Supplementary data

Mesoporous Zr-SBA-15 as green solid acid catalyst for
Prins reaction

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Fig. S1. Wide-angle XRD patterns of 10Zr-SBA samples (a) 10Zr-100-24 (b) 10Zr-208-24 (c) 10Zr-423-24 (d) 10Zr-639-24 (e) 10Zr-208-8 and (f) 10Zr-423-8.
Fig. S2. (a) N$_2$ adsorption–desorption isotherms and (b) pore size distribution of calcined 10Zr–208 and 10Zr-423 formed with 8 and 24 h aging time. Isotherms of 10Zr-423-8 and 10Zr-423-24 offset by 300 cm$^3$/g.
Fig. S3. TGA-MS of uncalcined 10Zr-100-24.
Fig. S4. $^{29}\text{Si}$ NMR of Si-SBA-15 and 10Zr-SBA-15 samples.
Fig. S5. Pyridine IR of 10Zr-SBA samples after pyridine adsorption followed by evacuation for 1 h at (a) room temperature and (b) 100 °C.
Fig. S6. Derivative weight loss versus temperature for β-pinene and formaldehyde adsorbed on 10Zr-423-8. Heat ramp at 10 °C min⁻¹ from room temperature to 500 °C in N₂. Displayed curve is after subtraction from blank run of 10Zr-423-8.
Fig. S7. Dependence of rate on concentration of (◊) β-pinene and (■) formaldehyde on 10Zr-423-8.
Fig. S8. Proposed coordination of β-pinene and formaldehyde at a zirconium site (dark grey sphere) leading to Nopol formation.
Fig. S9. Derivative weight loss versus temperature for 10Zr-423-8 after reaction, washing twice with 5 ml toluene and drying in N₂. Heat ramp at 10 °C min⁻¹ from room temperature to 500 °C in N₂. Displayed curve is after subtraction from blank run of 10Zr-423-8.