

## Supporting information

### The Deep Oxidative Desulfurization Catalyzed by Ionic Liquid-type peroxotungsten catalyst

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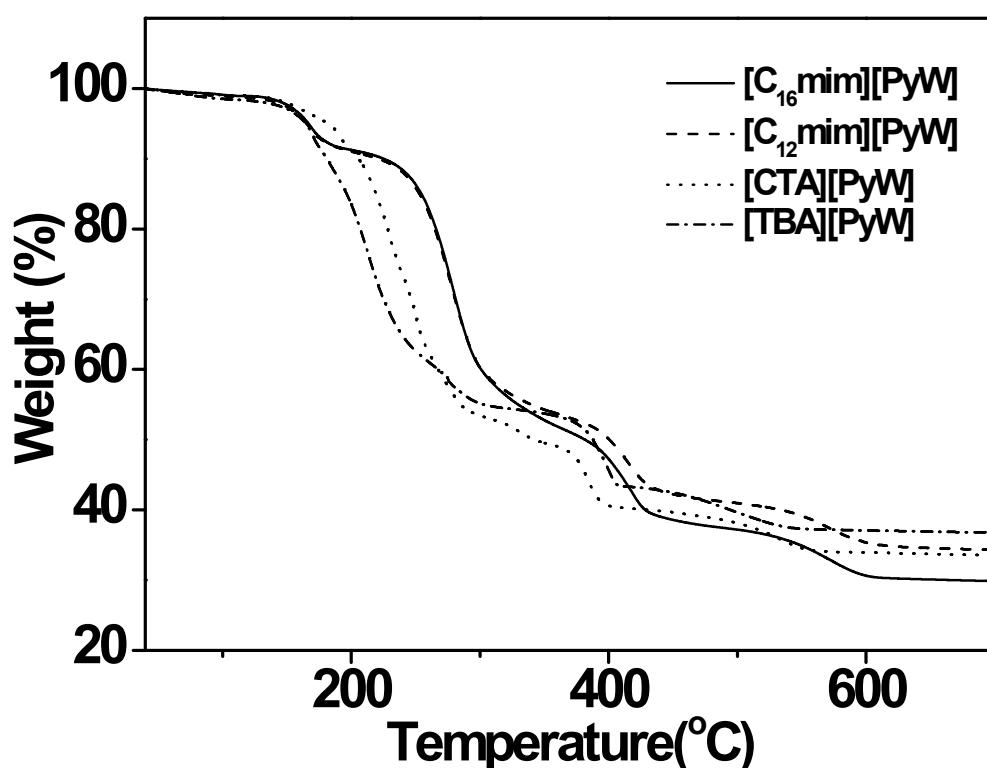


Fig. 1S TGA curves for different catalysts

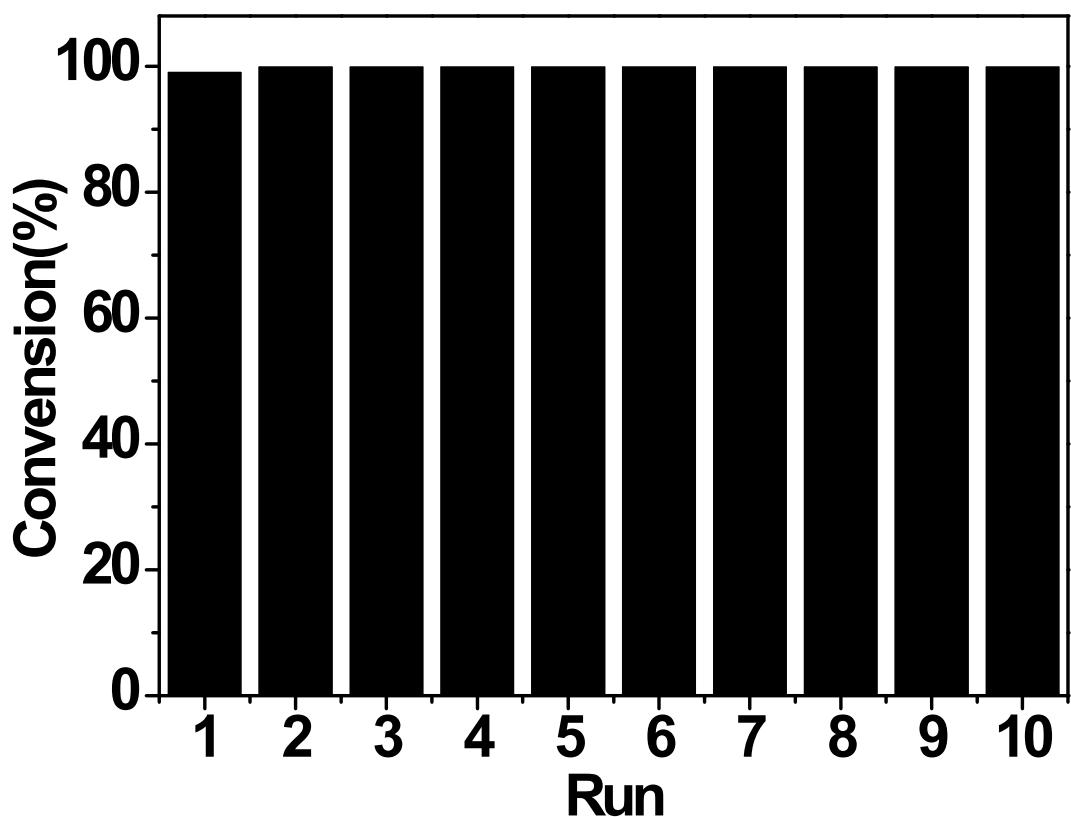


Fig. 2S Recyclability of [C<sub>16</sub>mim][PyW] for desulfurization of DBT. Reaction condition: model oil = 5 mL (S-content 1000 ppm), T = 50 °C, 2 h, n(DBT)/n(Catalyst)/n(H<sub>2</sub>O<sub>2</sub>) = 50:1:200 (molar ratio).

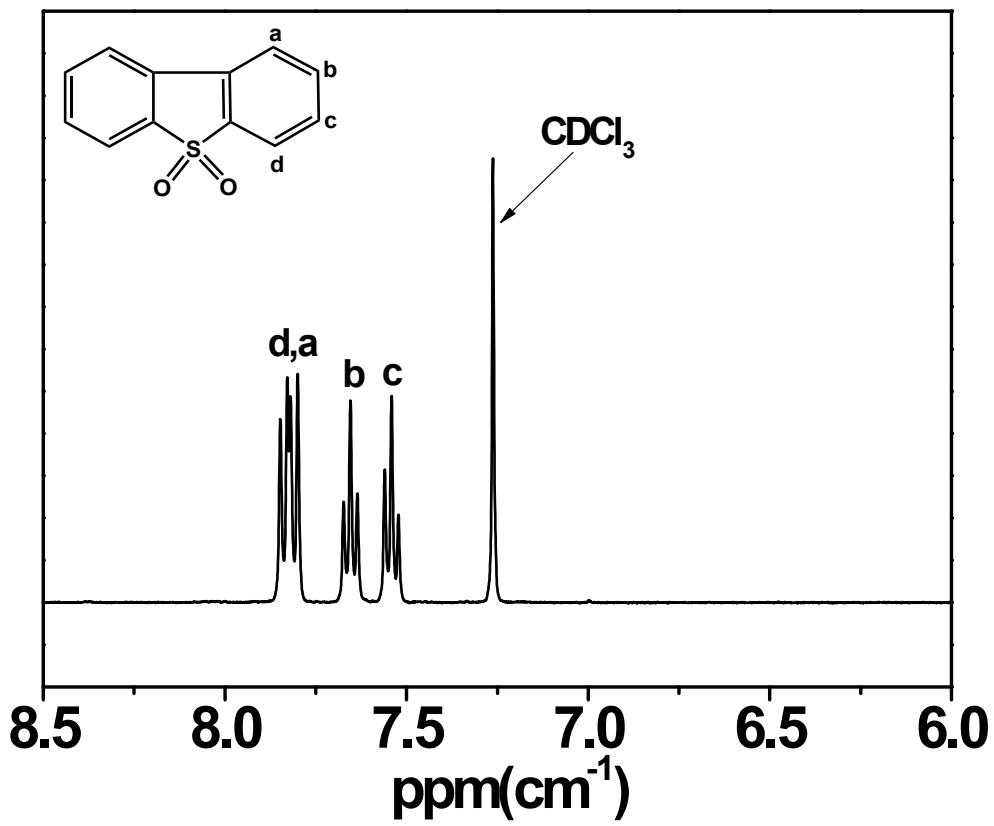


Fig. 3S  $^1\text{H}$  NMR ( $\text{CDCl}_3$ ) signal assignment of the protons of DBTO<sub>2</sub>

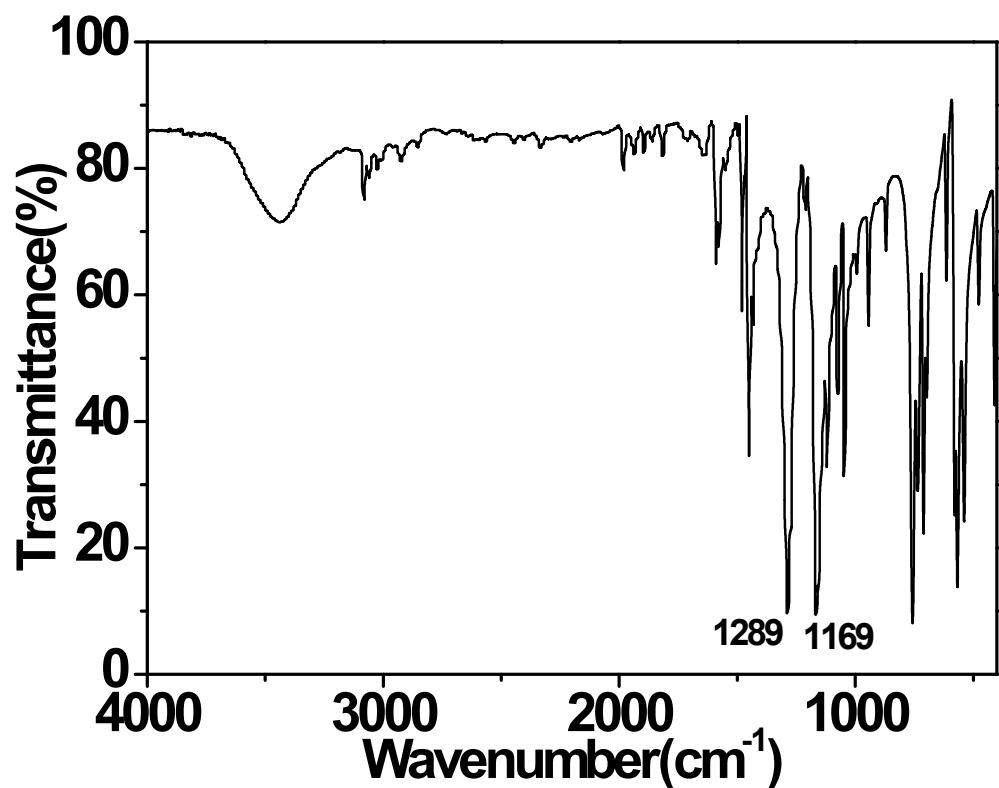


Fig. 4S FT-IR spectra of DBTO<sub>2</sub>