

Stable continuous production of γ -valerolactone from biomass-derived levulinic acid over Zr-Al-Beta zeolite catalyst

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Supplementary Information

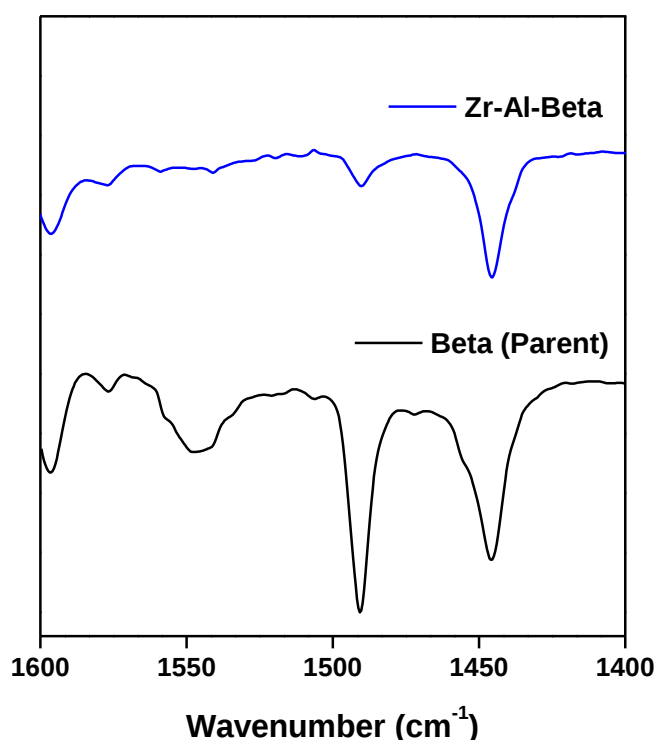


Figure S1. DRIFT signals of adsorbed pyridine on parent (commercial) Beta and Zr-Al-Beta zeolites.

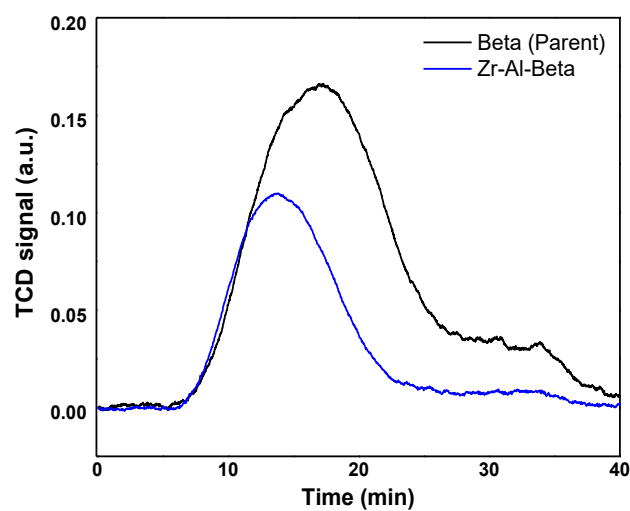


Figure S2. NH₃-TPD profiles of commercial of commercial H-Beta parent zeolite and Zr-Al-Beta zeolite.

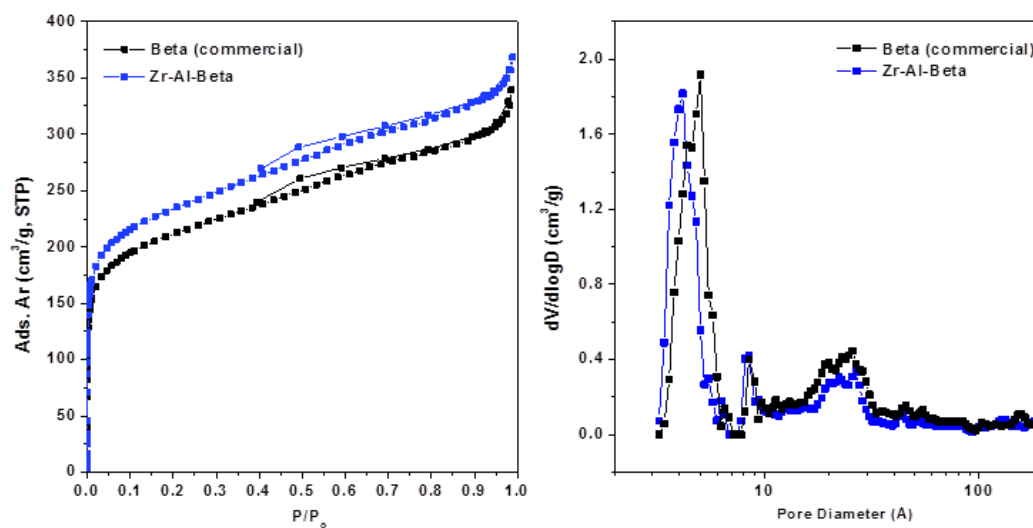


Figure S3. Ar adsorption-desorption isotherms of commercial H-Beta zeolite and Zr-Al-Beta (left side). Pore sizes distribution of commercial H-Beta parent zeolite and Zr-Al-Beta zeolite (right side).

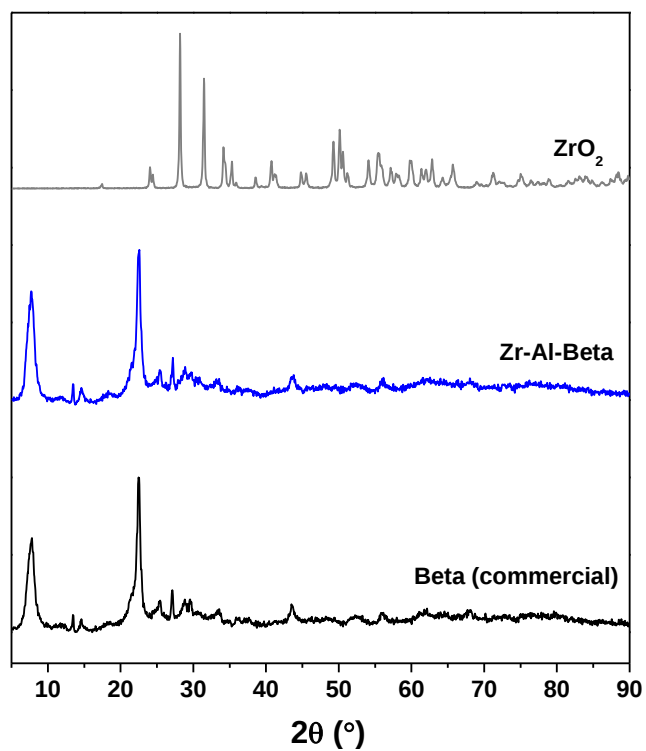


Figure S4. XRD patterns of Zr-Al-Beta, as compared to commercial Beta zeolite and crystalline ZrO_2 (monoclinic phase).