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SUPPLEMENTARY INFORMATION

Post-synthetic preparation of Sn-, Ti- and Zr-beta; a facile route to water tolerant, highly active Lewis acidic zeolites

Patrick Wolf,[a] Ceri Hammond,[a] Sabrina Conrad[a] and Ive Hermans[*a]

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A two-step procedure for the post-synthetic preparation of Lewis acidic Sn-, Zr- and Ti-zeolite β is reported. Dealumination of a commercially available Al-β zeolite leads to the formation of highly siliceous material containing silanol nests, which can be filled in a second step *via* the solid-state ion-exchange or impregnation of an appropriate metal precursor. Spectroscopic studies indicate that each metal is subsequently coordinated within the zeolite framework, and that little or no bulk oxides are formed – despite the high metal loadings. The synthesised catalysts demonstrate excellent activity for the isomerisation of glyceraldehyde to dihydroxyacetone, a key model reaction for the upgrading of bio-renewable feedstocks, and the epoxidation of bulky olefins.

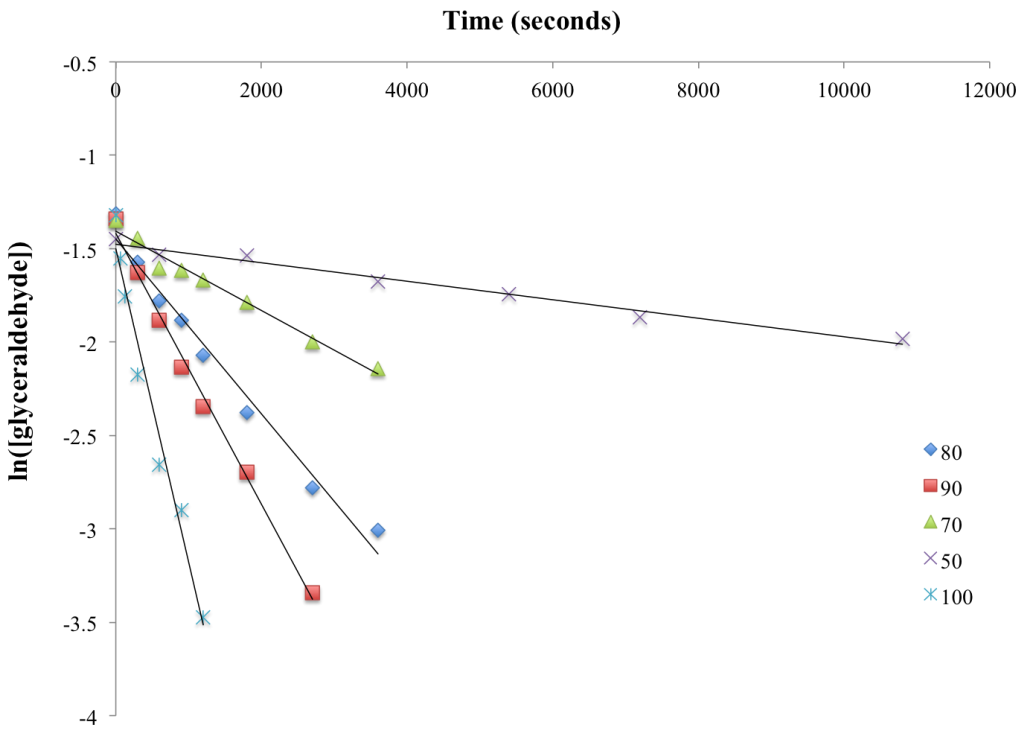

Figure S1. Kinetic data for the isomerisation of glyceraldehyde to dihydroxyacetone, catalysed by 10Sn-β between 50-100 ºC. Reaction conditions: 5mL, 0.4 M glyceraldehyde in H_2O, 1 mol. % Sn, heated to the desired reaction temperature (50-100 ºC).

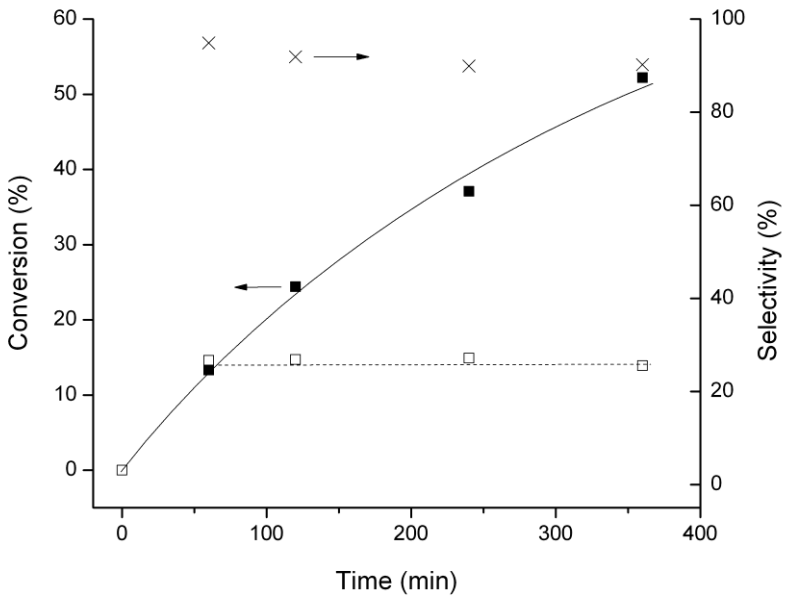

Figure S2. Time online data for the epoxidation of cyclooctene with 4Ti-β. Reaction conditions: 10 mL, 0.5 M cyclooctene in 2-butanol, 80 ºC, 0.5 M, H_2O_2/olefin = 1, 1 mol. % Ti.