Supporting Information:

Catalytic performances of Sn-Beta catalysts prepared from different heteroatom-containing Beta zeolites for the retro aldol fragmentation of glucose

Ricardo Navar,[1] Luca Botti[2], Giulia Tarantino[2], and Ceri Hammond[2]*

[1]Cardiff Catalysis Institute, Cardiff University, Park Place, Cardiff, CF10 3AT, UK

[2]Department of Chemical Engineering, Imperial College London, London, SW7 2AZ, UK

* ceri.hammond@imperial.ac.uk

Table S1. Principal modes and assignments of hydrothermal M-Beta zeolites.

Zeolite	Assignment (cm^{-1})						
	νO-T-$O_{Int\text{-}T}$[a]	$\nu_{(s)}$ O-T-O_{Ext}[b]	$\nu SiO_{4\ (UC)}$[c]	νO-T-$O_{Int.}$[d]	$\nu_{(as)}$ O-T-O_{Ext}[e]	$\nu SiOH_{Int}$[f]	$\nu SiOH_{Term.}$[g]
Al-Beta 100	736	~800	-	1042	1208	-	3748
B-Beta 100	737	~800	916 948	1040	1209	3734	3747
Ga-Beta 200	736	~800	942	1029	1209	-	3748
Al-Beta 200	737	~800	941	1039	1208	-	3747
B-Beta 200	736	~800	917	1033	1208	3733	3747
Fe-Beta 200	736	~800	-	1031	1207	3735	3748

[a] Intertetrahedral O-T-O;[b] Symmetric external O-T-O; [c] Vibrations of Si-O belonging to uncoupled SiO_4 tetrahedra [d] Symmetric internal O-T-O; [e] Asymmetric external O-T-O; [f]; Internal Si-OH groups present at framework defects; [h] Terminal Si-OH groups.

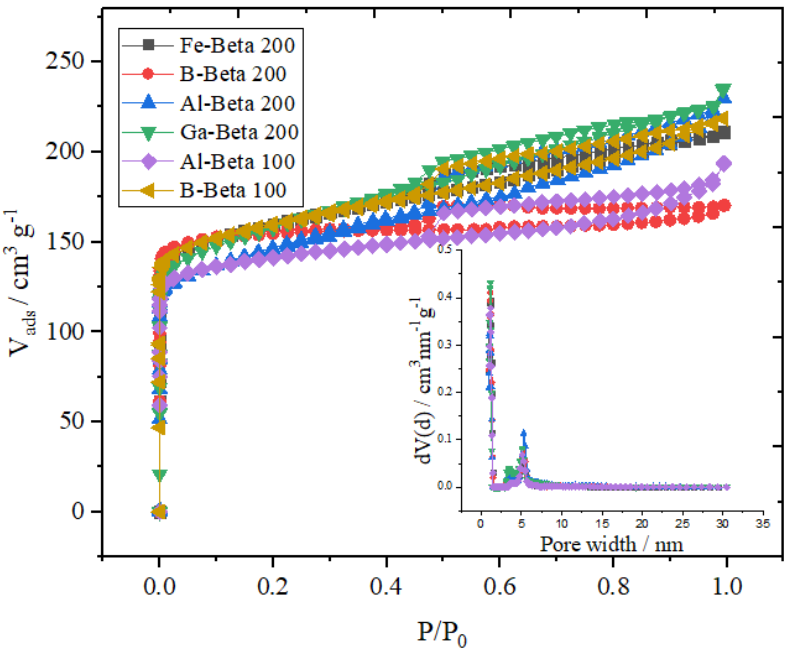

Figure S1. Nitrogen sorption isotherm and pore size distribution using DFT model (inset) of parent M-Beta zeolites.

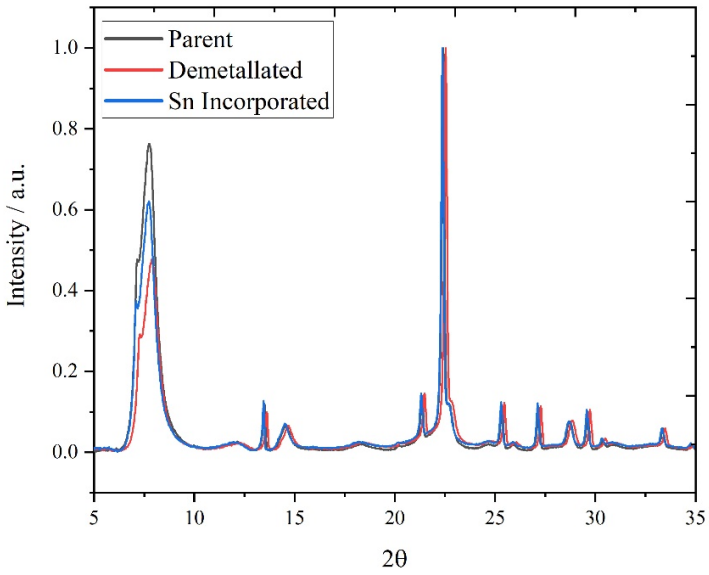

Figure S2. X-Ray Diffraction patterns of calcined B-Beta parent material, demetallated Beta derived from B-Beta, and Sn-Beta achieved by SSI of demetallated B-Beta.

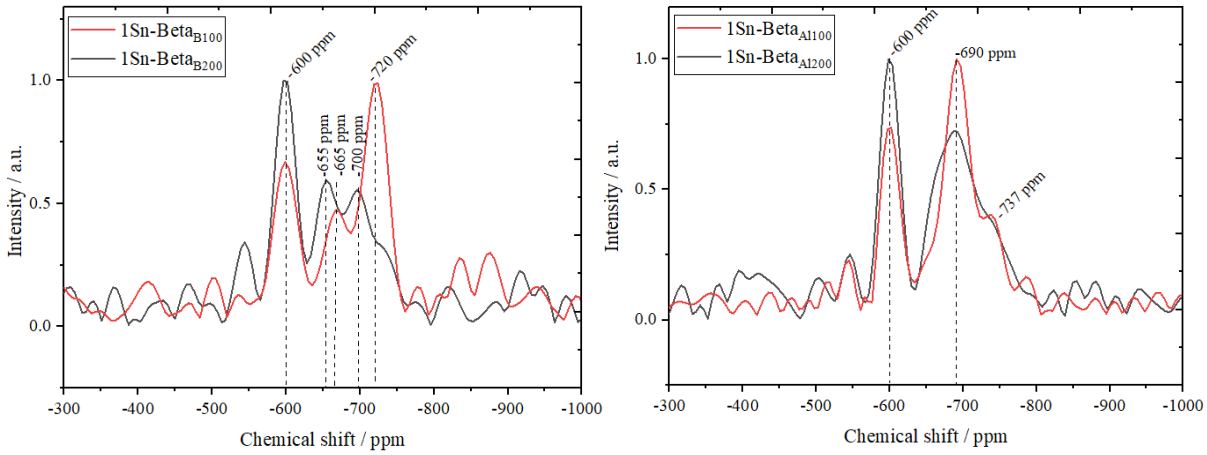

Figure S3. ^{119}Sn De CPMG MAS NMR spectra of 1Sn-Beta$_{100}$ and 1Sn-Beta$_{200}$ where M=B(left) and M=Al (right).

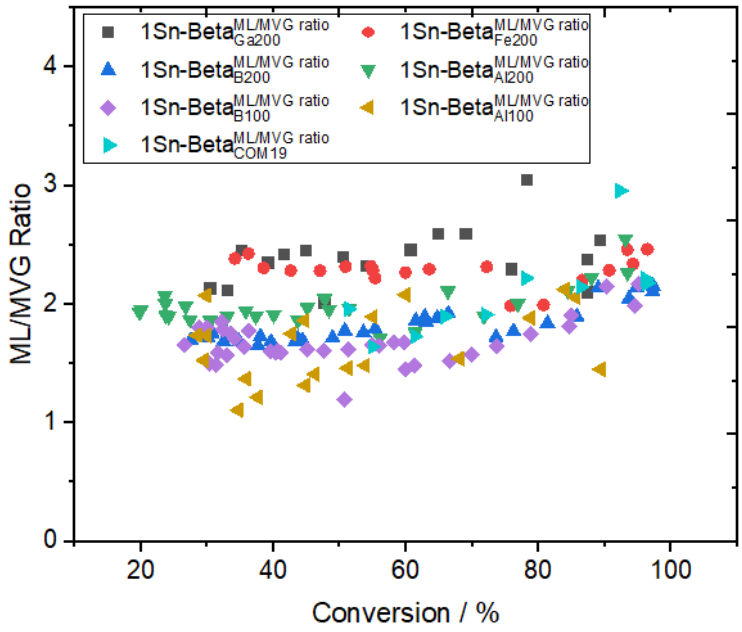

Figure S4. ML/MVG ratio over glucose conversion, for the 1Sn-Beta$_{MX}$ series and 1SnBeta$_{COM19}$.

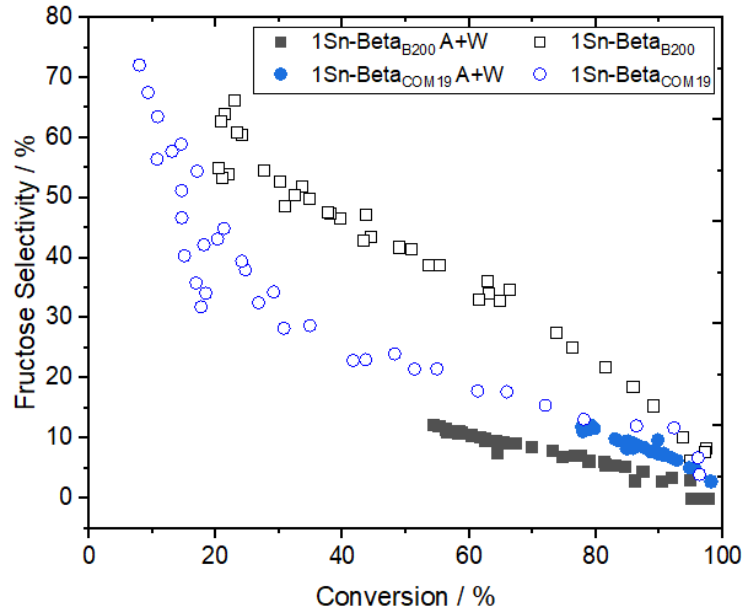

Figure S5. Comparion of the fructose selectivity over glucose conversion of original ML fragmentation and ML fragmentation with alkali salts and water (A+W).

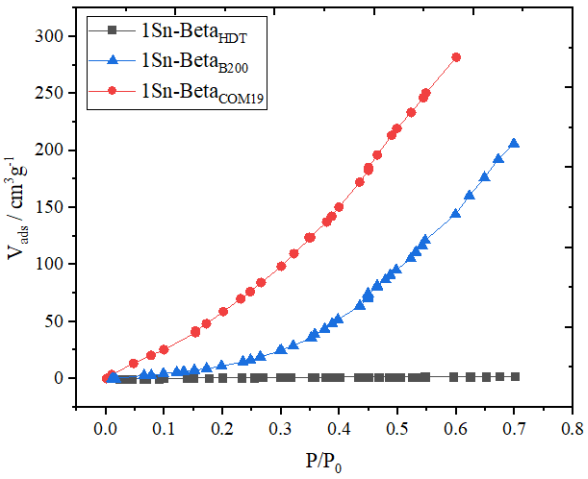

Figure S6. Vapour sorption data of various 1Sn-Beta catalysts, including (red/circles) 1Sn-Beta$_{COM19}$, (blue/triangles) 1Sn-Beta$_{B200}$ and (squares/black) hydrothermally synthesised 1Sn-Beta$_{HDT}$, which is provided for reference purposes only.