sup>2</sup>	70%, CE	70-50% mineralization	%-month stable operation, current- and pH- depended	different organic pollutants	103
Ir <sub>(30%)</sub> Ti <sub>(20%)</sub> Ce <sub>(50%)</sub> O <sub>2</sub>	p-benzoquinone maleic acid	10 mA/cm <sup>2</sup>	CE(%)=0.3		[p-benzoquinone]=5x10 <sup>-4</sup> M, considering one-electron reaction	muconic acid, maleic and oxalic acids	78
Ir <sub>(30%)</sub> Ti <sub>(70%)</sub> O <sub>2</sub>	p-benzoquinone maleic acid	10 mA/cm <sup>2</sup>	CE(%)=0.3		[p-benzoquinone]=5x10 <sup>-4</sup> M,, considering one-electron reaction	muconic acid, maleic and oxalic acids	78
IrO <sub>2</sub>	chloranilic acid	6.3-50 mA/cm <sup>2</sup>	GCE=0.1	90%	H <sub>2</sub> SO <sub>4</sub> T=25-60°C	hydroquinone, ketomalonic and oxalic acid	12
IrO <sub>2</sub> spray pyrolysis	p-benzoquinone maleic acid	10 mA/cm <sup>2</sup>	CE(%)=0.55		[p-benzoquinone]=5x10 <sup>-4</sup> M, considering one-electron reaction	muconic acid, maleic and oxalic acids	78
IrO <sub>2</sub> thermal decomposition	p-benzoquinone maleic acid	10 mA/cm <sup>2</sup>	CE(%)=0.45		[p-benzoquinone]=5x10 <sup>-4</sup> M, considering one-electron reaction	muconic acid, maleic and oxalic acids	78
Lead Anode and Packed bed lead particles	aniline	300 A/m <sup>2</sup>	15-40%, CE; depending on the experimental conditions	97.5% aniline was oxidized and 72.5% of products was converted in CO <sub>2</sub> after 5 h	[aniline]=5.5x10 <sup>-3</sup> M, H <sub>2</sub> SO <sub>4</sub> , pH=2, V=400 ml, T=25 °C	benzoquinone, maleic and carbon dioxide	73
Packed bed reactor of PbO <sub>2</sub> pellets	phenol	I=1.0 A	21% (after 2.5)	phenol removal 72-100%, depending on the experimental conditions	[phenol]=1.4x10 <sup>-2</sup> M, 1M H <sub>2</sub> SO <sub>4</sub> , First Electrochemical oxidation studies, Innovative reactor.	phenol, benzoquinone, maleic acid and CO <sub>2</sub>	85
Packed bed reactor of PbO <sub>2</sub> pellets	phenol	I=2.0 A	16% (after 1.5hrs.)	phenol removal 72-100%, depending on the experimental conditions	[phenol]=1.4x10 <sup>-2</sup> M, 1M H <sub>2</sub> SO <sub>4</sub> , First Electrochemical oxidation studies, Innovative reactor.	phenol, benzoquinone, maleic acid and CO <sub>2</sub>	85
Packed bed reactor of	phenol	I=3.0 V	16% (after 1.5hrs.)	phenol removal 72-100%, depending on the experimental conditions	[phenol]=1.4x10 <sup>-2</sup> M, 1M H <sub>2</sub> SO <sub>4</sub> , First Electrochemical oxidation studies, Innovative reactor.	phenol, benzoquinone, maleic acid and CO <sub>2</sub>	85

PbO <sub>2</sub> pellets						dissolved oxygen after 1.5 h and considerable [CO <sub>2</sub> ] achieved		
PbO <sub>2</sub>	indoles	I=0.5-500 mA	32%			0.05 Na <sub>2</sub> SO <sub>4</sub>	polymerization	75
PbO <sub>2</sub>	1-Methyl indol	I=0.5-500 mA	99%			0.05 Na <sub>2</sub> SO <sub>4</sub>	polymerization	75
PbO <sub>2</sub>	2-Methyl-indol	I=0.5-500 mA	58%			0.05 Na <sub>2</sub> SO <sub>4</sub>	polymerization	75
PbO <sub>2</sub>	3-Methyl-indol	I=0.5-500 mA	27%	90% (60 mA) and 99% (100 mA)		0.05 Na <sub>2</sub> SO <sub>4</sub>	polymerization	75
PbO <sub>2</sub>	tryptophan	I=0.5-500 mA	37%			0.05 Na <sub>2</sub> SO <sub>4</sub>	polymerization	75
PbO <sub>2</sub>	Phenol	Potential=1.4-2.5 V		68-100%		T=65°C, 0.2M H <sub>2</sub> SO <sub>4</sub>	hydroquinone, benzoquinone	90
PbO <sub>2</sub>	glucose	100-900 A/m <sup>2</sup>	EOI=30-60%	100%		1M H <sub>2</sub> SO <sub>4</sub> , T=25-57°C, Specific interaction between Pb <sup>(IV)</sup> sites and carboxylic groups	9 derivates of glucose	76
PbO <sub>2</sub>	chloranilic acid	6.3-50 mA/cm <sup>2</sup>	GCE=0.7-0.2	90%		H <sub>2</sub> SO <sub>4</sub> , T=25-60°C	hydroquinone, ketomalonic and oxalic acid	12
PbO <sub>2</sub>	p-Benzoquinone/ maleic acid	10 mA/cm <sup>2</sup>	CE(%)=0.6			[p-benzoquinone]=5x10 <sup>-4</sup> M assuming one-electron reaction	muconic acid, maleic and oxalic acids	78
PbO <sub>2</sub>	urine-waste biomass mixtures	E=1.8 V vs. NHE, around (0.2-0.4 mA/cm <sup>2</sup> )		95%		H <sub>2</sub> SO <sub>4</sub> , T=80 °C, real matrix	NO <sub>2</sub> , NO, NO <sub>2</sub> <sup>-3</sup> , NH <sub>4</sub> <sup>+</sup>	84
Planar graphite	phenol	10-100 A/m <sup>2</sup>	24.6-63.5%, CE	6-17%, COD		NaOH as electrolyte, [phenol]=100 ppm	aliphatic compounds, CO <sub>2</sub> and water	104
Porous Graphite	phenol	2.0 A	48%, CE			different percentages of phenol removal according of current density and residence time	different organics	167
Pt	phenol	30 mA/cm <sup>2</sup>	25% (1.5 h), EOI=0.13			pH influence in EOI	maleic, fumaric, oxalic acids	89
Pt	phenol	Potential=		34-47%		T=65 °C, 0.2 M H <sub>2</sub> SO <sub>4</sub>	hydroquinone, benzoquinone, maleic, fumaric and oxalic acids	90

Pt	glucose	0.25-1.5 V 100-900 A/m <sup>2</sup>	EOI=15-20%	40%	1 M H <sub>2</sub> SO <sub>4</sub> , T=25-57 °C, Specific interaction between Pb <sup>(IV)</sup> sites and carboxylic groups	9 derivates of glucose	76
Pt	4-Chlorophenol	0.18 A/cm <sup>2</sup>		78%	pH decrease 6 to 4	benzoquinone, maleic, malonic, succinic, oxalic, formic, acetic acids, chloride, 4- Cl-maleic acid, Cl-acetic, diCl-acetic	91
Pt	phenol	50 mA/cm <sup>2</sup>		50% (after 120 Ah/l)	[phenol]=2 gr/l, T=70 °C, Na <sub>2</sub> SO <sub>4</sub> , pH=2		92
Pt	dicamba (3, 6 dichloro-2 methoxy benzoic acid)	I=100-450 mA	ACE=0-0.4 (1h)	%TOC removal=21-65	pH=3, 0.5 M H <sub>2</sub> SO <sub>4</sub>	formic, maleic, oxalic acids	88
Pt	urine-waste biomass mixtures	8 mA/cm <sup>2</sup>		78%	T=60 °C, 72 h	NO <sub>2</sub> , NO, NO <sub>2</sub> <sup>-3</sup> , NH <sub>4</sub> <sup>+</sup>	84
Pt	benzene	E=1.6-2.2 V, aprox. 0.1-2.5 mA		90%, conversion in benzoquinone	0.5 M H <sub>2</sub> SO <sub>4</sub> , T=25°C	p-benzoquinone, hydroquinone, phenol, 1-ethynyl, 4-methyl benzene	157
Pt	Penta- chlorophenol					polymerazitation	99
Pt	Phenol	E=0.9-1.2 V	passive film was observed	different concentrations from 2-500 mM	0.09 M H <sub>2</sub> SO <sub>4</sub> , pH=1, mechanism phenol oxidation, study by FTIR spectroscopy	polymeratization reaction, quinone structures	93
Pt	p-cresol	E=0.9 V	passive film was observed	different concentrations from 2-500 mM	0.09 M H <sub>2</sub> SO <sub>4</sub> , pH=1, mechanism phenol oxidation, study by FTIR spectroscopy	polymeratization reaction, quinone structures	93
Pt	p-terbutyl phenol	E=0.9 V	passive film was observed	different concentrations from 2-500 mM	0.09 M H <sub>2</sub> SO <sub>4</sub> , pH=1, mechanism phenol oxidation, study by FTIR spectroscopy	polymeratization reaction, quinone structures	93
Pt	o, o' - biphenol	E=0.9 V	passive film was observed	different concentrations from 2-500 mM	0.09 M H <sub>2</sub> SO <sub>4</sub> , pH=1, mechanism phenol oxidation, study by FTIR spectroscopy	polymeratization reaction, quinone structures	93
Pt	phenol	different potentials	short times	identificacion of film: XPS; electrochemistry	H <sub>2</sub> SO <sub>4</sub> , pH=0-1, study of the electrode passivation	oligomers polymers	165
Pt	phenol	0.15 mA/cm <sup>2</sup>		PtOH species at 0.5V	Pt oxide coverage (1.1 mC/cm <sup>2</sup> )	hydroquinone, benzoquinone	166



Pt	tannis	E=3 V		40%, COD removal alkaline media,, 60-100% COD removal according pH effect, 95%	NaCl 2000mg/l, effect for supporting electrolyte, effect of pH, effect of chlorine concentration		87
Pt	ammonia	8.5 A/m <sup>2</sup>	53% CE		pH=8.2 using phosphate buffer, poor performance for organics		94
Pt	phenol	50 mA/cm <sup>2</sup>		100%	Selective oxidation, PtOx is formed during oxidation, pH=2.0, T=70°C	aromatic intermediates (hydroquinone, benzoquinone, catechol). Aliphatic acids (maleic, fumaric, oxalic) and CO <sub>2</sub>	6
Pt or Ti/Pt	phenol	300 A/m <sup>2</sup>		30% TOC	pH=12, [phenol]=1000mg/l, Na <sub>2</sub> SO <sub>4</sub> , competition with oxygen evolution reaction	stop oxidation with maleic and oxalic acids	106
Pt/WOx	formic and oxalic acids	10 mA/cm <sup>2</sup>	100% CE	approx. 95%	[formic]=8x10 <sup>-4</sup> M, [oxalic]=1.0x10 <sup>-3</sup> M, 0.5 M H <sub>2</sub> SO <sub>4</sub>	CO <sub>2</sub>	100
Pt/WOx	oxalic acid	E=1.385 and 1.885 V vs. SCE	100% CE	approx. 99%	[oxalic]=10 <sup>-3</sup> M, 0.5 M H <sub>2</sub> SO <sub>4</sub> . Determination of influence of stirring rate, potential-depended and oxidation rates constant	CO <sub>2</sub>	101
PtO <sub>2</sub>	p-benzoquinone/ maleic acid	10 mA/cm <sup>2</sup>	CE(%)=0.55		[p-benzoquinone]=5x10 <sup>-4</sup> M considering one-electron reaction	muconic acid, maleic and oxalic acids	78
pyrolytic carbon	penta-chlorophenol					carboxylic acids	99
Sn(Sb) Oxide	p-benzoquinone/ maleic acid	10 mA/cm <sup>2</sup>	CE(%)=0.55		[p-benzoquinone]=5x10 <sup>-4</sup> M considering one-electron reaction	muconic acid, maleic and oxalic acids	78
Sn/WOx	formic and oxalic acids	10 mA/cm <sup>2</sup>	100% CE	approx. 95%	[formic]=8x10 <sup>-4</sup> M, [oxalic]=1.0x10 <sup>-3</sup> M, 0.5 M H <sub>2</sub> SO <sub>4</sub>	CO <sub>2</sub>	100
SnO <sub>2</sub>	glucose	100-900 A/m <sup>2</sup>	EOI<20%	40%	1 M H <sub>2</sub> SO <sub>4</sub> , T=25-57 °C, Specific interaction between Pb <sup>(IV)</sup> sites and carboxylic groups	9 glucose derivates	76
SnO <sub>2</sub>	phenol	50 mA/cm <sup>2</sup>	EOI=30-40%	90%	T=70 °C, pH=12, [phenol]= 21 mM	maleic, fumaric, oxalic acids	168
SnSb	oxalic	E=1.385 and 1.885 V vs. SCE	50% CE	approx. 50%	[oxalic]=10 <sup>-3</sup> M, 0.5 M H <sub>2</sub> SO <sub>4</sub> . Determination of influence of stirring rate, potential-depended	CO <sub>2</sub>	101

Stainless steel plates	acid orange II	E=20.0 V	100% ACE	99% COD, 87% color removal	and oxidation rates constant granular activated carbon, pH controlled, air flow=0.1 m <sup>3</sup> /h		163
Ta/PbO <sub>2</sub>	phenol	100-200 mA/cm <sup>2</sup>	faradic yields from 40-70% (after 20 Ah/l); Mean faradic yields=15% whatever temperature after 100 Ah/l	60 °C=80% 70 °C=80% 90 °C=70%	V=160 cm <sup>3</sup> , T= 60-90 °C	1, 4 benzoquinone, maleic acid, hydroquinone, catechol, glyoxal, fumaric, glyoxalic, formic, oxalic, CO <sub>2</sub>	129
Ti/70TiO <sub>2</sub> /30RuO <sub>2</sub>	cyanide	5-70 mA/cm <sup>2</sup>	Energy consumption = 2 - 350 KWh/Kg (99%); 2 - 180 KWh/Kg (90%)	90% from 60 to 90 min, 99% from 120 to 180 min	0.1 M NaOH, 0.1 M Na <sub>2</sub> SO <sub>4</sub> and 0.1 M Na <sub>2</sub> CO <sub>3</sub> , pH=13.5, conductivity=45 mS/cm		164
Ti/BDD	dyes	100 A/m <sup>2</sup>	70-90%	80-97% COD	T=30 °C, V=25 ml, initial dyes concentration=1000mg/l, initial pH 4.70-6.7	Some polymeric products in the Monozol T-blue HFG oxidation	153
Ti/BDD	acetic acid	200 A/m <sup>2</sup>	64% CE	97% COD (after 5.53 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	CO <sub>2</sub>	108
Ti/BDD	maleic acid	200 A/m <sup>2</sup>	61% CE	96% COD (after 6.43 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	CO <sub>2</sub>	108
Ti/BDD	phenol	100 A/m <sup>2</sup>	78.5% CE	97% COD (after 4.85 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	CO <sub>2</sub>	108
Ti/BDD	orange II	200 A/m <sup>2</sup>	54,9% CE	91% COD (after 6.25 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	several pollutants	108
Ti/BDD	reactive Red HE-3B	200 A/m <sup>2</sup>	46.9% CE	95% COD (after 6.25 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	several pollutants	108
Ti/Fe-PbO <sub>2</sub>	benzoquinone	10 mA/cm <sup>2</sup>		99% (after 10 h)	V=50 ml, [benzoquinone]= 50 ml stock solution, [stock solution]=100 mg/l, colorless solution	hydroquinone, resorcinol, p-benzoquinone, pyrocatechol, formic, acetic, maleic, succinic, malonic, fumaric, acetic acids	80
Ti/IrO <sub>2</sub>	phenol	<50 mA/cm <sup>2</sup>	EOI=0.17	71%	alkaline media (pH>9), T=50 °C, [phenol]=50 mmol/dm <sup>3</sup>		81
Ti/IrO <sub>2</sub>	1, 4 benzoquinone	50 mA/cm <sup>2</sup>		60%	[benzoquinone]=2 gr/l, T=70 °C, Na <sub>2</sub> SO <sub>4</sub> , pH=2	hydroquinone, fumaric, mesoxalic, oxalic, maleic acids	92

Ti/IrO <sub>2</sub>	chlorinated phenols	0.06-5 mA/cm <sup>2</sup>	1.8-54% CE	60-90% COD	oxidation involving hydroxyl radicals	different compounds	82
Ti/IrO <sub>2</sub>	1, 4-benzoquinone	50 mA/cm <sup>2</sup>	EOI=0.06	40% COD (after 80 Ah/l)	pH=2.5, H <sub>2</sub> SO <sub>4</sub> or NaOH, 150 g/l Na <sub>2</sub> SO <sub>4</sub> , [benzoquinone]=14.8 mM	benzoquinone, aliphatic acids (maleic, fumaric, mesoxalic, oxalic) and CO <sub>2</sub>	110
Ti/IrO <sub>2</sub>	aliphatic alcohols	I= 1-5 kA/m <sup>2</sup>	30-40% CE	90%	Isopropanol, Ethanol, methanol and propanol alcohols; influence of alcohol nature	CO <sub>2</sub>	111
Ti/IrO <sub>2</sub>	phenol	50 mA/cm <sup>2</sup>		80%	Selective oxidation, pH=2.0, T=70°C	aromatic intermediates (hydroquinone, benzoquinone, catechol). Aliphatic acids (maleic, fumaric, oxalic) and CO <sub>2</sub>	6
Ti/IrO <sub>2</sub> /SnO <sub>2</sub> -Sb <sub>2</sub> O <sub>5</sub>	p-chlorophenol	30 mA/cm <sup>2</sup>		95%	pH=2, Na <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , T=30 °C		107
Ti/MnO <sub>2</sub> -RuO <sub>2</sub>	3 dyes (Red 74, Yellow 126, Blue 139)	2 A/dm <sup>2</sup>	24%	10% COD, 46% color removal	supporting electrolyte 0.1 M NaCl, T=25 °C	different pollutants	95
Ti/PbO <sub>2</sub>	phenol	50 mA/cm <sup>2</sup>	EOI=0.18	71%	alkaline media, pH>9, T=50 °C, [phenol]=50 mmol/dm <sup>3</sup>		81
Ti/PbO <sub>2</sub>	benzoquinone	10 mA/cm <sup>2</sup>		98% (after 24 h)	Vol=50 ml, [benzoquinone]= 50 ml stock solution, [Stock solution]= 100 mg/l, colorless solution	hydroquinone, resorcinol, p-benzoquinone, pyrocatechol, formic, acetic, maleic, succinic, malonic, fumaric, acetic acids	80
Ti/PbO <sub>2</sub>	phenol	300 A/m <sup>2</sup>		40%, TOC	pH=12, [phenol]=1000 mg/l, Na <sub>2</sub> SO <sub>4</sub> , competition with oxygen evolution reaction		106
Ti/PbO <sub>2</sub>	benzoic acid	30 mA/cm <sup>2</sup>	EOI=0.10	30%	0.5 M H <sub>2</sub> SO <sub>4</sub> , pH=12, Vol=150 ml	different pollutants	97
Ti/PbO <sub>2</sub>	chlorinated phenols	0.06-5 mA/cm <sup>2</sup>	2.1-77% CE	60-90% COD		different metabolites	82
Ti/PbO <sub>2</sub>	2-chlorophenol	8-16 mA/cm <sup>2</sup>	faradic yields: 50% (8 mA/cm <sup>2</sup> ), 40% (16 mA/cm <sup>2</sup> )	80-90%	V=300 ml, flow=0.3-1.5 cm <sup>3</sup> /s, pH= 3 and 7, [2-chlorophenol]=1000 mg/l	oxalic acid	74

Ti/PbO <sub>2</sub>	2-chlorophenol	80-160 A/m <sup>2</sup>	35-40% CE	80-95%	Pb <sup>+2</sup> formation, initial COD=1000 mg, T=25 °C		74
Ti/PbO <sub>2</sub>	landfill leachate	50-150 A/m <sup>2</sup>	30% COD, 10% NH <sup>+4</sup> -N	90% COD, 10% NH <sup>+4</sup> -N	characteristics of leachate: pH=8.3, BOD=80 mg/t, COD=1200 mg/l, Total Nitrogen=420 mg N/l Amomonium-N=380 mg N/l Chlorides=1600 mg Cl/l, Conductivity=12 mS/cm	humic and fulvic acids, halogenated compounds	83
Ti/PdO- Co <sub>3</sub> O <sub>4</sub>	3 dyes (Red 74, Yellow 126, Blue 139)	2 A/dm <sup>2</sup>	58%	25% COD, 48% color removal	supporting electrolyte 0.1 M NaCl, T=25 °C	different pollutants	95
Ti/Pt	benzoic acid	30 mA/cm <sup>2</sup>	EOI=0.10	30%	0.5 M H <sub>2</sub> SO <sub>4</sub> , pH=12, V=150 ml	different pollutants	97
Ti/Pt	bisphenol A	I=0.3 A	30% CE	60% (after 30 h)	E during process= 0.8-1.0 V and 3-4 V, [bisphenol A]= 1.0 mM	aliphatic acids, tartaric acid, CO <sub>2</sub> and H <sub>2</sub> O	98
Ti/Pt	2, 4-dihydroxy- benzoic acid	100-300 A/m <sup>2</sup>	faradic yield 18%	90% (after 4 Ah/l)	[dihydroxybenzoic acid]= 0.3 Kg/m <sup>3</sup>	2, 3, 4 trihydroxy-2, 4, 5 benzoic acid, maleic, glyoxalic and oxalic acids	162
Ti/Pt	tannery wastewater	2-6 A/dm <sup>2</sup>	6-26% CE	50%	tannery wastewater: 1) sampled after aerobic treatment, 2) mixed, 3) sampled after passing through a primary settling tank, 4) final effluent	ammonia and other compounds	96
Ti/Pt	3 dyes (Red 74, Yellow 126, Blue 139)	2 A/dm <sup>2</sup>	21.40%	9% COD, 40% color removal	supporting electrolyte 0.1M NaCl, T=25°C	different pollutants	95
Ti/Pt/Ir	tannery wastewater	2-6 A/dm <sup>2</sup>	6-26% CE	50-80%	tannery wastewater: 1) sampled after aerobic treatment, 2) mixed, 3) sampled after passing through a primary settling tank, 4) final effluent	ammonia and other compounds	96
Ti/Pt-Ir	3 dyes (Red 74, Yellow 126, Blue 139)	2 A/dm <sup>2</sup>	100%	50% COD (after 40 min), 90% color removal	supporting electrolyte 0.1 M NaCl, T=25 °C	different pollutants	95
Ti/RhO <sub>x</sub> - TiO <sub>2</sub>	3 dyes (Red 74, Yellow 126, Blue 139)	2 A/dm <sup>2</sup>	77%	29% COD, 47% color removal	supporting electrolyte 0.1 M NaCl, T=25 °C	different pollutants	95

Ti/Ru	benzoquinone	10 mA/cm <sup>2</sup>		97% (after 48 h)	V=50 ml, [benzoquinone]= 50 ml stock solution, [stock solution]= 100 mg/l	hydroquinone, resorcinol, p-benzoquinone, pyrocatechol, formic, acetic, maleic, succinic, malonic, fumaric, acetic acids	80
Ti/RuO <sub>2</sub>	phenol	50 mA/cm <sup>2</sup>	EOI=0.14	71%	alkaline media, pH>9, T=50 °C, [phenol]=50 mmol/dm <sup>3</sup>		81
Ti/RuO <sub>2</sub> -TiO <sub>2</sub>	3 dyes (Red 74, Yellow 126, Blue 139)	2 A/dm <sup>2</sup>	60-40%	26% COD, 42% color removal	supporting electrolyte 0.1 M NaCl, T=25 °C	different pollutants	95
Ti/Ru-Ti-Sb-SnO <sub>2</sub>	benzoquinone	10 mA/cm <sup>2</sup>		99.4% (after 24 h)	V=50 ml, [benzoquinone]= 50 ml stock solution, [stock solution]= 100 mg/l	hydroquinone, resorcinol, p-benzoquinone, pyrocatechol, formic, acetic, maleic, succinic, malonic, fumaric, acetic acids	80
Ti/Sb-SnO <sub>2</sub>	benzoquinone	10 mA/cm <sup>2</sup>		100% (after 0.5 h)	V=50 ml, [benzoquinone]= 50 ml stock solution, [stock solution]= 100 mg/l, corrosion	hydroquinone, resorcinol, p-benzoquinone, pyrocatechol, formic, acetic, maleic, succinic, malonic, fumaric, acetic acids	80
Ti/SnO <sub>2</sub>	phenol	50 mA/cm <sup>2</sup>	EOI=0.58	90%	alkaline media, pH>9, T=50 °C, [phenol]=50 mmol/dm <sup>3</sup>	fumaric, maleic, oxalic acids	81
Ti/SnO <sub>2</sub>	1, 4 benzoquinone	50 mA/cm <sup>2</sup>		100% (after 50 Ah/l)	[benzoquinone]=2 gr/l, T=70 °C, Na <sub>2</sub> SO <sub>4</sub> , pH=2	CO <sub>2</sub>	92
Ti/SnO <sub>2</sub>	benzoic acid	30 mA/cm <sup>2</sup>	EOI=0.79	90%	0.5 M H <sub>2</sub> SO <sub>4</sub> , pH=12, V=150 ml	different pollutants	97
Ti/SnO <sub>2</sub>	chlorinated phenols	0.06-5 mA/cm <sup>2</sup>	2.8-61% CE	60-90% COD	oxidation involving hydroxyl radicals	different compounds	82
Ti/SnO <sub>2</sub>	2-chlorophenol	8-16 mA/cm <sup>2</sup>	faradic yield: 50% (8 mA/cm <sup>2</sup> ), 35% (16 mA/cm <sup>2</sup> )	80-90%	V=300 ml, flow=0.3-1.5 cm <sup>3</sup> /s, pH= 3 and 7, [chlorophenol]=1000 mg/l	oxalic acid	74
Ti/SnO <sub>2</sub>	bisphenol A	I=0.3 A	70% CE	100% (after 5 h)	E <sub>during process</sub> =0.8-1.0 V and 3-4 V, [bisphenol A]= 1.0 mM	>aliphatic acids, < CO <sub>2</sub> and H <sub>2</sub> O	98
Ti/SnO <sub>2</sub>	acid red 14	4.5 mA/cm <sup>2</sup>		60% TOC	electrolyte influence, mass transfer and reaction time process	naphthalene and other organic pollutants	161
Ti/SnO <sub>2</sub>	1, 4-benzoquinone	50 mA/cm <sup>2</sup>	EOI=0.19	100% COD	pH=2.5, H <sub>2</sub> SO <sub>4</sub> or NaOH, 150 g/l Na <sub>2</sub> SO <sub>4</sub> , [benzoquinone]=14.8 mM	benzoquinone, aliphatic acids (maleic, fumaric, mesoxalic, oxalic) and CO <sub>2</sub>	110
Ti/SnO <sub>2</sub>	2-chlorophenol	80-160 A/m <sup>2</sup>	35-40% CE	80-95%	initial COD=1000 mg, T=25 °C	oxalic acid	74
Ti/SnO <sub>2</sub>	landfill leachate	50-150 A/m <sup>2</sup>	30% COD	90% COD	characteristics of leachate: pH=8.3, BOD=80 mg/l, COD=1200 mg/l, Total	humic and fulvic acids, halogenated compounds	83

					Nitrogen=420 mg N/l amomonium-N=380 mg N/l Chlorides=1600 mg Cl/l, Conductivity=12 mS/cm 1 M H <sub>2</sub> SO <sub>4</sub> , [phenol]=5 mM Chemisorptions of oxygen and electrochemical conversion of phenol		109
Ti/SnO <sub>2</sub>	phenol	CV method, -0.5-2.0 V vs. NHE					
Ti/SnO <sub>2</sub>	phenol	50 mA/cm <sup>2</sup>		100%	Combustion of organics, pH=2.0, T=70 °C	Aromatic intermediates (hydroquinone, benzoquinone, catechol). The main products are aliphatic acids (maleic, fumaric, oxalic) but these were oxidized to CO <sub>2</sub>	6
Ti/SnO <sub>2</sub> - Sb <sub>2</sub> O <sub>5</sub>	phenol	300 A/m <sup>2</sup>		100% TOC	pH=12, [phenol]=1000 mg/l, Na <sub>2</sub> SO <sub>4</sub>	CO <sub>2</sub>	106
Ti/SnO <sub>2</sub> - Sb <sub>2</sub> O <sub>5</sub>	p-chlorophenol	30 mA/cm <sup>2</sup>		75%	pH=2, Na <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , T=30 °C	-	107
Ti/SnO <sub>2</sub> - Sb <sub>2</sub> O <sub>5</sub>	3 dyes (Red 74, Yellow 126, Blue 139)	2 A/dm <sup>2</sup>	61%	23% COD, 45% color removal	supporting electrolyte 0.1 M NaCl, T=25 °C	different pollutants	95
Ti/SnO <sub>2</sub> - Sb <sub>2</sub> O <sub>5</sub>	acetic acid	200 A/m <sup>2</sup>	20.2% CE	30% COD (after 5.53 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	various pollutants	108
Ti/SnO <sub>2</sub> - Sb <sub>2</sub> O <sub>5</sub>	maleic acid	200 A/m <sup>2</sup>	35.0% CE	55% COD (after 6.43 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	various pollutants	108
Ti/SnO <sub>2</sub> - Sb <sub>2</sub> O <sub>5</sub>	phenol	100 A/m <sup>2</sup>	50.1% CE	64% COD (after 4.85 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	various pollutants	108
Ti/SnO <sub>2</sub> - Sb <sub>2</sub> O <sub>5</sub>	orange II	200 A/m <sup>2</sup>	16.4% CE	27% COD (after 6.25 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	various pollutants	108
Ti/SnO <sub>2</sub> - Sb <sub>2</sub> O <sub>5</sub>	reactive Red HE- 3B	200 A/m <sup>2</sup>	11.0% CE	22% COD (after 6.25 Ah/l)	V=30 ml, Na <sub>2</sub> SO <sub>4</sub> (2000 mg/l), T=30 °C	various pollutants	108
Ti/TiO <sub>2</sub> - RuO <sub>2</sub> -IrO <sub>2</sub>	cresols	I=0-6 A	25-30% CE	50-60% TOC	V=500 ml, T=30 °C	aliphatic compounds	160

BDD = Boron Doped Diamond, COD = Chemical Oxygen Demand, V = Volume, T = Temperature, [ ] = concentration,  $J$  = Current density,  $i$  = current, E = potential, ICE = Instantaneous current efficiency, ACE = Apparent current efficiency, EOI = Electrochemical oxidation index, CE = current efficiency, GCE = General current efficiency and Percentage (%).

**Table S2** Indirect anodic oxidation of organic compounds (anode materials listed in alphabetical order)

<b>Anode</b>	<b>Pollutant</b>	<i>J, i or E</i>	<b>E MA</b>	<b>E MP</b>	<b>RE MA</b>	<b>RE MP</b>	<b>Mediator</b>	<b>Notes</b>	<b>Metabolites</b>	<b>Ref</b>
BDD	chlorophenols	30 mA/cm <sup>2</sup>		95% (before 15 h/l)		100% COD	hypochlorite or peroxy- disulphate	Na <sub>2</sub> SO <sub>4</sub> 5000 mg/l, T=30-60 °C	oxalic, maleic and fumaric acids, hydro-quinone, benzo-quinone, tri-chloroacetic acid	147
DSA	landfill leachate	7.5 A/dm <sup>2</sup>			29% COD, 36.1% ammonium		chlorine/ hypochlorite			217
Graphite	landfill leachate	7.5 A/dm <sup>2</sup>			21% COD, 11% ammonium		chlorine/ hypochlorite			217
Graphite	nitrite ion	1.5 V vs Ag/AgCl				60-100% potential- depended	HClO	1-3 % wt NaCl		218
Pb/PbO <sub>2</sub>	o-chlorotoluene	156-931 A/m <sup>2</sup>		43% CE		10-40% conversion	Mn(III)	T=33-60 °C, acid concentration (44-55wt%)		219
Pt	alcohols	10-100 mA/cm <sup>2</sup>					NaBr, the formation of [Br• or Br <sup>+</sup> ]	synthetic utility	carbonyl compounds	20
Pt	organic waste	6000 mA					Ag(II)	Electrolyte 0.5 M AgNO <sub>3</sub> /7 M HNO <sub>3</sub> , 1000 cm <sup>3</sup> , 70 °C, 970- 1030 bar, carrier gas= 200-1800 air		214
Pt	NO <sub>x</sub>	5000 mA				97% NO <sub>x</sub> to NO <sub>3</sub>	Mn(III) or Co(III)	Electrolyte 0.1 M MnSO <sub>4</sub> /6 M H <sub>2</sub> SO <sub>4</sub> ; 0.1 M CoSO <sub>4</sub> /3 M H <sub>2</sub> SO <sub>4</sub> , 1000 cm <sup>3</sup> , 20 °C, 970-1030 bar		214
Pt	phenol	1 mA/cm <sup>2</sup>				100% [phenol]	active chlorine	Electrolyte 10 g/l NaCl + 100 mg/l phenol	chlororganic compounds	220
Pt	aniline	E=1.5- 1.9 V vs Ag/AgCl	21%	84% Ce(IV) 2-7% Co(III)	1%	3% Ce(IV), 4-20% Co(III)	Ce(IV) and Co(III)	cyclic voltammetry method	benzoquinone, maleic acid	197
Pt foil	pesticides and	0.1-0.4				<99%	Ag(II) and	Electrolyte 0.5 M AgNO <sub>3</sub> /7 M	CO <sub>2</sub>	8



	industrial wastes	A/m <sup>2</sup>						Mn(III) or Co(III)	HNO <sub>3</sub> , 1000 cm <sup>3</sup> , 70 °C, 970-1030 bar, carrier gas= 200-1800 air and Electrolyte 0.1 M MnSO <sub>4</sub> /6 M H <sub>2</sub> SO <sub>4</sub> ; 0.1 M CoSO <sub>4</sub> /3 M H <sub>2</sub> SO <sub>4</sub> , 1000 cm <sup>3</sup> , 20 °C, 970-1030 bar		
Stainless steel	nitrite	2.0 A				30%		hypochlorite	pH dependence		221
Ti/ Sn-Pd- Ru-oxide	landfill leachate	7.5 A/dm <sup>2</sup>			30.3% COD, 37.6% ammonium.	67.6% COD, 92% ammonium		chlorine/ hypochlorite	at 15 A/dm <sup>2</sup> and 7500 mg/l NaCl	chloramines	217
Ti/Pt/Bi-PbO <sub>2</sub>	phenol	100 mA/cm <sup>2</sup>	24% (after 24 Ah/l)	26% (after 26Ah/l) [NaCl]=0.1 M, 30% (after 20Ah/l) [NaCl]=0.5 M	79% COD, (after 24 Ah/l)	98% COD (after 24 Ah/l) [NaCl]=0.1 M, 99% COD (after 20 Ah/l) [NaCl]=0.5 M		active chlorine	pH = 12	CHCl <sub>3</sub>	222
Ti/IrO <sub>2</sub>	phenol	0.1 A/cm <sup>2</sup>	EOI=0.65	EOI=0.65	25% [phenol]	98%, [phenol]		electrogenerated ClO <sup>-</sup>	selective oxidation, Na <sub>2</sub> SO <sub>4</sub> + NaCl	organo-chlorinated compounds and after to volatile chlorinated compounds	24
Ti/PbO <sub>2</sub>	landfill leachate	7.5 A/dm <sup>2</sup>			27.4% COD, 33.1% ammonium.			chlorine/ hypochlorite			217
Ti/PbO <sub>2</sub>	glucose	200-1200 A/m <sup>2</sup>			100% COD (after 20 h)	100% COD (after 20 h)		active chlorine	better [NaCl] = 5 g/l, electrolyte = 1 M Na <sub>2</sub> SO <sub>4</sub> + 0.01M NaOH	gluconic acid and carboxylic acids	13
Ti/PbO <sub>2</sub>	phenol	100 mA/cm <sup>2</sup>	22% (after 24Ah/l)	26% (after 26 Ah/l), [NaCl]=0.1 M 36% (after 26 Ah/l) [NaCl]=0.5 M	75% COD (after 24 h/L)	98% COD, (after 24 Ah/L), [NaCl]=0.1M; 100% COD, (after 16 Ah/L), [NaCl]=0.5M		active chlorine	pH = 12	CHCl <sub>3</sub>	222
Ti/Pt	o-chlorotoluene	781.25			40-44% CE	10-40%,		Mn(III)	T=33-60 °C, acid concentration		219

Ti/Pt	glucose	A/m <sup>2</sup> 1200		60-90% CE	>5%, COD	conversion 100% COD	Hypochlorous acid	(44-55wt%) Influence of temperature and current density		14
Ti/Pt	glucose	A/m <sup>2</sup> 200- 1200 A/m <sup>2</sup>			10-20%, COD	100% COD (after 18 h)	active chlorine	Better [NaCl] = 5 g/l, electrolyte=1 M Na <sub>2</sub> SO <sub>4</sub> + 0.01 M NaOH, J=1200 A/m <sup>2</sup>	gluconic acid and carboxylic acids	13
Ti/Pt cylindrical	landfill leachate	E=20-40 V				53% COD	Cl <sup>-</sup>	pH dependence, energy consumption = 4.29 kWh/Kg COD removal		223
Ti/RuO <sub>2</sub>	aniline	E=1.2- 1.3V vs Ag/AgCl	4.71%	74% Ce(IV), 8-19% Co(III)	1.72%	3% Ce(IV) 2% Co(III)	Ce(IV) and Co(III)	cyclic voltammetric method	benzoquinone, maleic acid	197
Ti/SnO <sub>2</sub>	phenol	0.1 A/cm <sup>2</sup>	EOI= 0.1	EOI=0.65			electro- generated OH radicals, NaCl does not influence in the efficiency	combustion, Na <sub>2</sub> SO <sub>4</sub> + NaCl	carboxylic acids	24
Ti/SnO <sub>2</sub> -Pt	glucose	200- 1200 A/m <sup>2</sup>			10-20% COD	50-90%, COD (after 25 h)	active chlorine	better [NaCl] = 5 g/l, electrolyte=1 M Na <sub>2</sub> SO <sub>4</sub> + 0.01 M NaOH	gluconic acid and carboxylic acids	13
Ti/TiRuO <sub>2</sub>	synthetic tannery wastewater	300-600 A/m <sup>2</sup>		21.20%		100%, COD (after 36 Ah/l)	active chlorine	[NaCl]=7 g/l, Na <sub>2</sub> SO <sub>4</sub> 8 g/l	sulphides, surfactants, tannic acid, ammonium,	224
Ti-Ru-Sn	2-naphthol	75 mA/cm <sup>2</sup>	EOI = 0.2	EOI =0.3-0.7 [NaCl]- depended	30% COD	50-100% COD	active chlorine	pH= 10, Electrolyte=0.5 N Na <sub>2</sub> SO <sub>4</sub> , [2-naphthol]=5 mM, T=25 °C, NaCl= 1-10 g/l	phthalic acid, maleic acid, and other products	25

BDD = Boron Doped Diamond, COD = Chemical Oxygen Demand, V = Volume, T = Temperature, [ ] = concentration, J = Current density, i = current, E = potential, ICE = Instantaneous current efficiency, ACE = Apparent current efficiency, EOI = Electrochemical oxidation index, CE = current efficiency, GCE = General current efficiency and Percentage (%).

EMA = Efficiency Mediator Absence, EMP = Efficiency Mediator Presence, REMA = Removal Efficiency Mediator Absence, REMP = Removal Efficiency Mediator Presence.

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