Supporting information

Modification of Sn-Beta zeolite: Characterization of acido-basic properties and catalytic performance in Baeyer-Villiger oxidation

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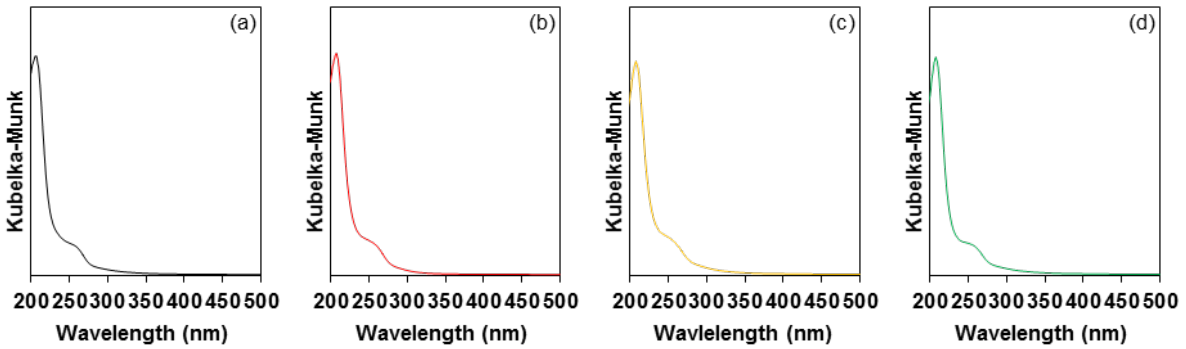

Fig. S1 UV-Vis spectra of pre-treated Sn-Beta samples. (a) Sn-Beta, (b) Sn-Beta-Li-L, (c) Sn-Beta-Na-L, and (d) Sn-Beta-Cs-L. The samples were pretreated *in vacuo* at 400 °C for 1 h. The spectra were normalized by adjusting the peak intensity at 210 nm similar.

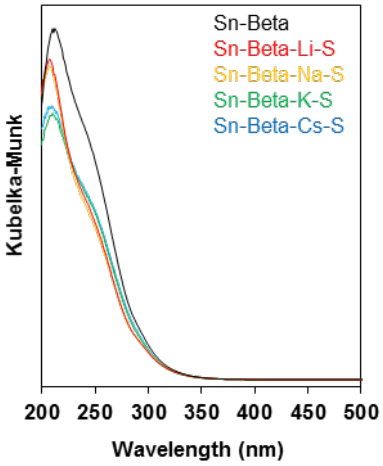

Fig. S2 UV-Vis spectra of wet Sn-Beta samples.

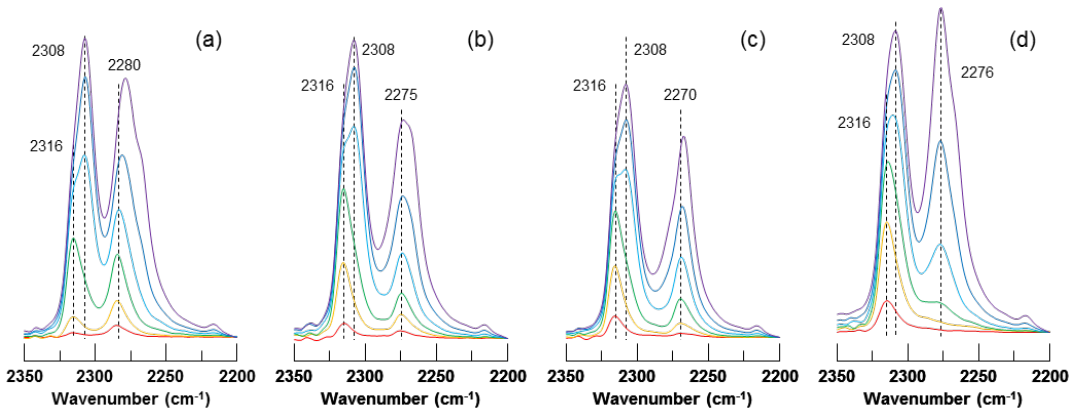

Fig. S3 IR spectra of CD_3CN molecules adsorbed on (a) Sn-Beta-Na-S, (b) Sn-Beta-K-S, (c) Sn-Beta-Cs-S, and (d) Sn-Beta-H_2O. From bottom (red) to top (purple), CD_3CN pressure was increased from 5 to 200 Pa.

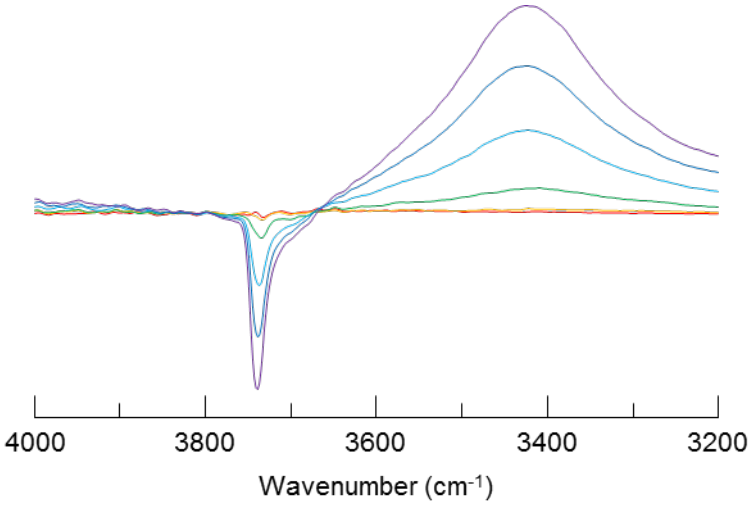

Fig. S4 OH-region difference IR spectra of Sn-Beta before and after adsorption of CD_3CN. From bottom (red) to top (purple), CD_3CN pressure was increased from 5 to 200 Pa.

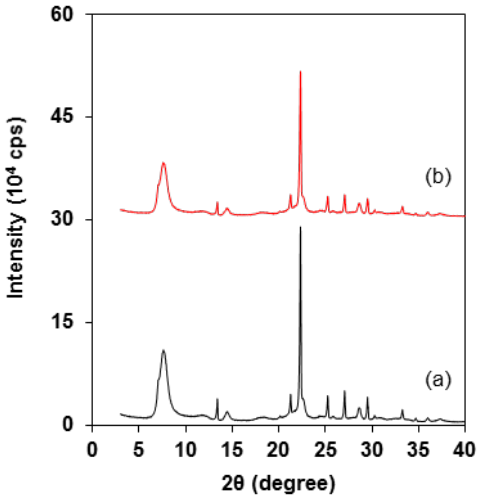

Fig. S5 XRD patterns of (a) Sn-Beta and (b) Sn-Beta-H_2O.

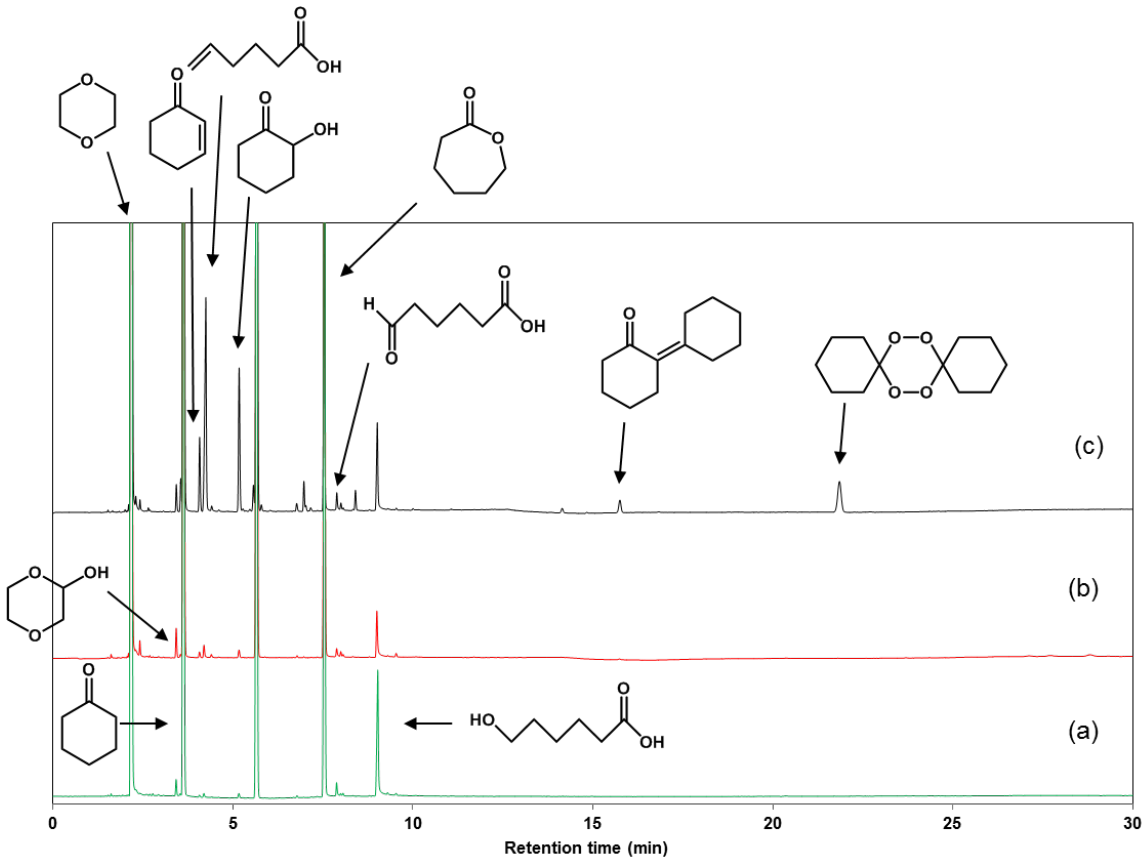

Fig. S6 Gas chromatograms for the BV oxidation of cyclohexanone with (a) Sn-Beta-Na-S, (b) Sn-Beta, and (c) Al-Beta.

Reaction conditions: catalyst, 50 mg; cyclohexanone, 3 mmol; H_2O_2 (35 wt.%) 3 mmol; 1,4-dioxane, 8.5 ml; temperature, 90 °C; reaction time, 2 h (for Al-Beta, 1 h).

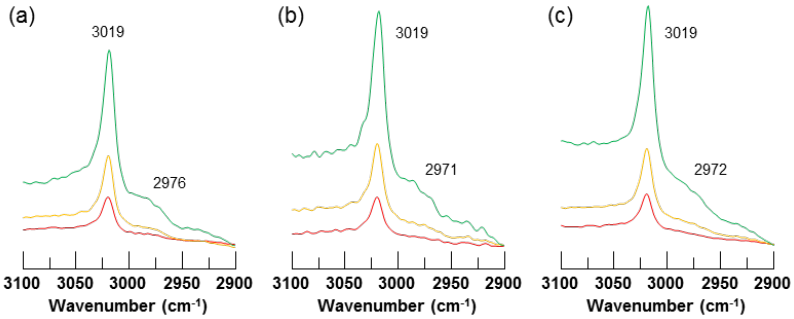

Fig. S7 IR spectra of $CHCl_3$ molecules adsorbed on (a) Sn-Beta-Na-S, (b) Sn-Beta-K-S, and (c) Sn-Beta-Cs-S. From bottom (red) to top (green), CD_3CN pressure was increased from 50 to 200 Pa.