Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Supporting information

On demand production of ethers or alcohols from furfural and HMF by selecting the composition of a Zr/Si catalyst

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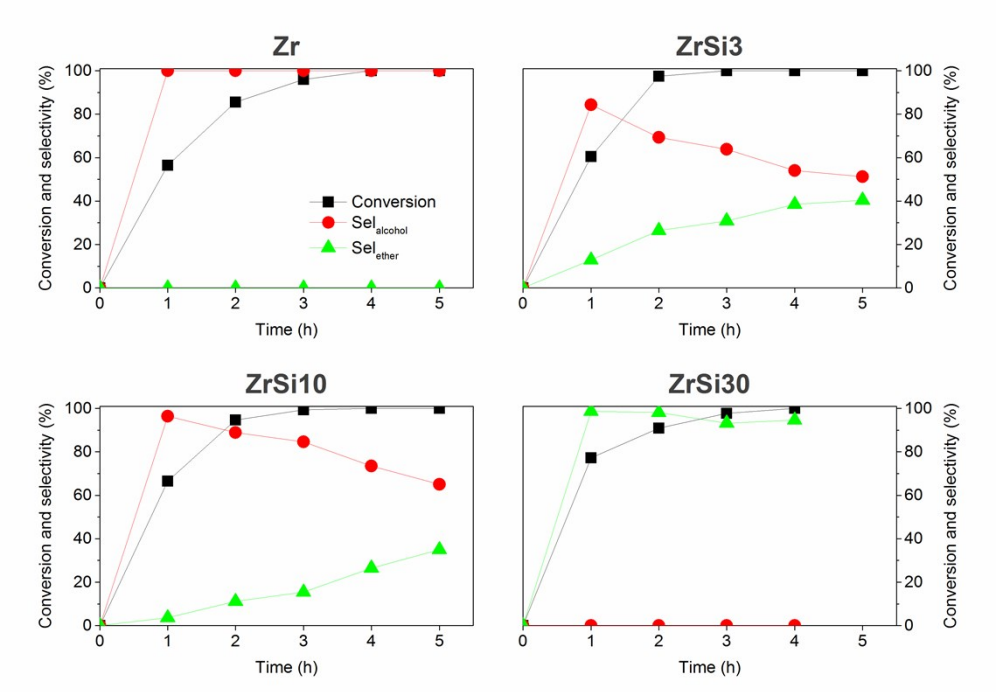

Figure S1. Reaction profiles for the conversion of furfural over the different catalysts (120 °C, 2-butanol, N_2 = 1 atm).

Catalyst	Alcohol	t (h)	C (%)	Product Yields (%)			
							OR
$ZrO_2 + SiO_2$	2-butanol	4	63	60	0	0	
ZrSi30	2-octanol	4	95	0	90	0	
ZrSi30	1-butanol	4	96	0	7	57	
		8	99	0	19	35	
ZrSi30	*tert*-butanol	4	0	0	0	0	

Table S1. Additional experiments (furfural = 0.1 g, alcohol = 0.084 mol, 120 °C)

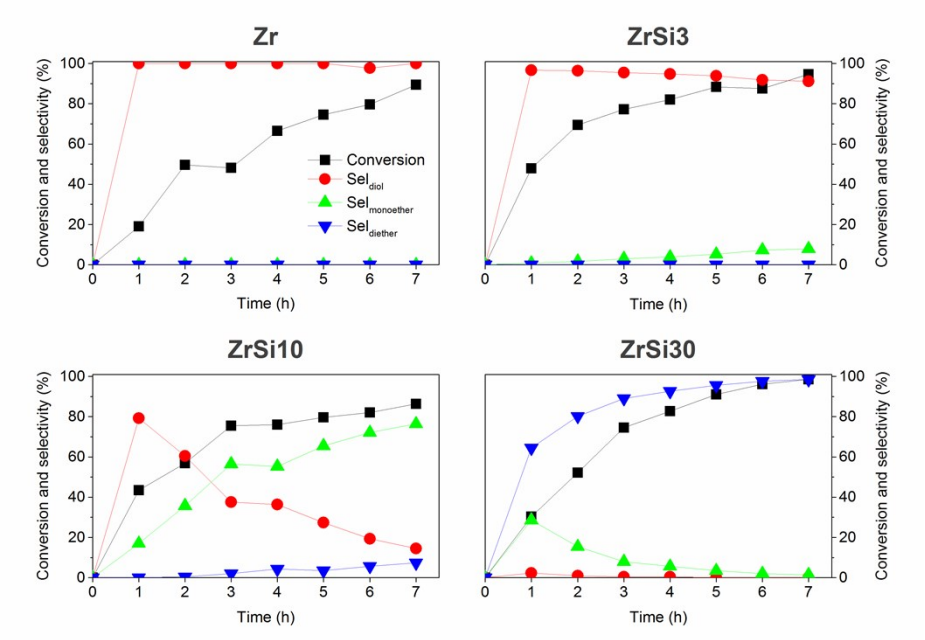

Figure S2. Reaction profiles for the conversion of HMF over the different catalysts (120 °C, 2-butanol, N_2 = 1 atm).

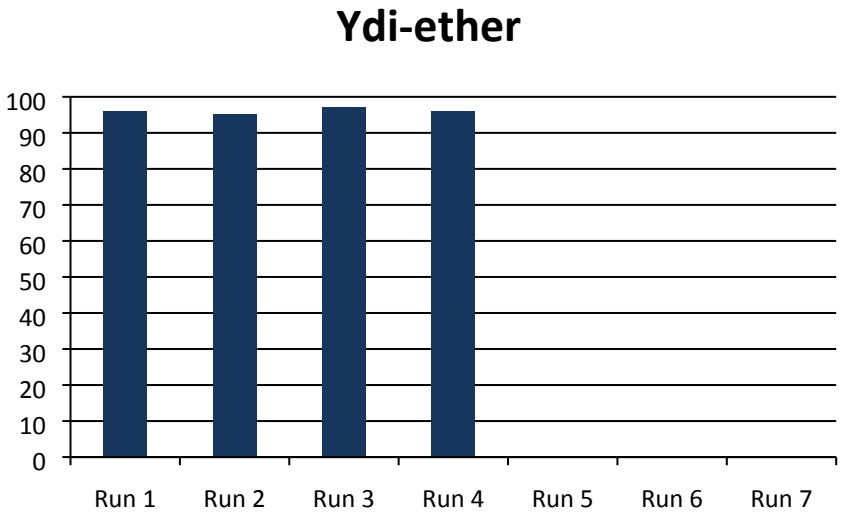

Figure S3. Recycling of ZrSi30 in the HMF conversion to di-ether (7h)

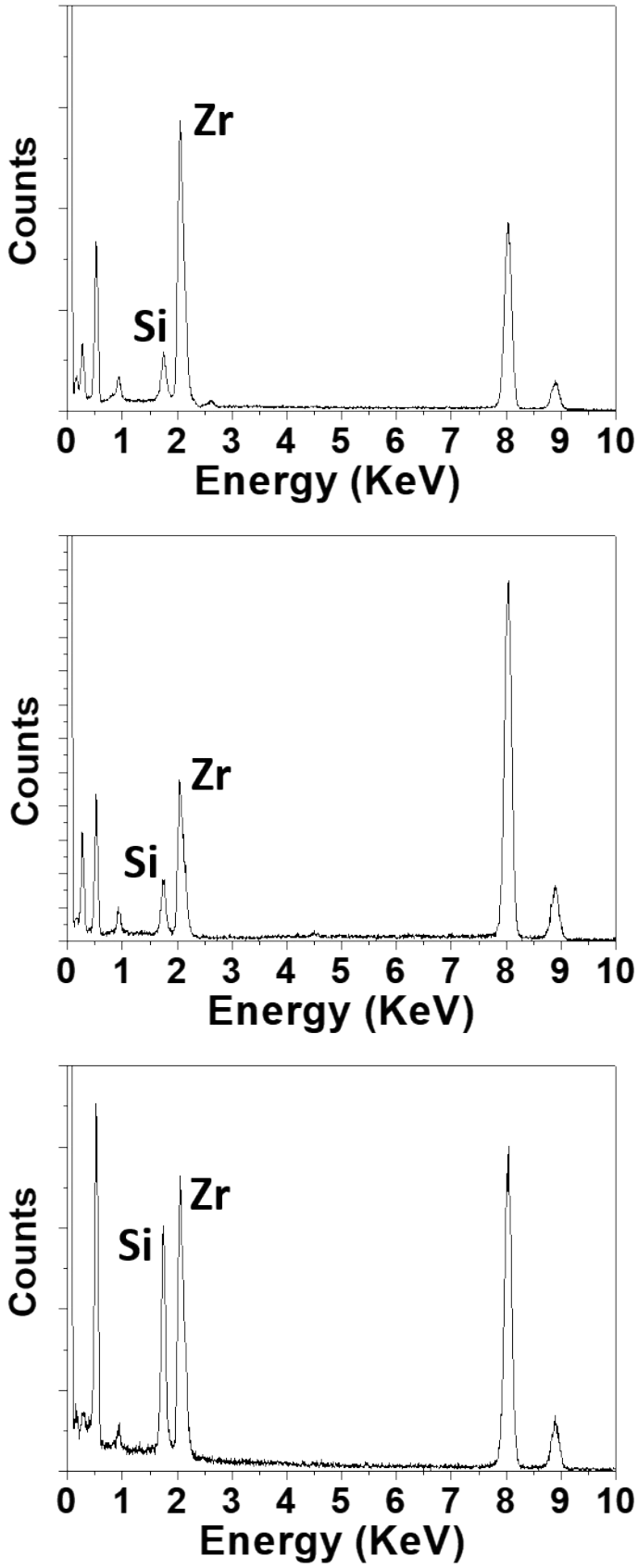

Figure S4. EDX spectrum of a representative catalyst grain of ZeSi3 (top), ZeSi10 (medium) and ZrSi30 (bottom). The signals at 8.0 and 8.9 are Cu signals originated from the copper grid.

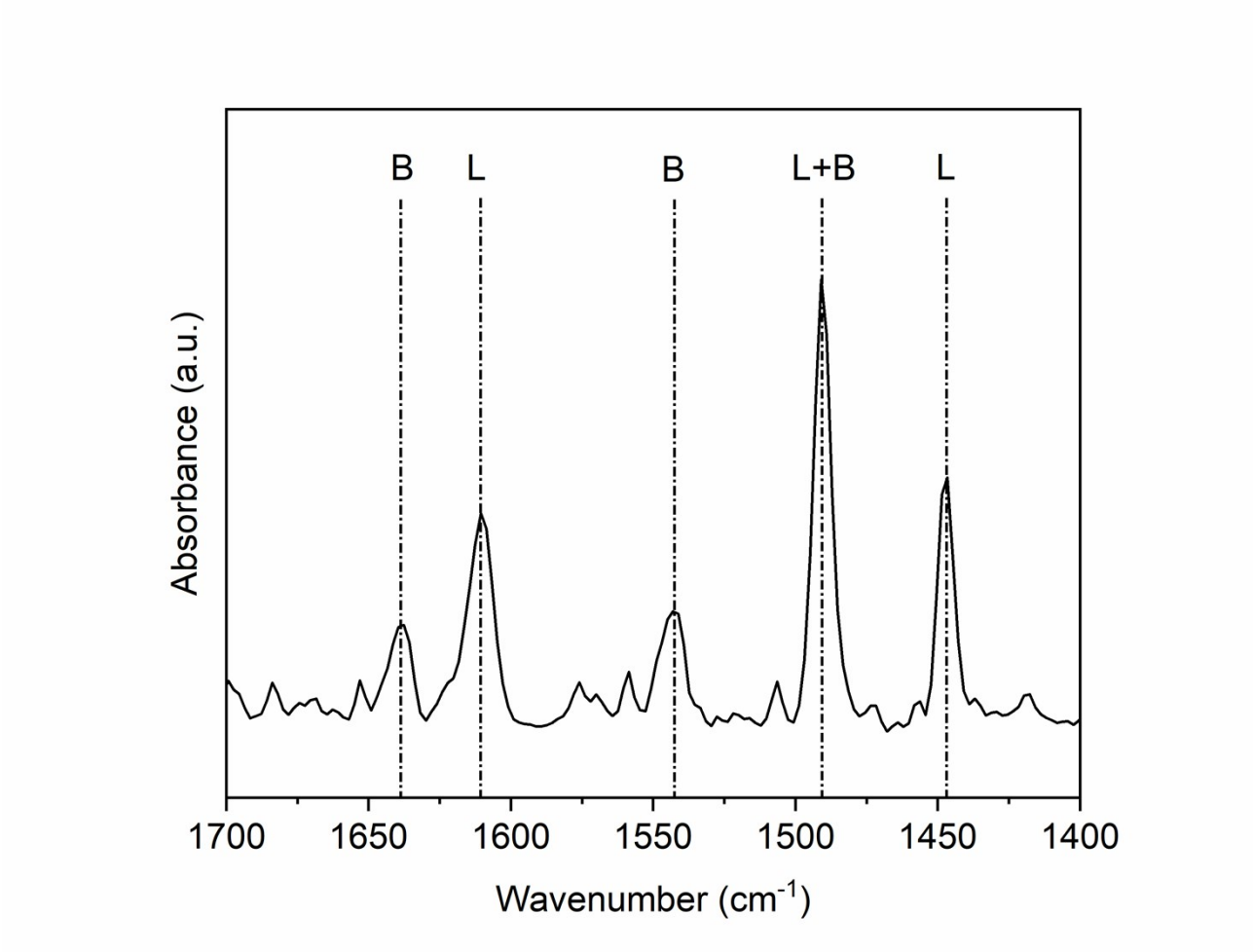

Figure S5. FT-IR pyridine desorption spectra collected at 120 °C of the recovered and regenerated ZrSi30 catalyst.