Supporting Information

Tailoring the acidity of ZSM-5 via surface passivation: catalytic assessment on dimethyl ether to olefins (DTO) process.

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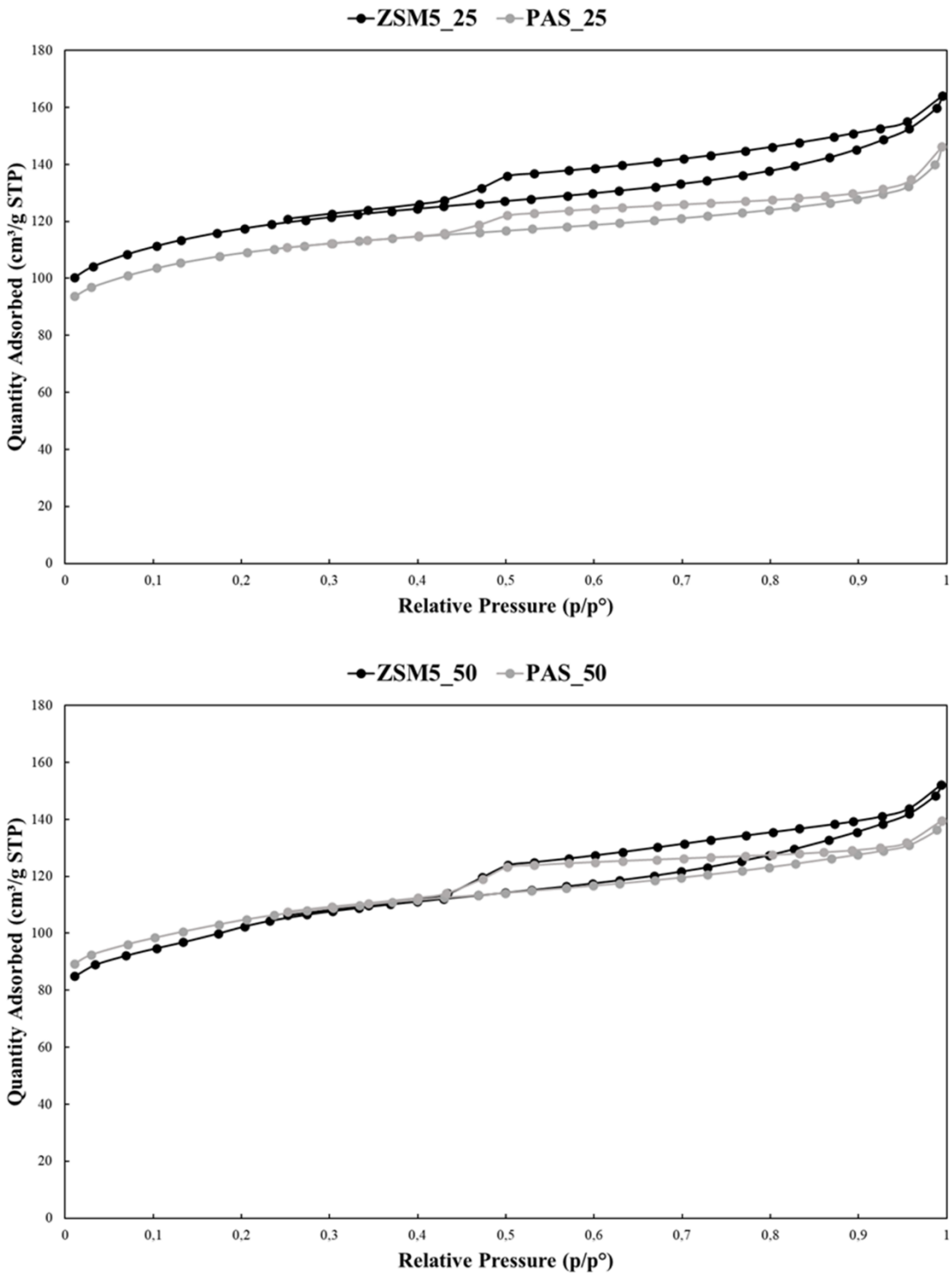

Figure S1. Nitrogen adsorption/desorption isotherms for the investigated samples

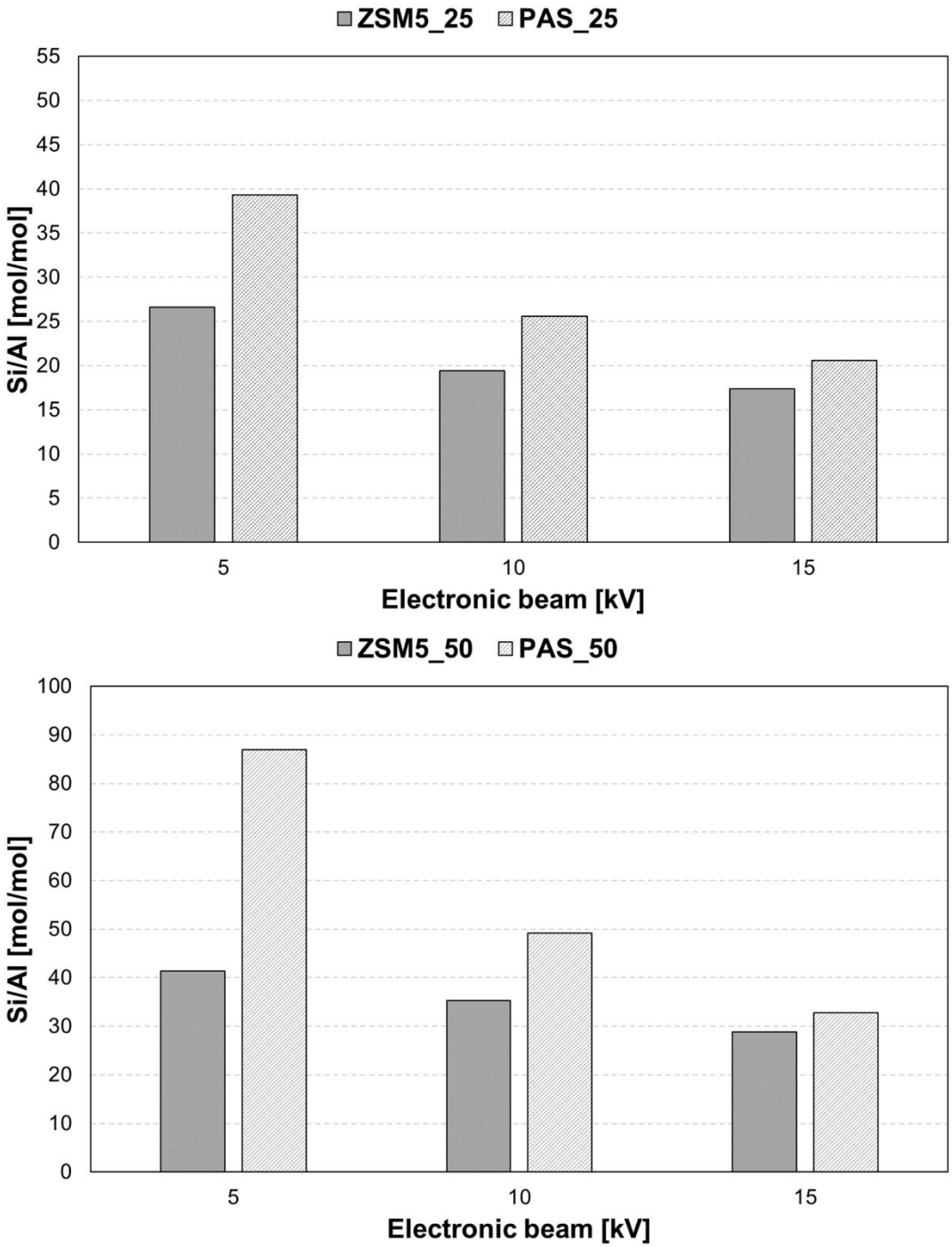

Figure S2. Si/Al evaluation via EDX analysis at 5, 10 and 15 kV for the investigated samples

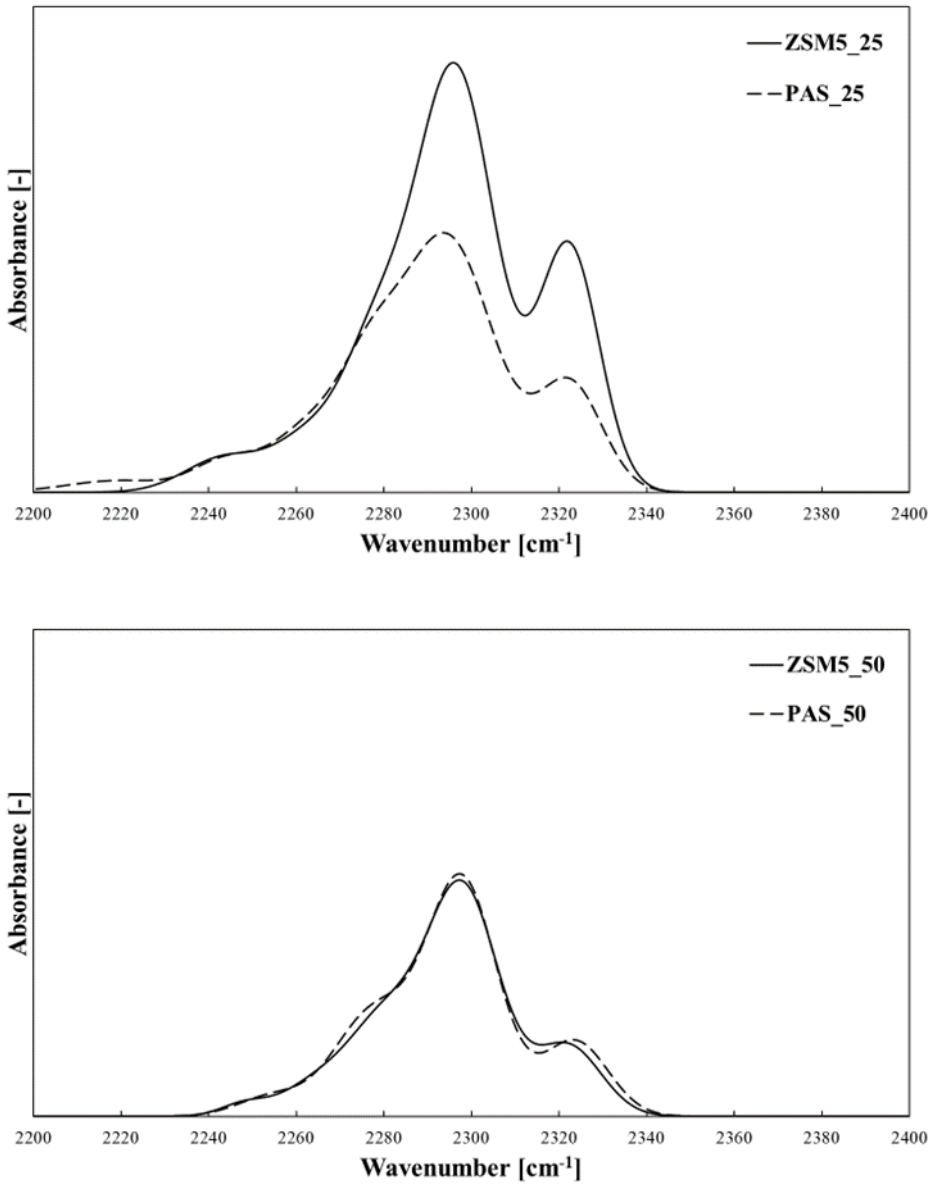

Figure S3. FT-IR spectra of samples after d_3-acetonitrile adsorption

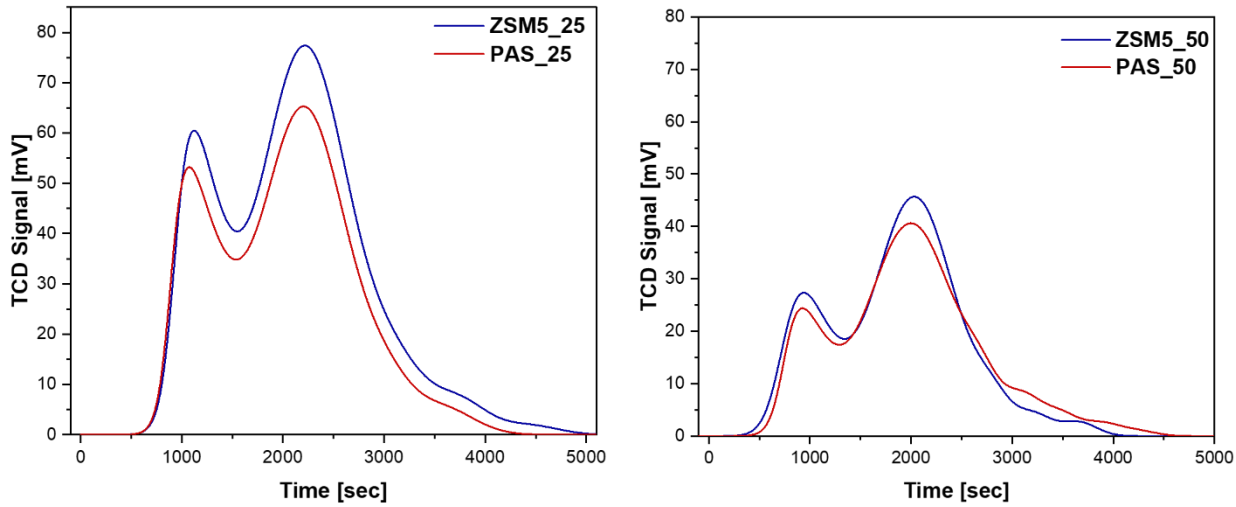

Figure S4. NH_3-TPD profiles for the investigated samples.

Table S1. Acid sites distribution via NH_3-TPD (peak temperature values are reported between brackets below the corresponding concentration).

SAMPLE	Weak acid sites (µmol g_{cat}^{-1})	Strong acid sites (µmol g_{cat}^{-1})	W + S (µmol g_{cat}^{-1})	S/W
ZSM5_25	187 (290 °C)	432 (470 °C)	619	2.3
PAS_25	178 (290 °C)	409 (470 °C)	587	2.3
ZSM5_50	90 (250 °C)	250 (440 °C)	340	2.8
PAS_50	78 (250 °C)	238 (440 °C)	316	3.0

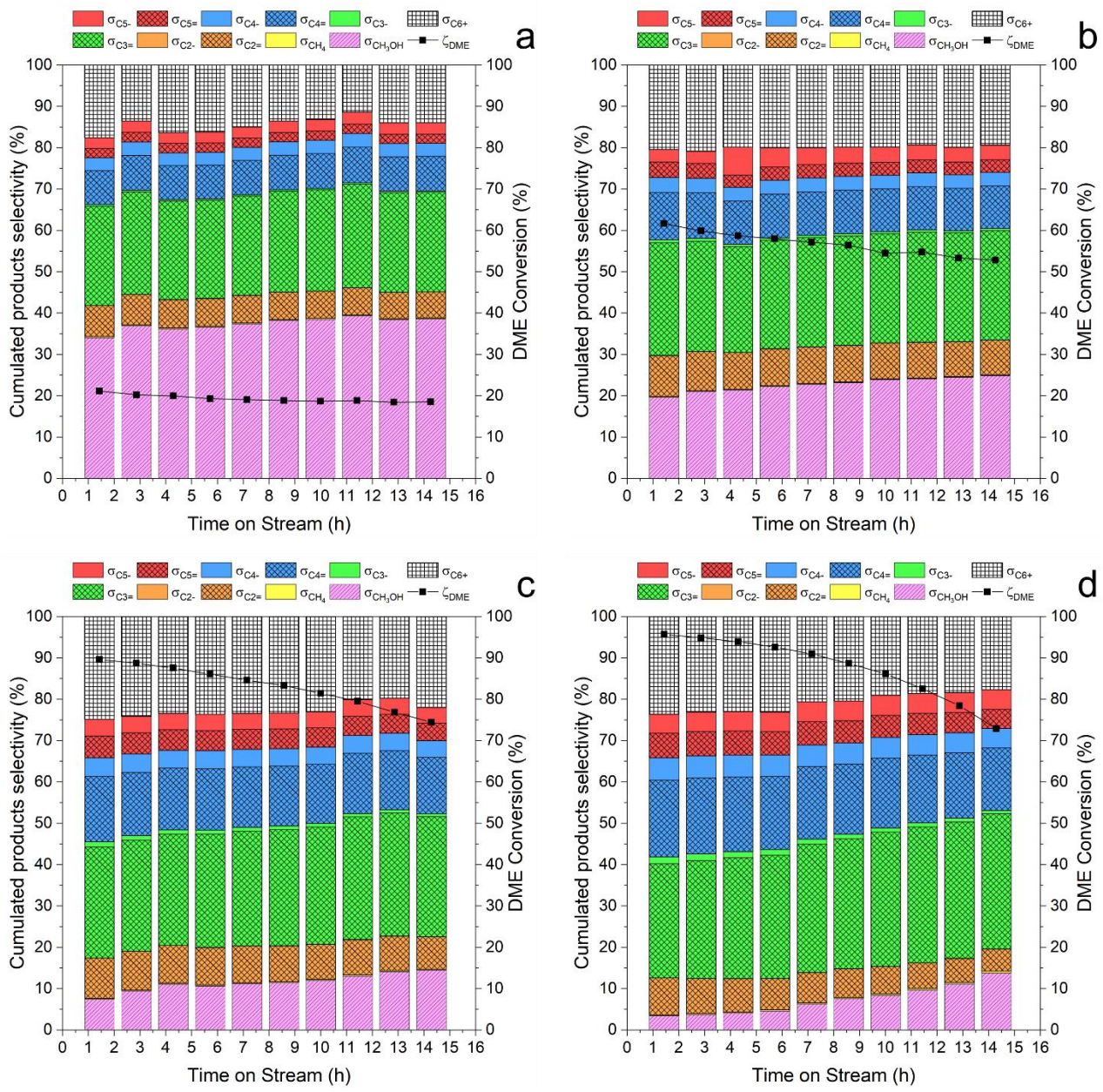

Figure S5. Product distribution (colored bars) and DME conversion (black line with square symbol) over time on stream for PAS_25 sample at 300 °C (a), 325 °C (b), 350 °C (c) and 375 °C (d).

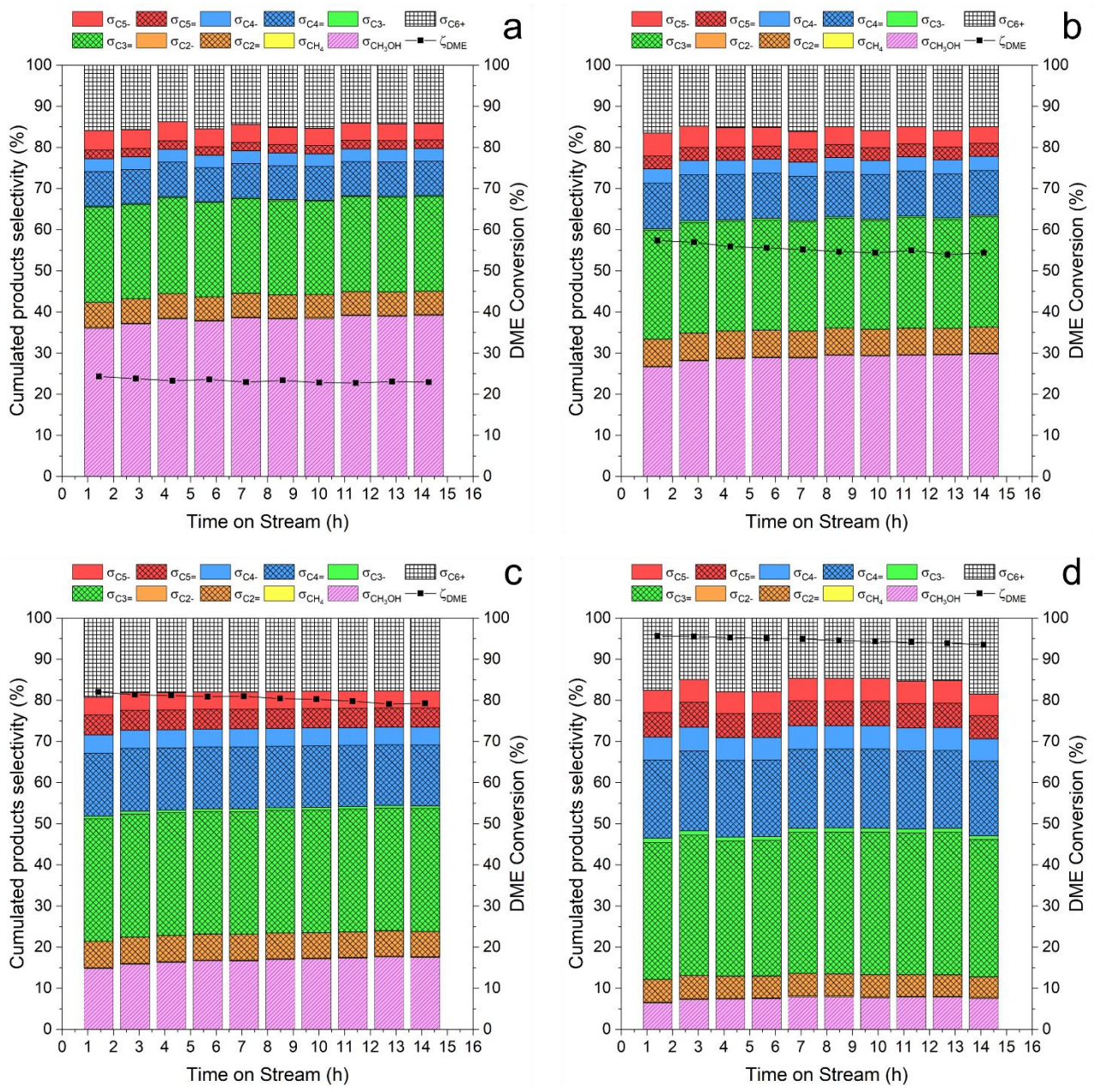

Figure S6. Product distribution (colored bars) and DME conversion (black line with square symbol) over time on stream for ZSM5_50 sample at 300 °C (a), 325 °C (b), 350 °C (c) and 375 °C (d).

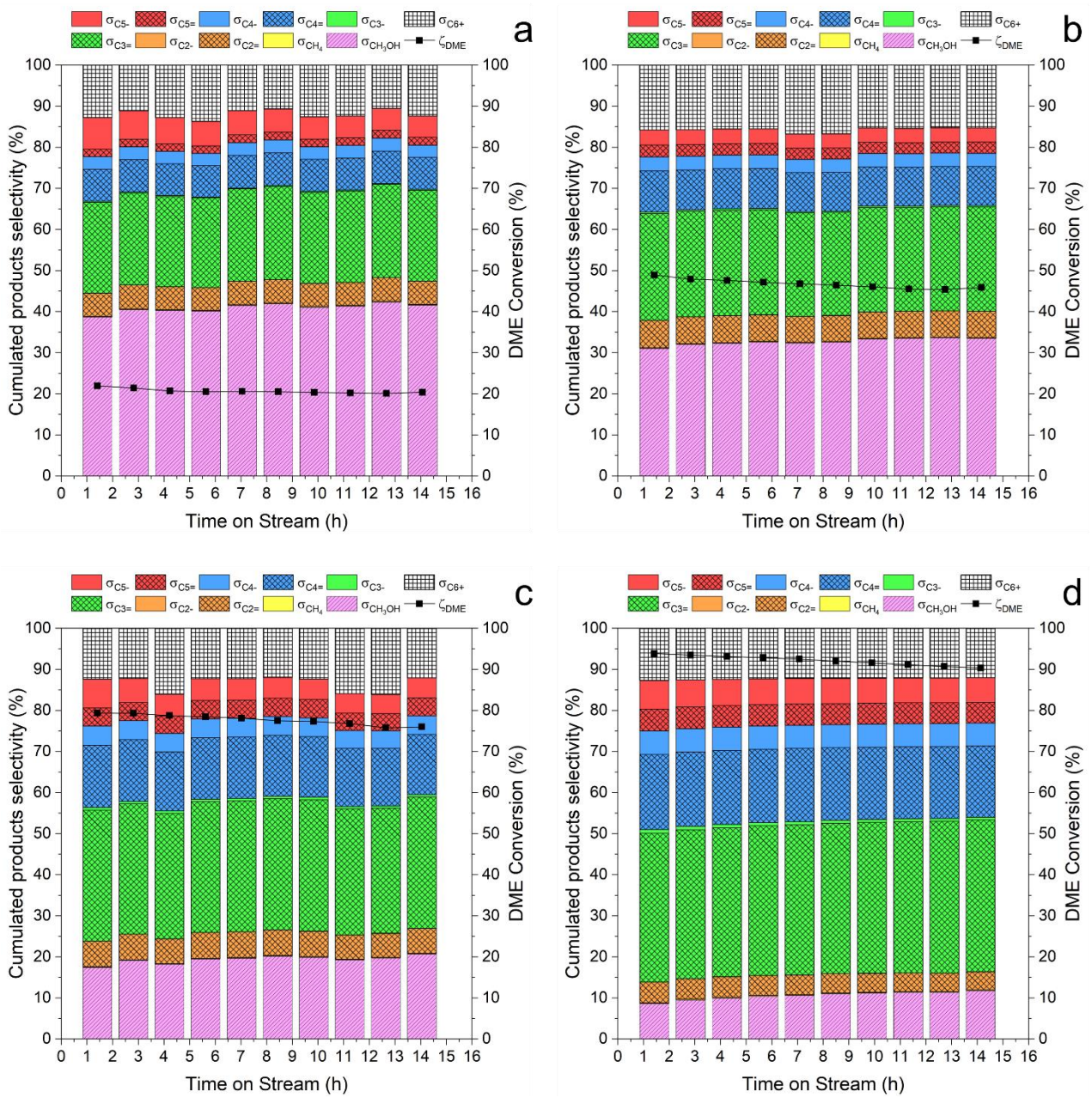

Figure S7. Product distribution (colored bars) and DME conversion (black line with square symbol) over time on stream for PAS_50 sample at 300 °C (a), 325 °C (b), 350 °C (c) and 375 °C (d).

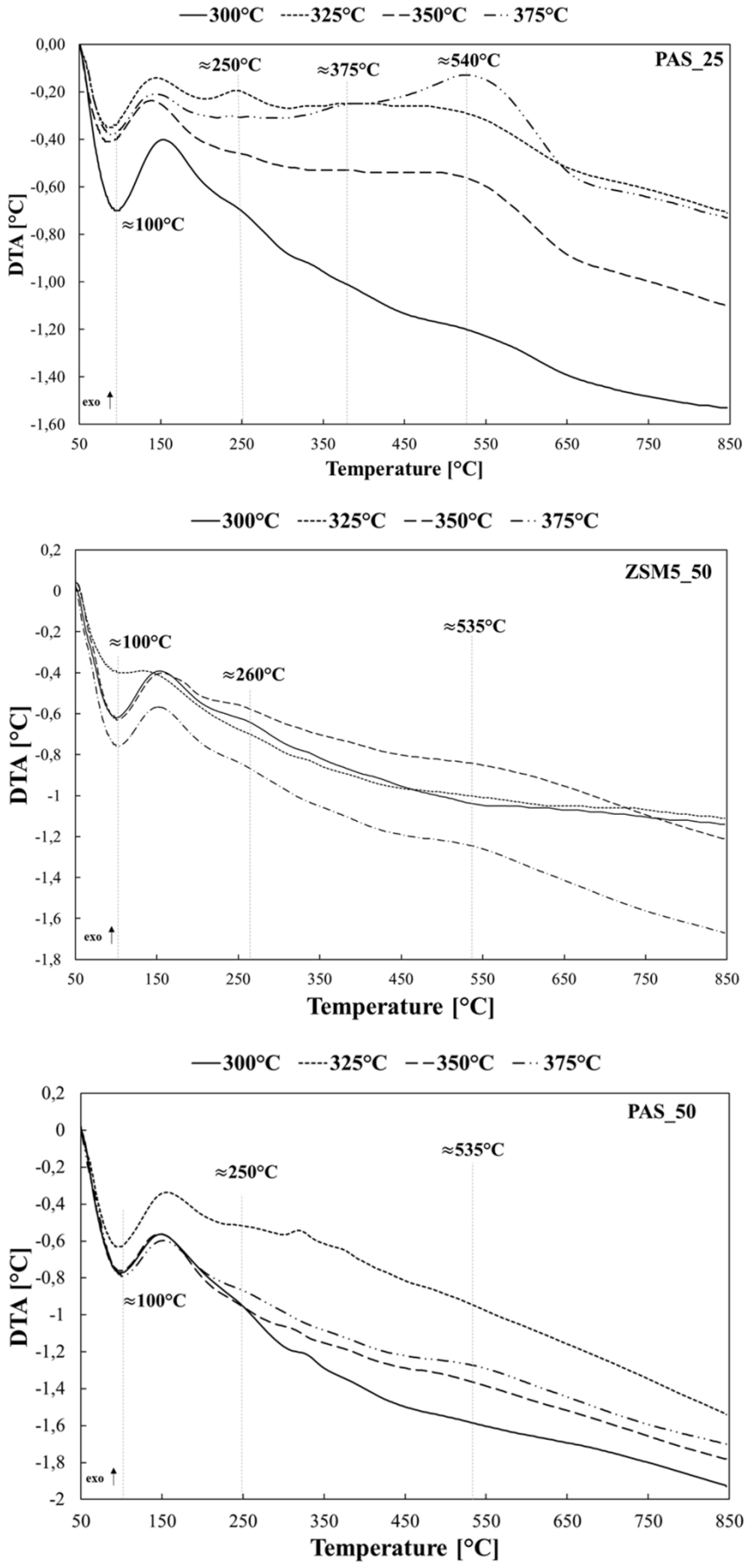

Figure S8. DTA analysis results for the spent samples tested at different temperatures.

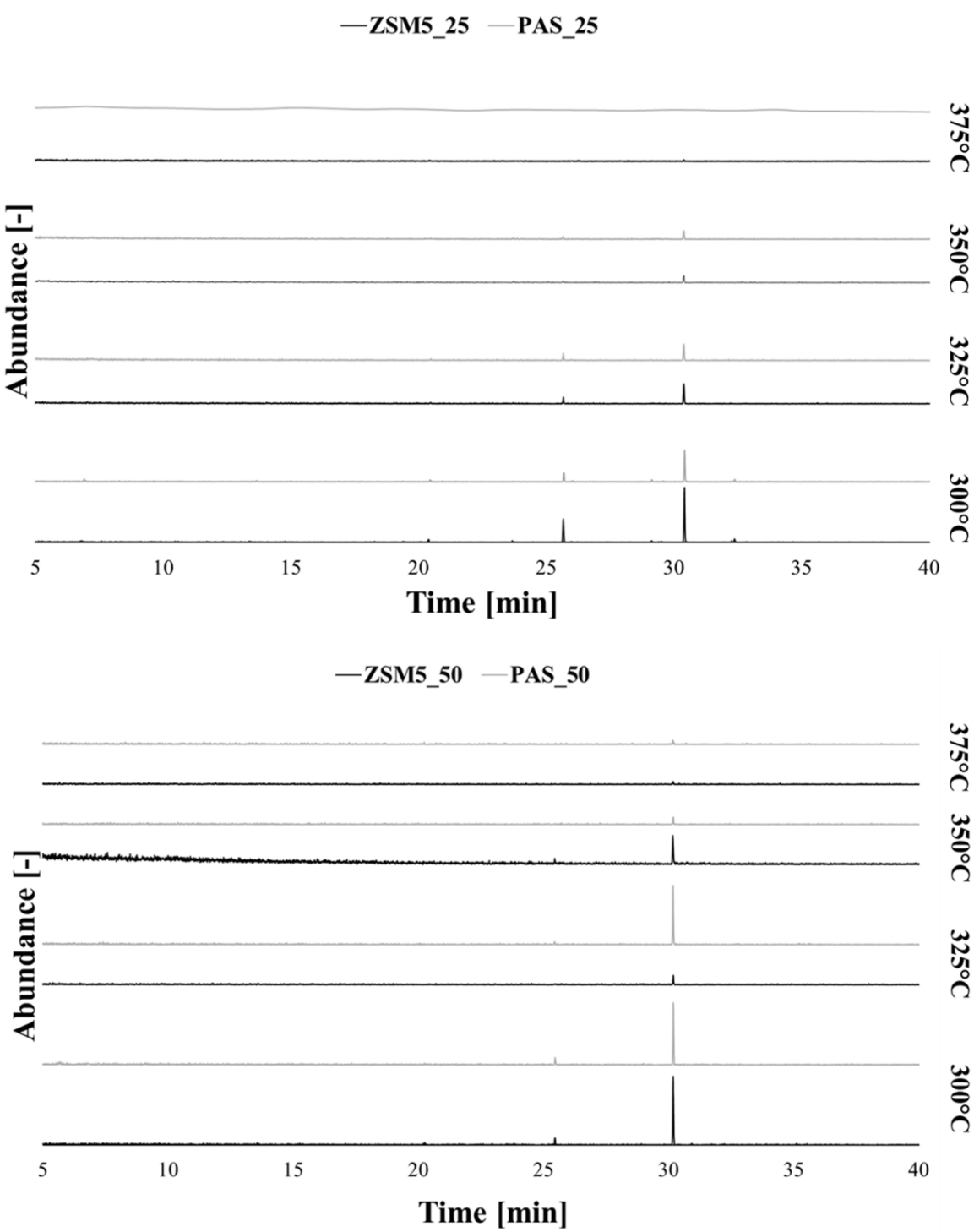

Figure S9. GC-MS chromatograms for the spent samples tested at different temperatures.

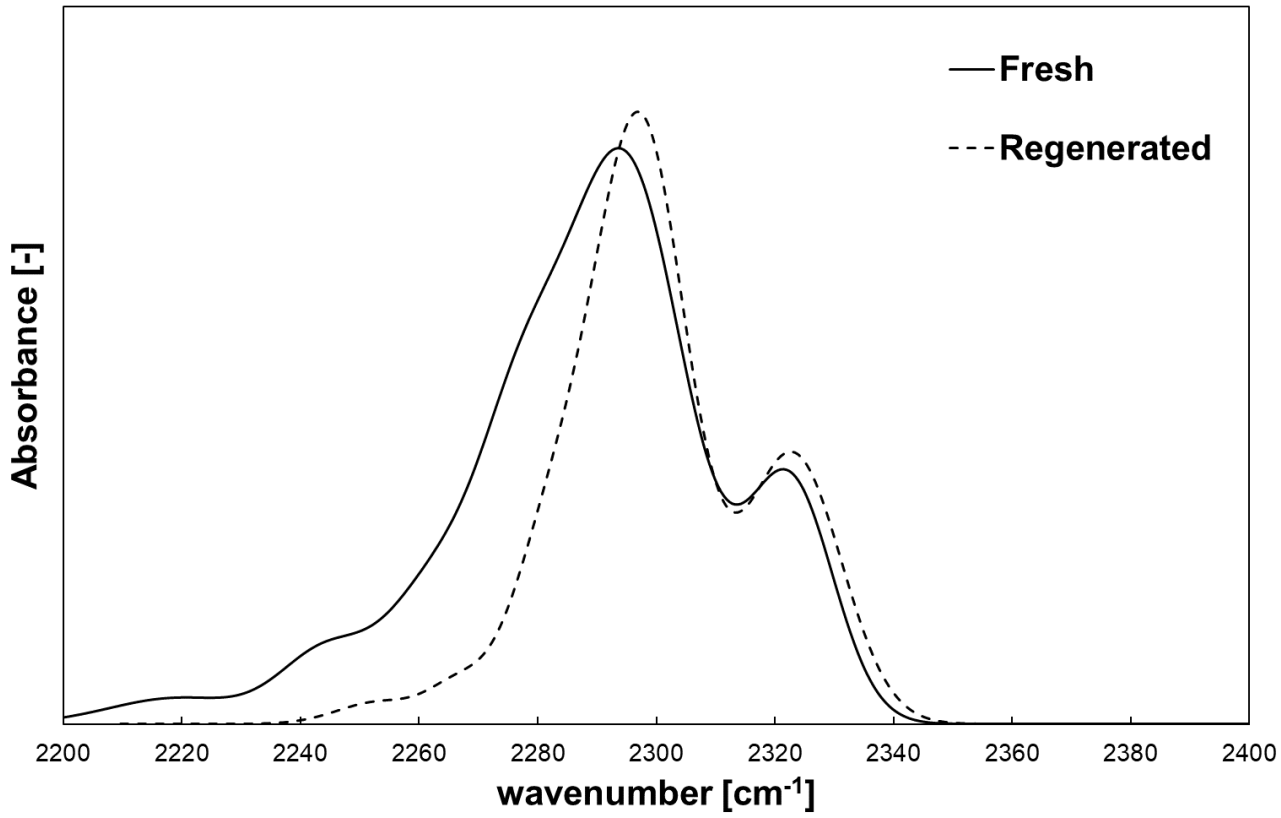

Figure S10. FT-IR spectra of fresh and regenerated sample (PAS_25) after d3-acetonitrile adsorption.