

Deactivation of zeolite catalysts in the Prins condensation between propylene and formaldehyde in the liquid phase

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Supplementary information

Table S1. XRF results

Sample	H-BEA	H-FAU	H-MFI	H-MOR
Si/Al theoretical	15	25	25	10
Si/Al	17.2	22.0	22.6	13.0
Al/Na	0	67.6	0	0

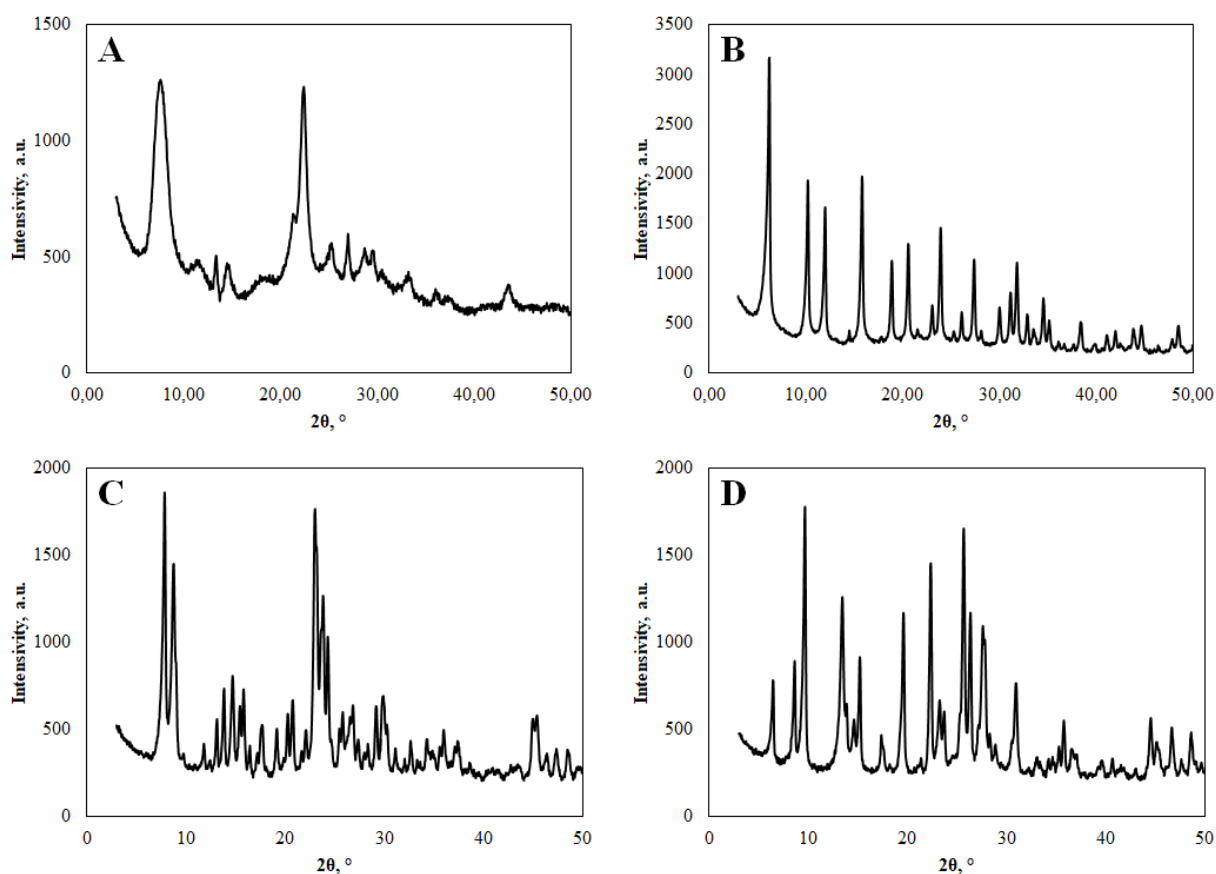


Figure S1. XRD patterns: A – H-BEA, B – H-FAU, C – H-MFI and D – H-MOR.

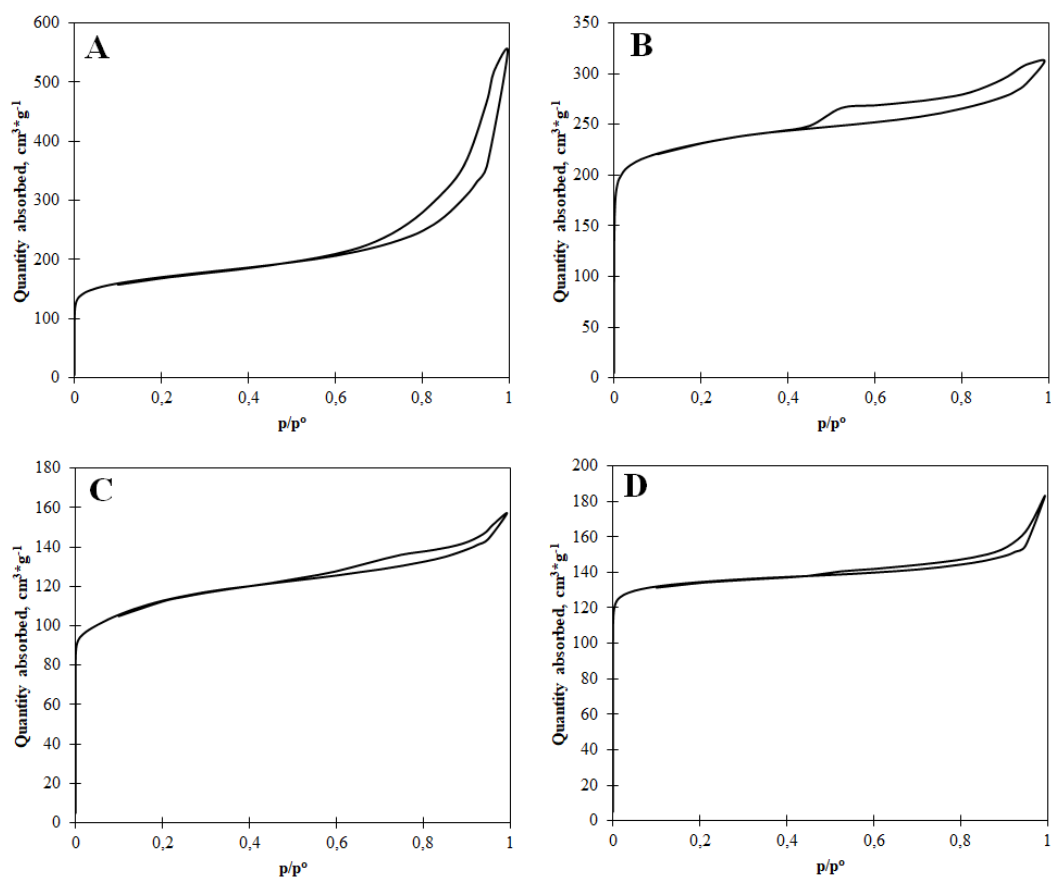


Figure S2. The nitrogen physisorption isotherms: A – H-BEA, B – H-FAU, C – H-MFI and D – H-MOR.

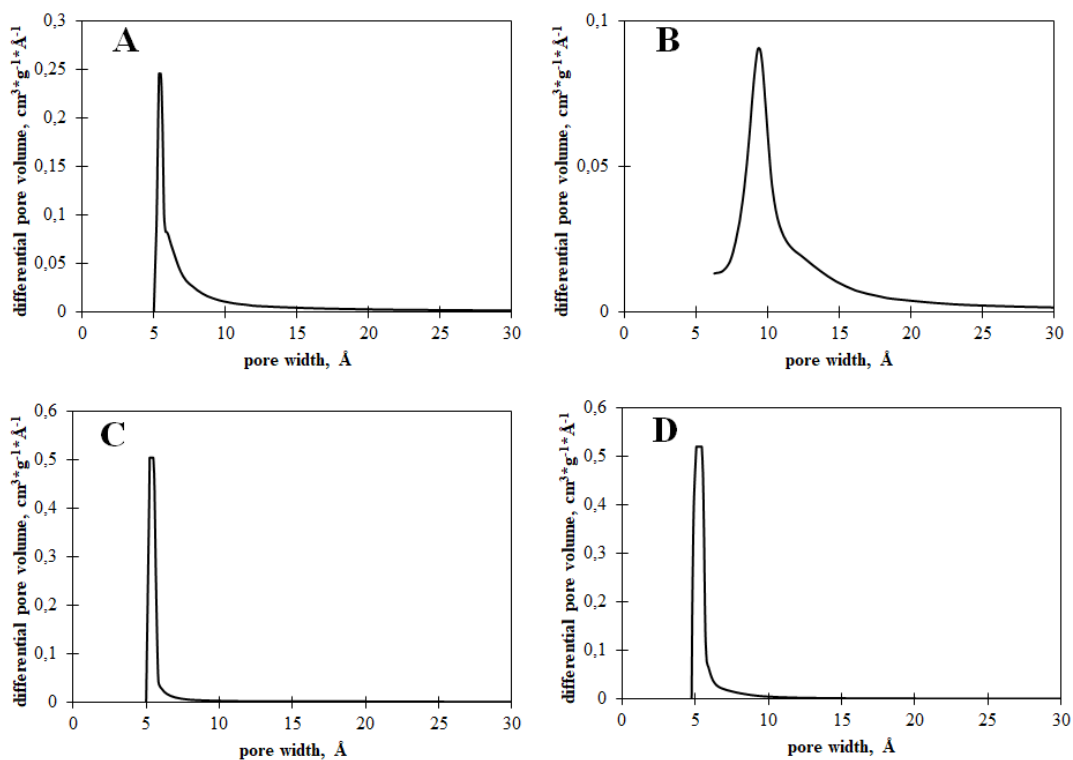


Figure S3. The Horwath-Kawazoe pore volume distribution: A – H-BEA, B – H-FAU, C – H-MFI and D – H-MOR.

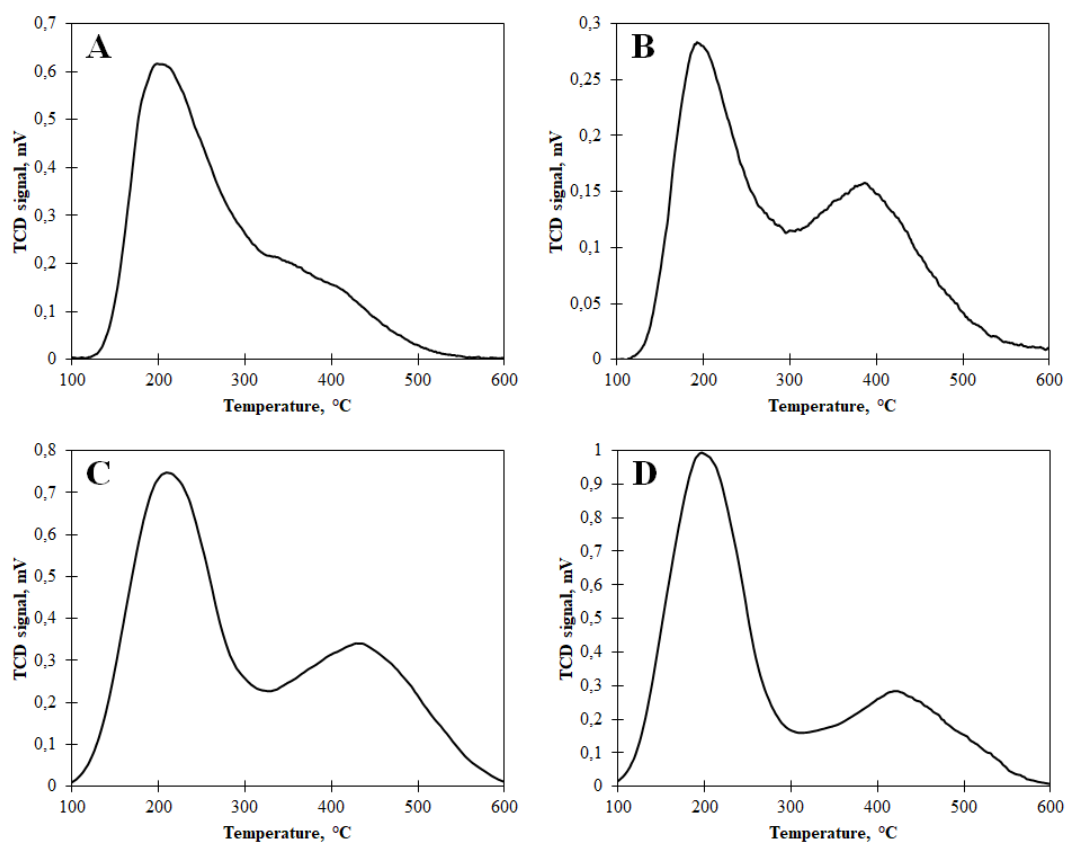


Figure S4. The TCD-NH₃ curves: A – H-BEA, B – H-FAU, C – H-MFI and D – H-MOR.

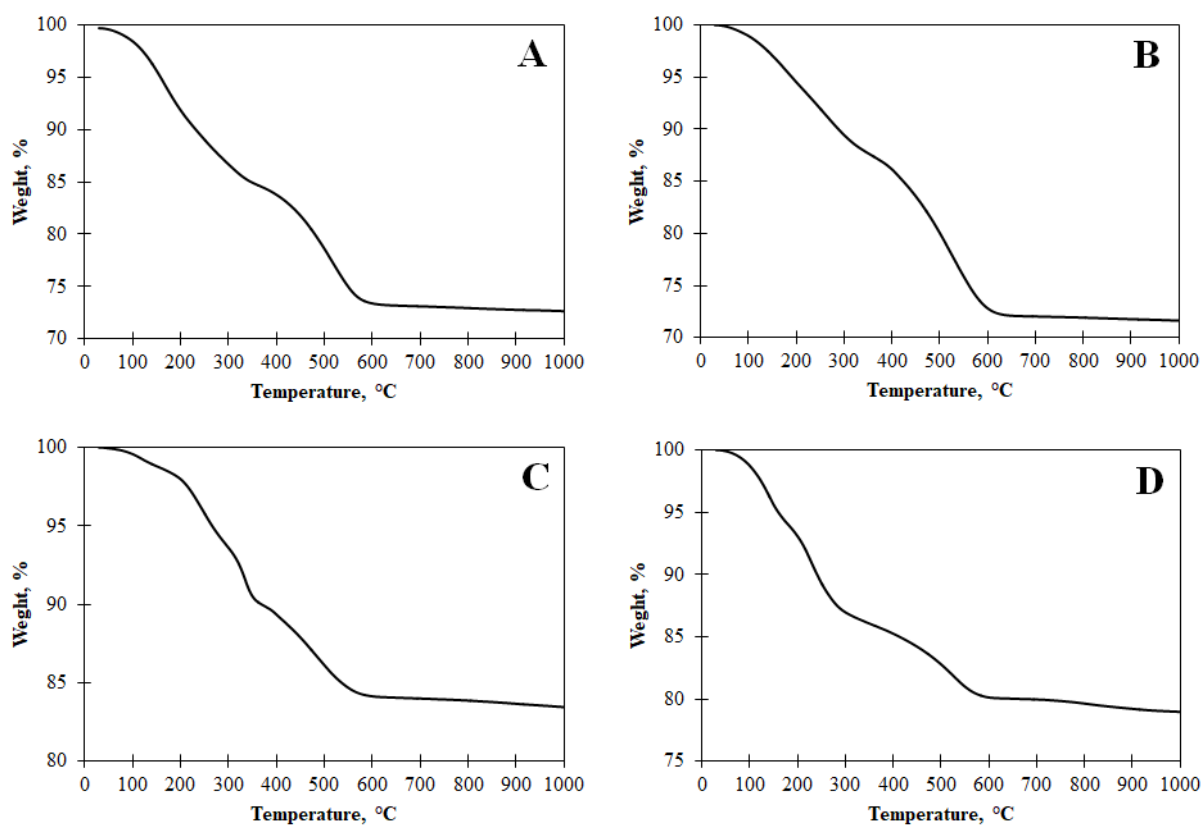


Figure S5. The TGA curves of spend samples: A – H-BEA, B – H-FAU, C – H-MFI and D – H-MOR.

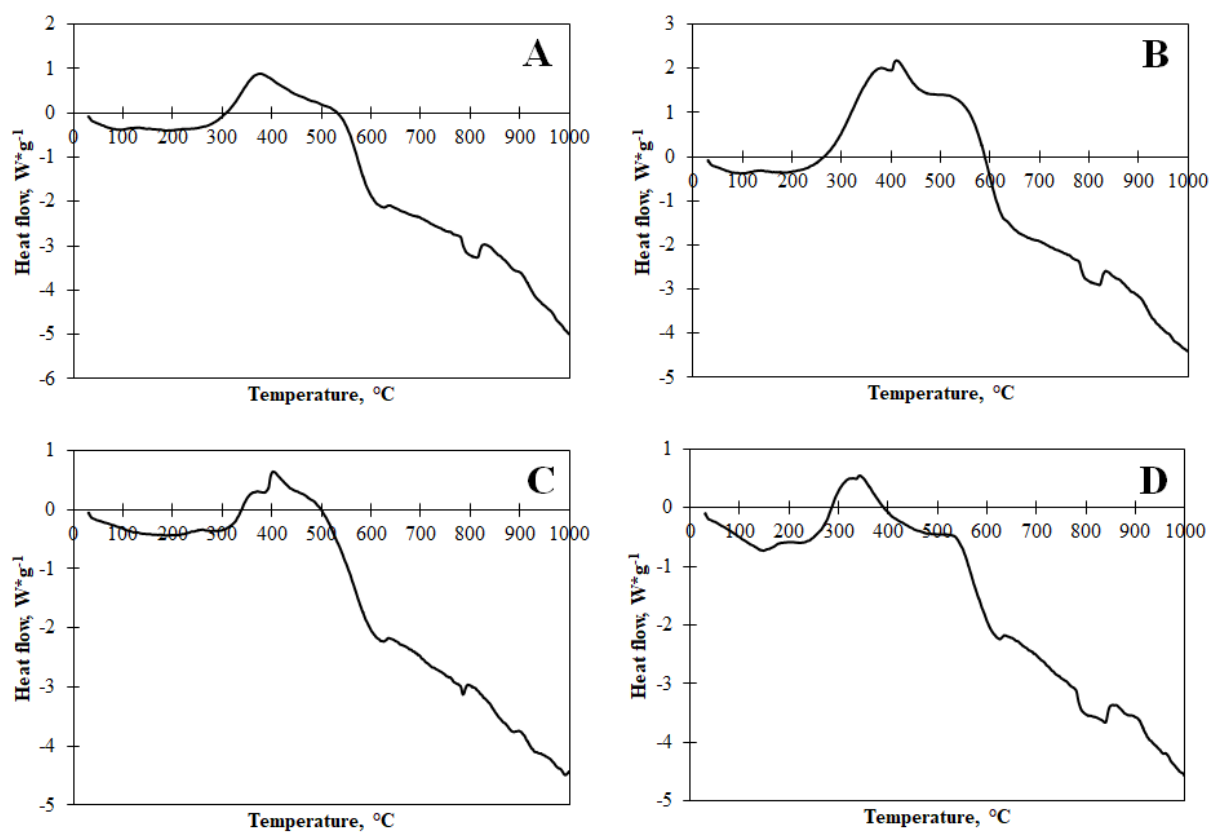
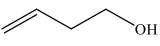
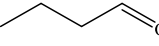
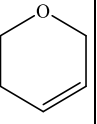
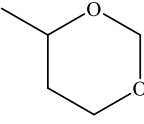
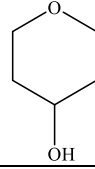
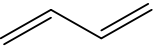


Figure S6. The DSC curves of spend samples: A – H-BEA, B – H-FAU, C – H-MFI and D – H-MOR.

Table S2. Activity of regenerated samples

Sample	X, %	Selectivity toward, %						
								other*
H-BEA	44.7	1.9	1.1	55.3	19.2	9.2	10.1	3.2
H-MFI	19.4	34.2	14.6	27.7	7.6	8.8	5.3	1.8

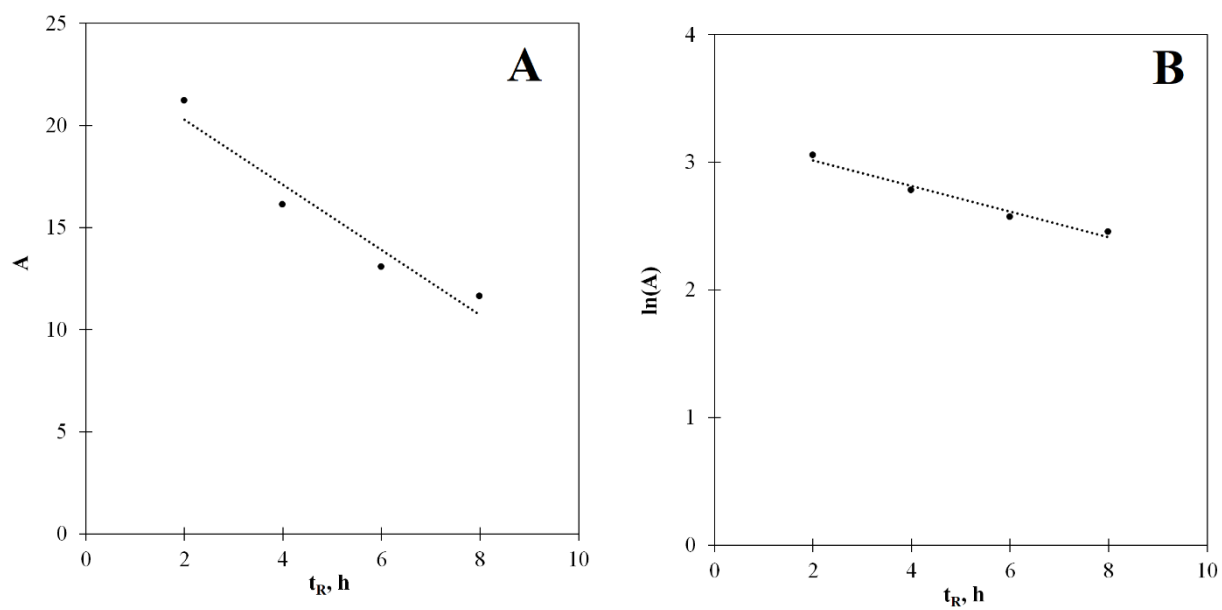


Figure S7. Activity vs. t_R (A) and $\ln(\text{activity})$ vs. t_R (B) curves for H-BEA

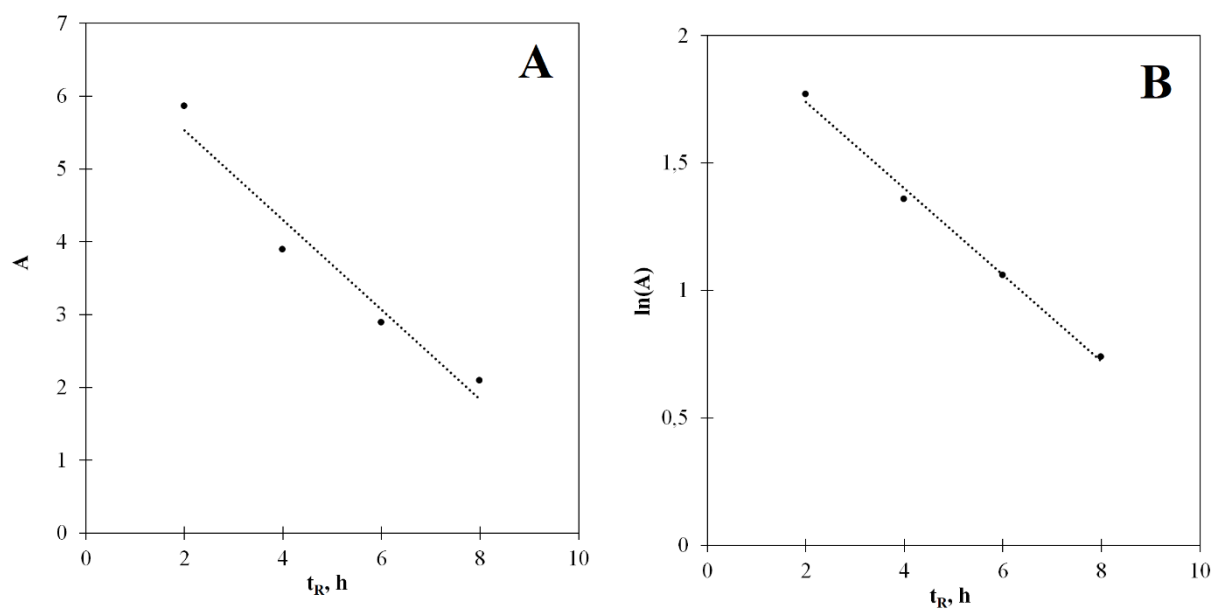


Figure S8. Activity vs. t_R (A) and $\ln(\text{activity})$ vs. t_R (B) curves for H-MFI.

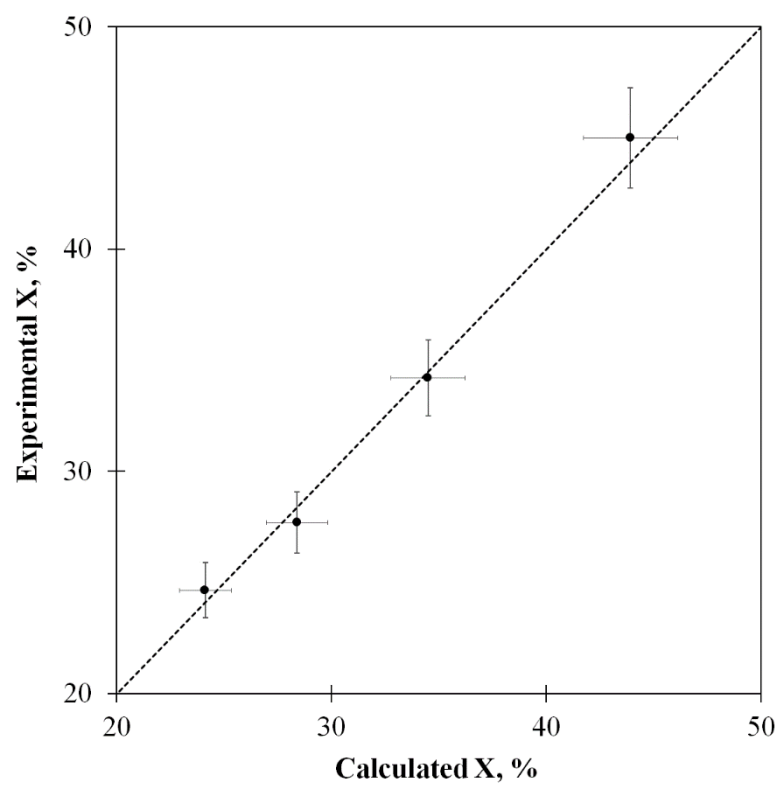


Figure S9. The calculated X vs experimental X for H-BEA.

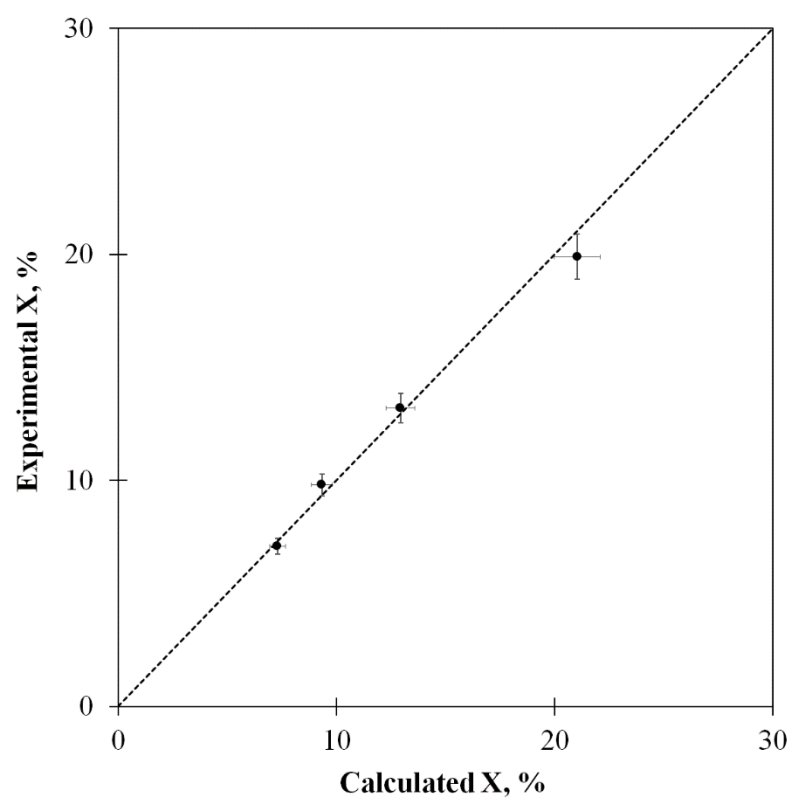


Figure S10. The calculated X vs experimental X for H-MFI.