Supplementary Information (SI) for New Journal of Chemistry.
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All data that support the findings of this study are provided in the manuscript and supplementary information (SI). Supplementary information: the catalytic performance of hierarchical zeolite; XRD,  $N_2$  adsorption-desorption isotherms, SEM images, TEM images and  $NH_3$ -TPD curves of hierarchical zeolites; the textural properties of microporous and hierarchical ZSM-5 zeolites;  $N_2$  adsorption-desorption isotherms and the textural properties of spent microporous and hierarchical ZSM-5 zeolites.