Supporting Information

A Rapid Synthesis of Hf-Beta Zeolite as Highly Active Catalyst for Meerwein-Ponndorf-Verley Reduction by Controlling Water Content of Precursor Gel

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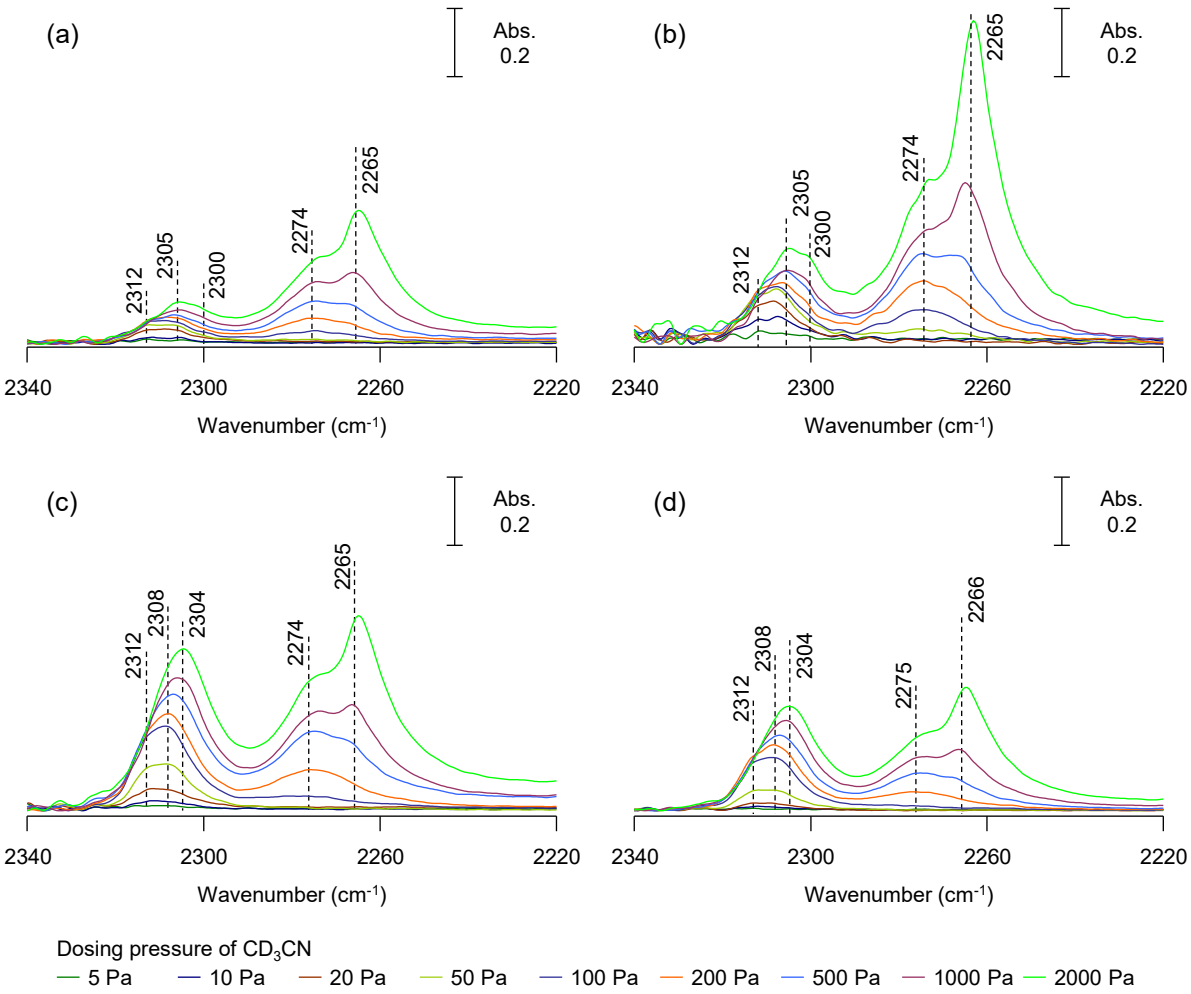

Figure S1. FT-IR spectra of CD_3CN adsorbed on Hf-Beta (a) Hf-1.4-72, (b) Hf-4.5-72, (c) Hf-6.4-72, and (d) Hf-HF. Dosing pressure of CD_3CN = 5 – 2000 Pa.

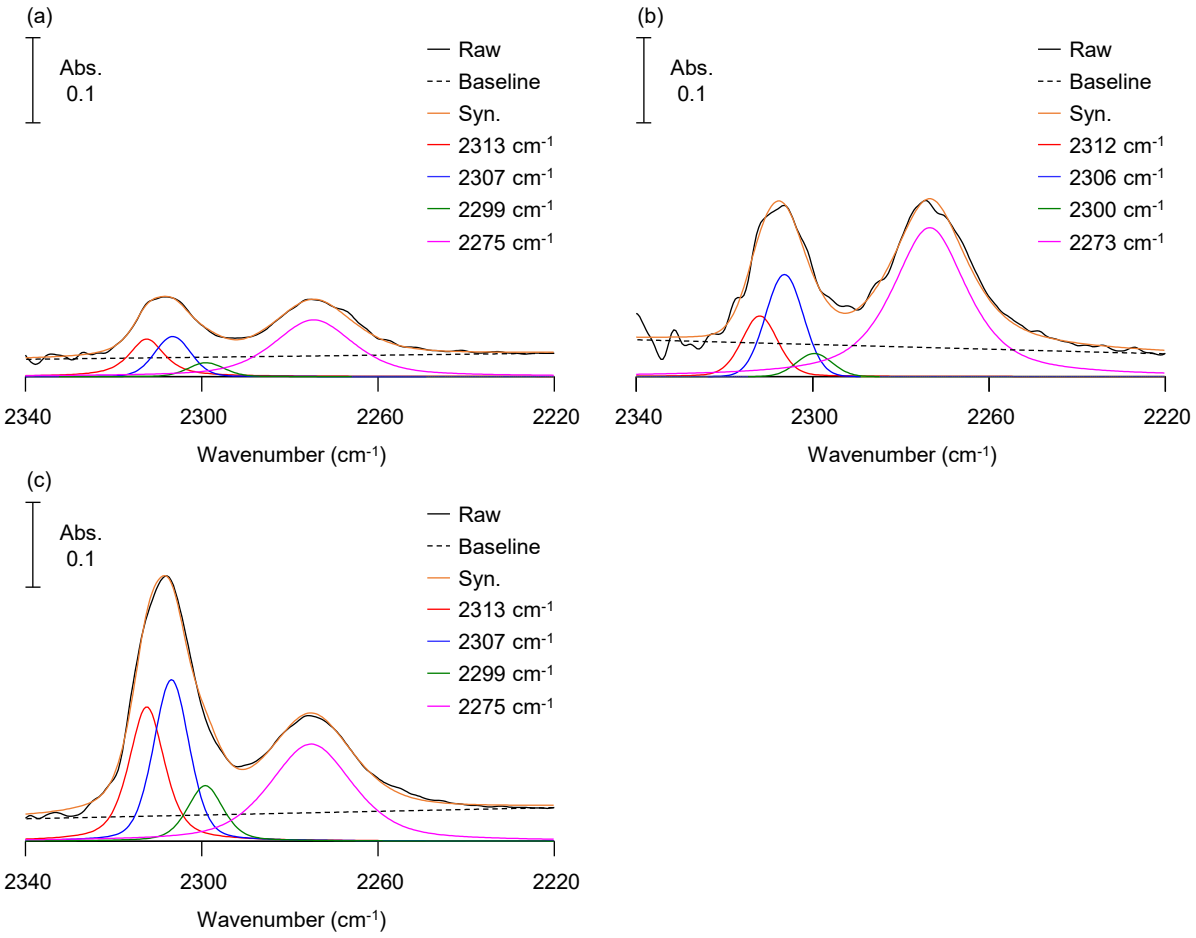

Figure S2. Deconvoluted FT-IR spectra of CD_3CN adsorbed on (a) Hf-1.4-72, (b) Hf-4.5-72, and (c) Hf-6.4-72. Dosing pressure of CD_3CN was 200 Pa.

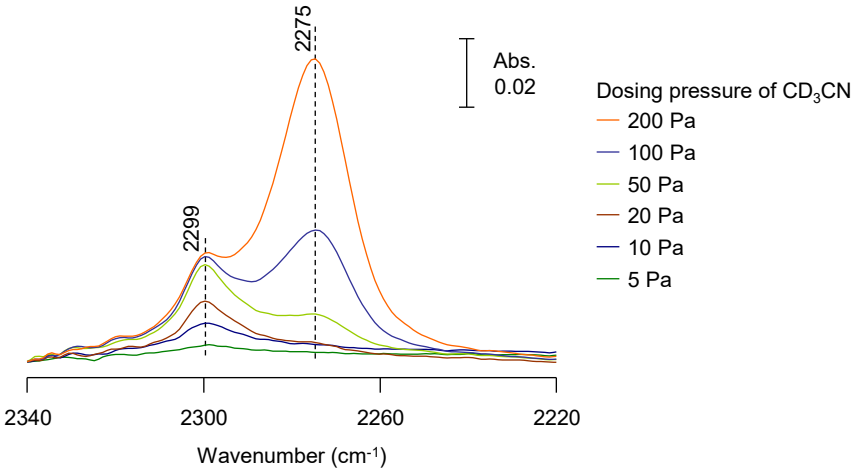

Figure S3. FT-IR spectra of CD_3CN adsorbed on HfO_2/Si-Beta. Dosing pressure of CD_3CN = 5 – 200 Pa.

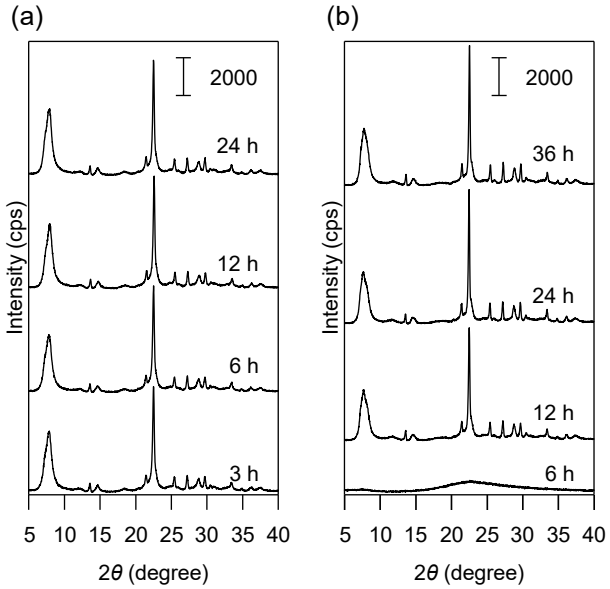

Figure S4. XRD patterns of calcined samples synthesized from precursor gel containing seed crystal with H_2O/SiO_2 = (a) 1.4 and (b) 6.4 at different crystallization periods.

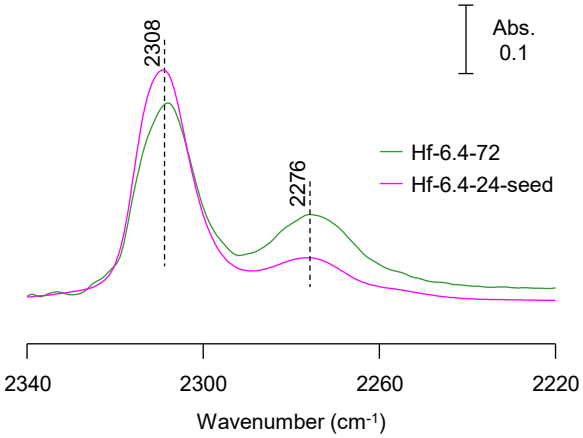

Figure S5. FT-IR spectra of CD_3CN adsorbed on Hf-6.4-72 and Hf-6.4-24-seed. Dosing pressure of CD_3CN was 200 Pa.

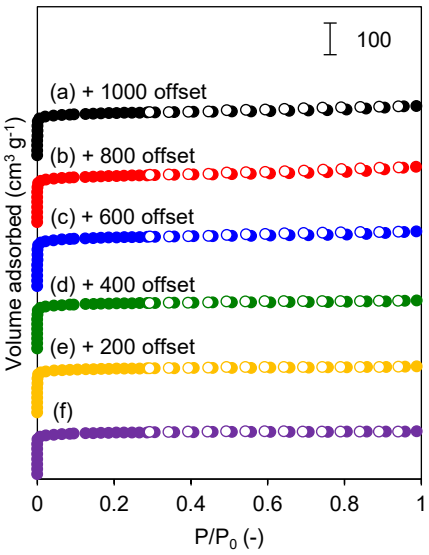

Figure S6. N_2 adsorption-desorption isotherms at -196 °C for (a) Hf-1.4-72, (b) Hf-2.2-72, (c) Hf-3.3-72, (d) Hf-4.5-72, (e) Hf-5.5-72 and (f) Hf-6.4-72.

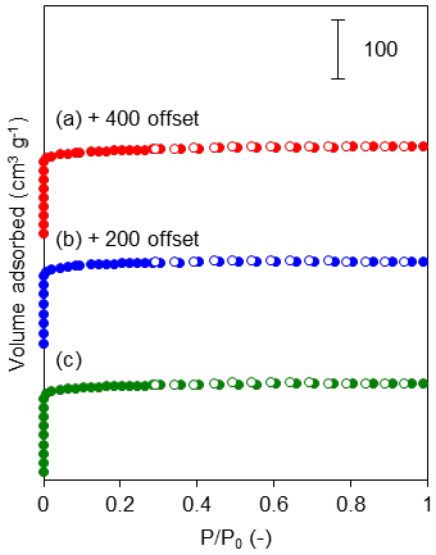

Figure S7. N_2 adsorption-desorption isotherms at -196 °C for (a) Hf-HF, (b) Zr-HF and (c) Sn-HF.

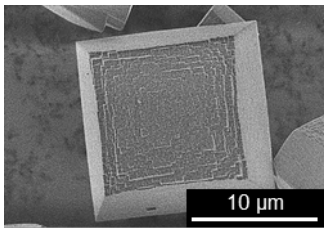

Figure S8. SEM image of Hf-HF.