Supporting Information

Size-matched polyoxometalate encapsulated in UiO-66(Zr): an extraordinary catalyst with double active sites for highly efficient ultra-deep oxidative desulfurization of fuel oil

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Experimental

Preparation of Mo_8

1.25 g $Na_2MoO_4{\cdot}2H_2O$ was dissolved in 3 ml water, adjust the solution pH to 4.5 with HCl (1.0 ml, 6 mol/l), then add 0.80 g $(n\text{-}C_4H_9)_4NCl$, filter out the resulting precipitation, finally wash the precipitation thoroughly with water, absolute ethyl alcohol, acetone, diethyl ether, respectively.

Characterization

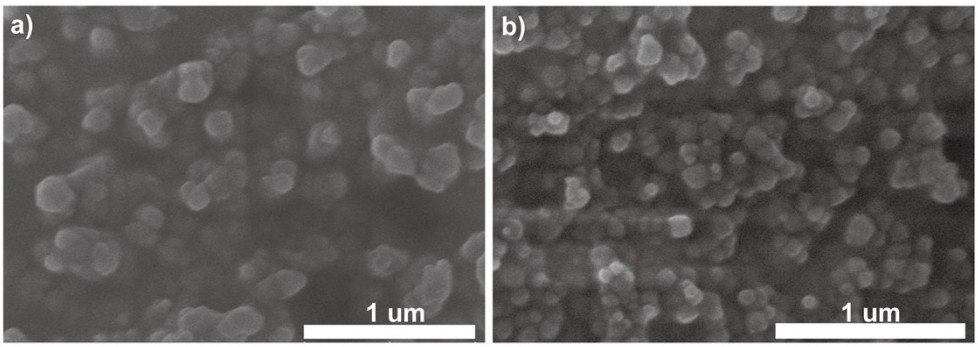

Figure S1. FE-SEM images of UiO-66 (a), Mo_8-UiO-66 (b).

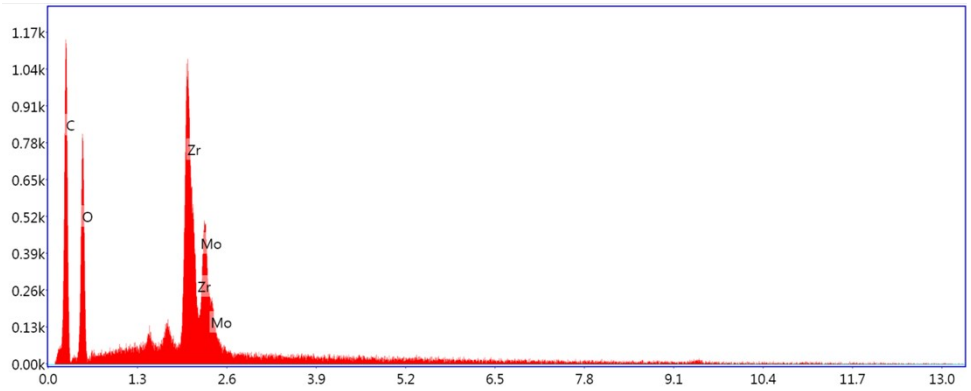

Figure S2. EDS analysis of Mo_8-UiO-66.

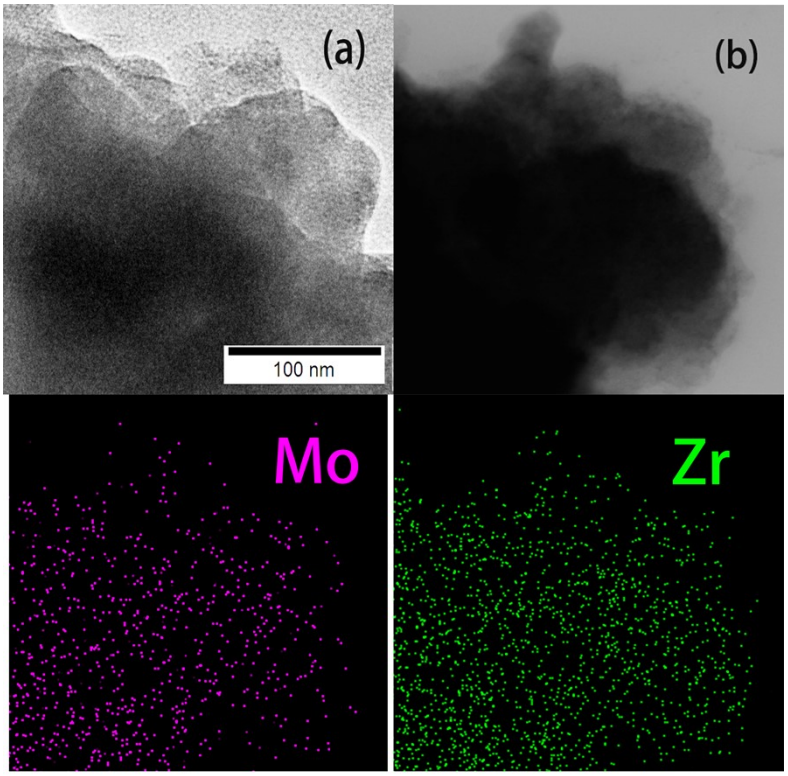

Figure S3. TEM images of Mo_8-UiO-66 (a) and element mapping (b).

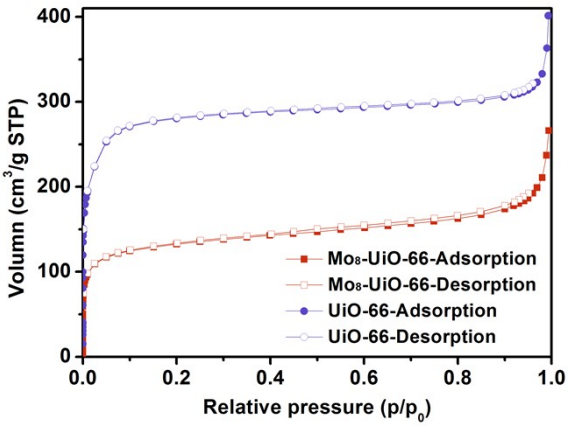

Figure S4. Nitrogen adsorption-desorption isotherms of UiO-66 and Mo_8-UiO-66.

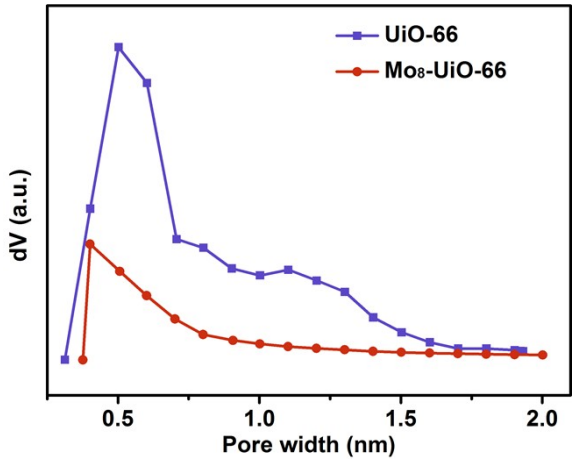

Figure S5. Aperture distribution of UiO-66 and Mo_8-UiO-66.

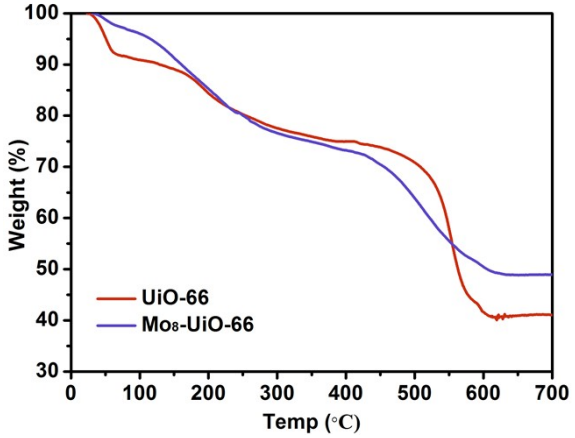

Figure S6. Thermogravimetric analysis of UiO-66 and Mo_8-UiO-66.

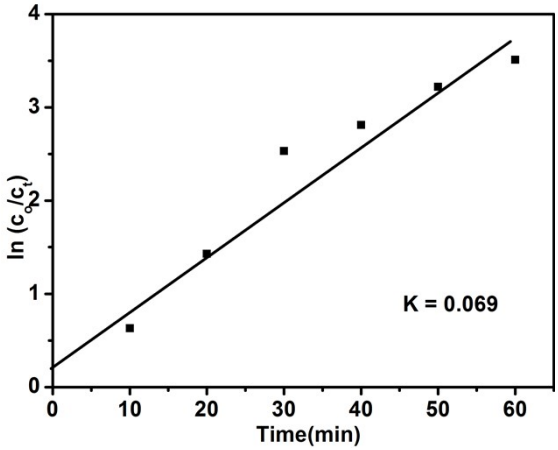

Figure S7. Reaction kinetics of DBT removal, reaction conditions: 60 ℃, O/S = 4, m_{cat} = 0.020 g, t = 10 min.

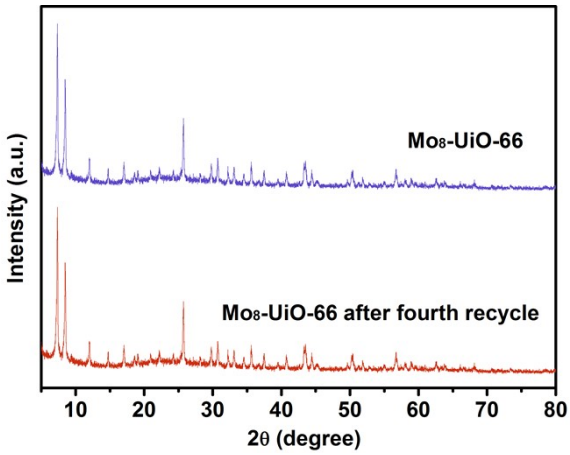

Figure S8. PXRD patterns of Mo_8-UiO-66 and Mo_8-UiO-66 after fourth recycle.

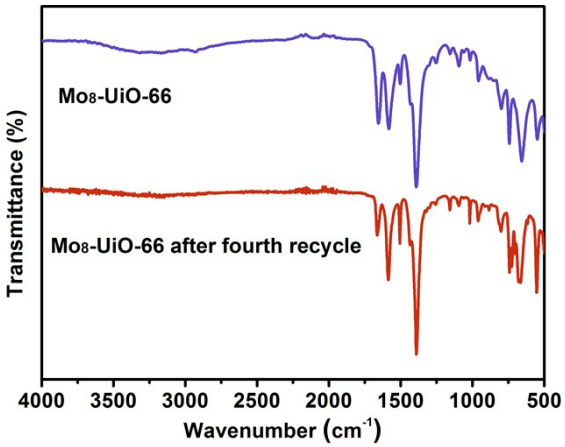

Figure S9. FT-IR spectra of Mo_8-UiO-66 and Mo_8-UiO-66 after fourth recycle.

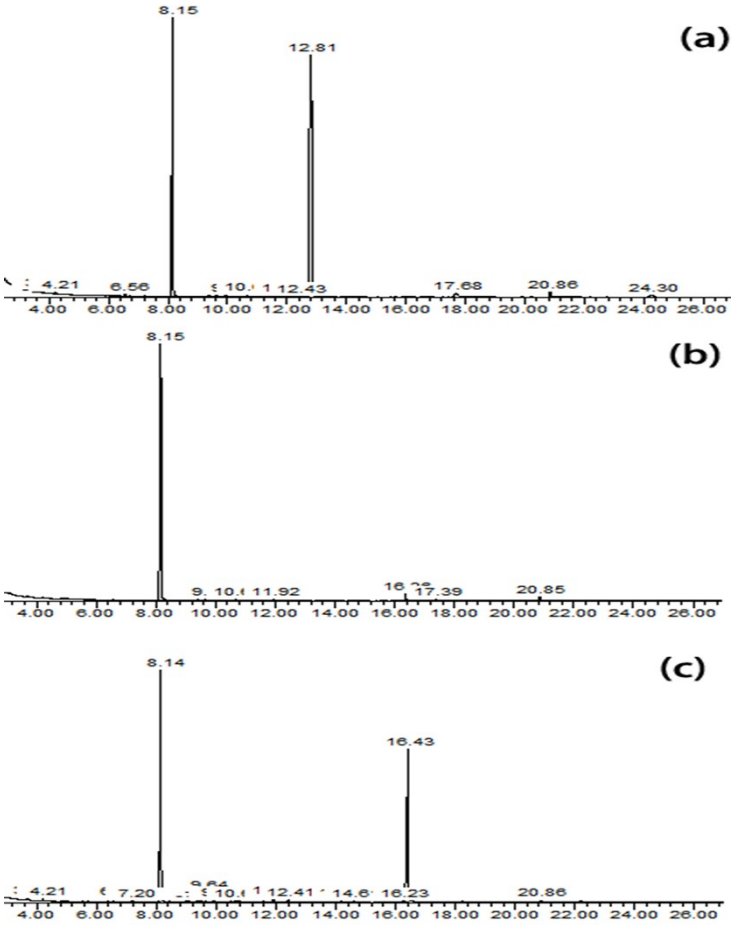

Figure S10. GC-MS of fresh model oil phase (a), oil phase after reaction (b), oxidative production after reextraction (c).

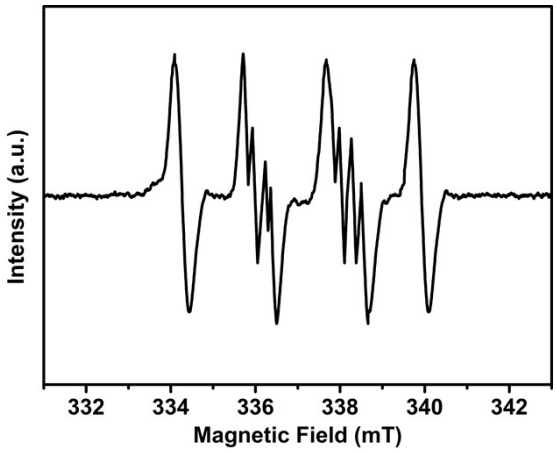

Figure S11. EPR spectrum of Mo_8-UiO-66, H_2O_2 and DMPO.

Table S1. The content of Mo_8 in different conditions (measured by ICP).

Samples	Content of Mo_8
Mo_8-UiO-66	28.05%
Mo_8-UiO-66 (after reaction)	27.88%