Electronic Supplementary Material (ESI) for Green Chemistry.

Supporting information

Alkylphenols to phenol and olefins by zeolite catalysis: a pathway to valorize raw and fossilized lignocellulose

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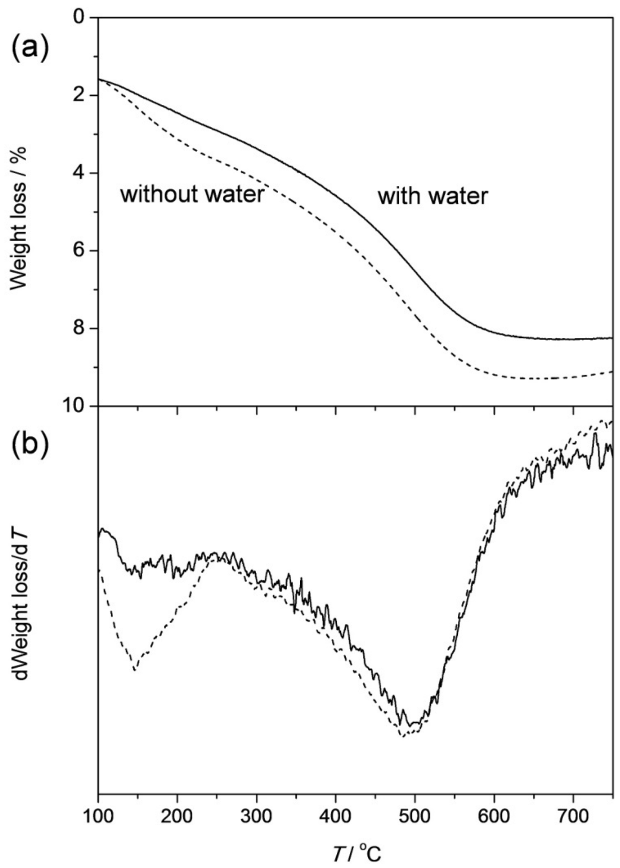

Figure SI1. Thermo-gravimetric analyses of spent ZSM5-40 catalysts derived from dealkylation experiments in the absence and presence of water (**Figure 1a**).

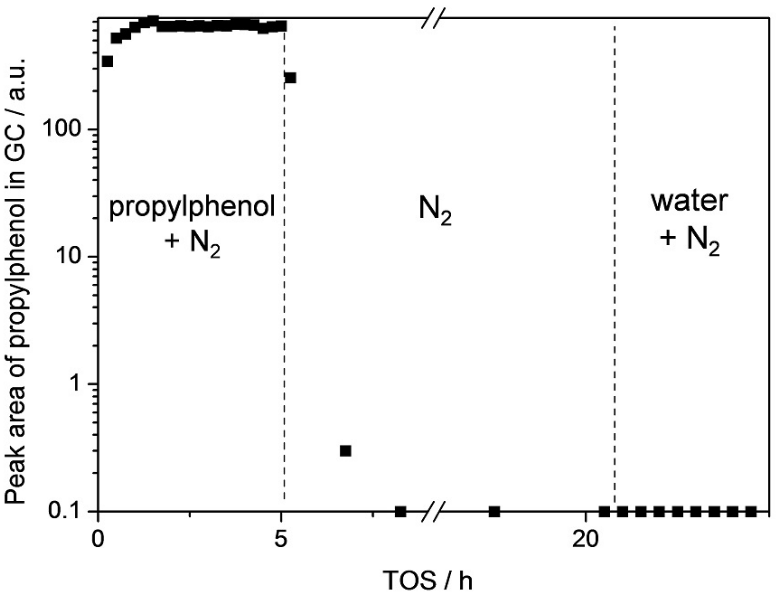

Figure SI2. Peak area of 4-*n*-propylphenol as analysed by GC over a ZSM5-40 catalyst as a function of TOS in different conditions. The absence of propylphenol or water was compensated with nitrogen to maintain a constant flow. T = 305°C and WHSV = 3.7 h^{-1}.

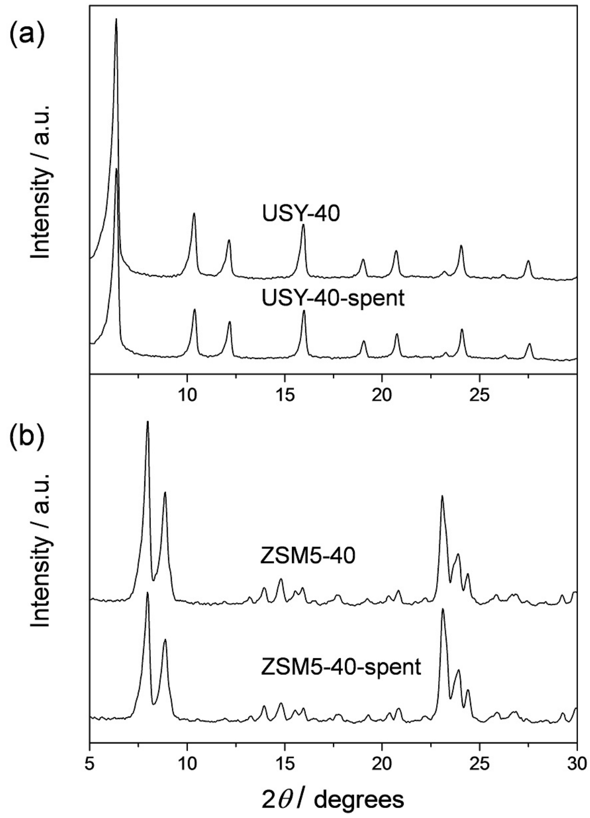

Figure SI3. X-ray diffraction patterns of fresh and spent USY (a) and ZSM-5 (b) zeolites derived from dealkylation experiments in **Figure 3**.

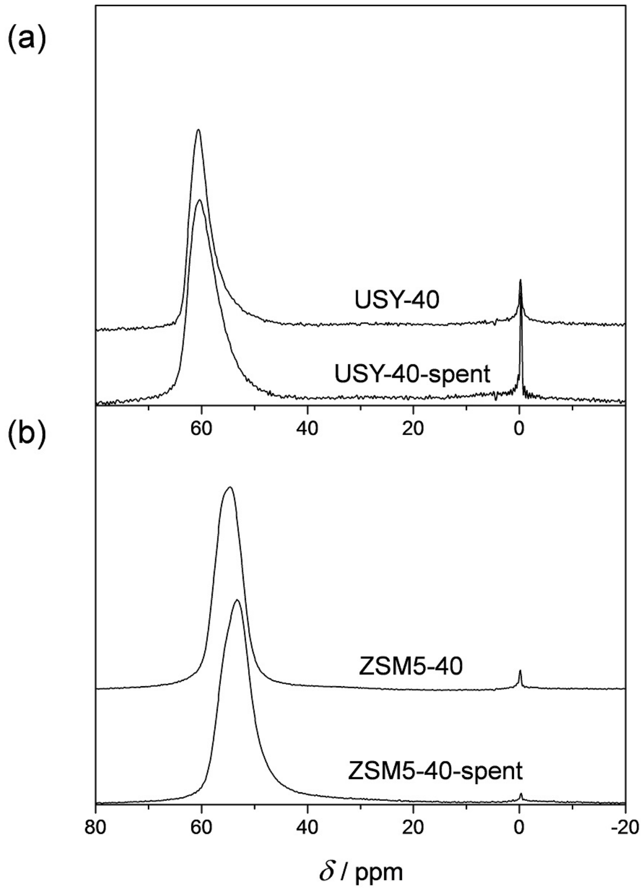

Figure SI4. ^{27}Al MAS NMR spectra of fresh and spent USY (a) and ZSM-5 (b) zeolites derived from dealkylation experiments in **Figure 3**.

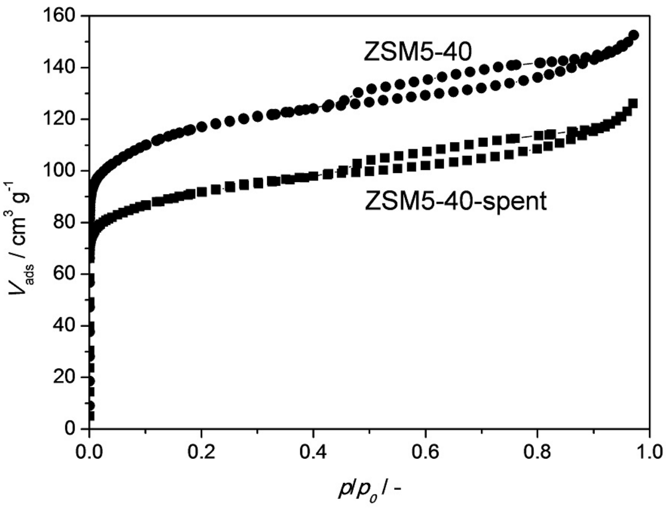

Figure SI5. N_2 isotherms of fresh and spent ZSM5-40 derived from dealkylation experiments in **Figure 3**.

Table S1. The yield of phenol from lignocellulose of reported technique.

Technique	Solvent	Catalysts	Phenol yield (wt%)	Ref.
pyrolysis/ solvolysis	formic acid alcohol	-	<1	1
pyrolysis/ solvolysis	formic acid alcohol	-	<1	2
pyrolysis	-	-	1	3
depolymerization	water/butanol	-	<5	4
depolymerization	water butanol	-	<1	5
catalytic depolymerization	ethanol	$CuMgAlO_x$	<1	6
catalytic fast pyrolysis	-	zeolite	<2	7
catalytic depolymerization	formic acid, water	Pd/C	<2	8
catalysic depolymerization	alcohol	Ni/C	<1	9
catalytic depolymerization	formic acid, ethanol	Pt/C	<2	10
catalytic depolymerization	water	NaOH	<1	11
pyrolysis	-	ZSM5	<2	12
Pyrolysis	-	-	<1	13
catalytic depolymerization	ethanol and water	Pt/Al_2O_3 and acid or base	<1	14
catalytic depolymerization	water	Pt/Al_2O_3 and H_2SO_4	<1	15
catalytic depolymerization	water and tetrahydrofuran	-	<1	16
catalytic depolymerization	water	KOH	1	17
catalytic depolymerization	methanol	NaOH and Ru/C	3	18
catalytic depolymerization	water	NaOH	1	19
solvolytic depolymerization	water and methanol	NaOH/HZSM5	<7	20
catalytic depolymerization	water	Na_2CO_3	<3	21
hydrothermal depolymerization	water	-	<1	22
catalytic depolymerization	-	sulfided $NiMoP/\gamma\text{-}Al_2O_3$	<1	23
hydropyrolysis	-	Pd/HZSM5	<4	24

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