Synthesis of novel mesoporous sulfated zirconia nanosheets derived from Zr-based Metal-Organic Frameworks

Ningyue Lu, a Xuelian Zhang, a Xiaoliang Yan, a Dahai Pan, a Binbin Fan, * a and Ruifeng Li * a,b

a College of Chemistry and Chemical Engineering, Taiyuan University of Technology, Taiyuan 030024, P.R. China

b Key Laboratory of Coal Science and Technology MOE, Taiyuan University of Technology, Taiyuan 030024, P.R. China
Fig. S1 XRD patterns of Zr-MOFs-S samples with different S/Zr molar ratios.

Fig. S2 XRD pattern of UiO-66 sample.
Fig. S3 TGA curves under Air of Zr-MOFs-S samples with different S/Zr molar ratios.

Fig. S4 SEM images of UiO-66 (a), Zr-MOFs-S-0.1 (b), Zr-MOFs-S-0.3 (c).
Fig. S5 SEM images of Zr-MOFs-SH (a), Zr-MOFs-NH (b) and Zr-MOFs-NO (c).

Fig. S6 SEM images of SZN-600 (a), SZN-700 (b).

Fig. S7 $\text{N}_2$ adsorption-desorption isotherm and pore distribution plots (inset) of SZ-r samples.
Fig. S8 The conversion of tributyrin as a function of reaction temperature over SZN-500 catalyst. (Reaction conditions: 0.1 g catalyst, 1.3 mmol tributyrin, 52 mmol methanol, 6 h)

Fig. S9 Catalytic performances of different SZN samples on transesterification of tributyrin. (Reaction conditions: 0.1 g catalyst, 1.3 mmol tributyrin, 52 mmol methanol, 140 °C, 6 h)
Fig. S10 SEM images of Zr-MOFs-M samples. (M = SA1 (a), SCo (b), SCu (c), SZn (d)).