

Supplementary Materials

Recyclable polyether-polyquaternium grafted SiO₂ microsphere for efficient treatment of ASP

flooding-produced water: Oil adsorption characteristics and mechanism

Hao Sun ^{a,b}, Xin He ^c, Qian Tang ^{a,b}, Xiaobing Li ^{a,b,*}

^aNational Engineering Research Center of Coal Preparation and Purification, China University of Mining and Technology, Xuzhou 221116, Jiangsu, China

^bSchool of Chemical Engineering and Technology, China University of Mining and Technology, Xuzhou 221116, Jiangsu, China

^cKey Laboratory of Coalbed Methane Resources and Reservoir Formation Process of Ministry of Education, China University of Mining and Technology, Xuzhou 221008, China

Corresponding Author: Xiaobing Li, (+86)13512568890

Corresponding Author's email: Xiaobing.li@cumt.edu.cn

Mailing address: National Engineering Research Center of Coal Preparation and Purification, China University of Mining and Technology, Xuzhou 221116, Jiangsu, China

Number of pages: 6; number of Figures: 5.

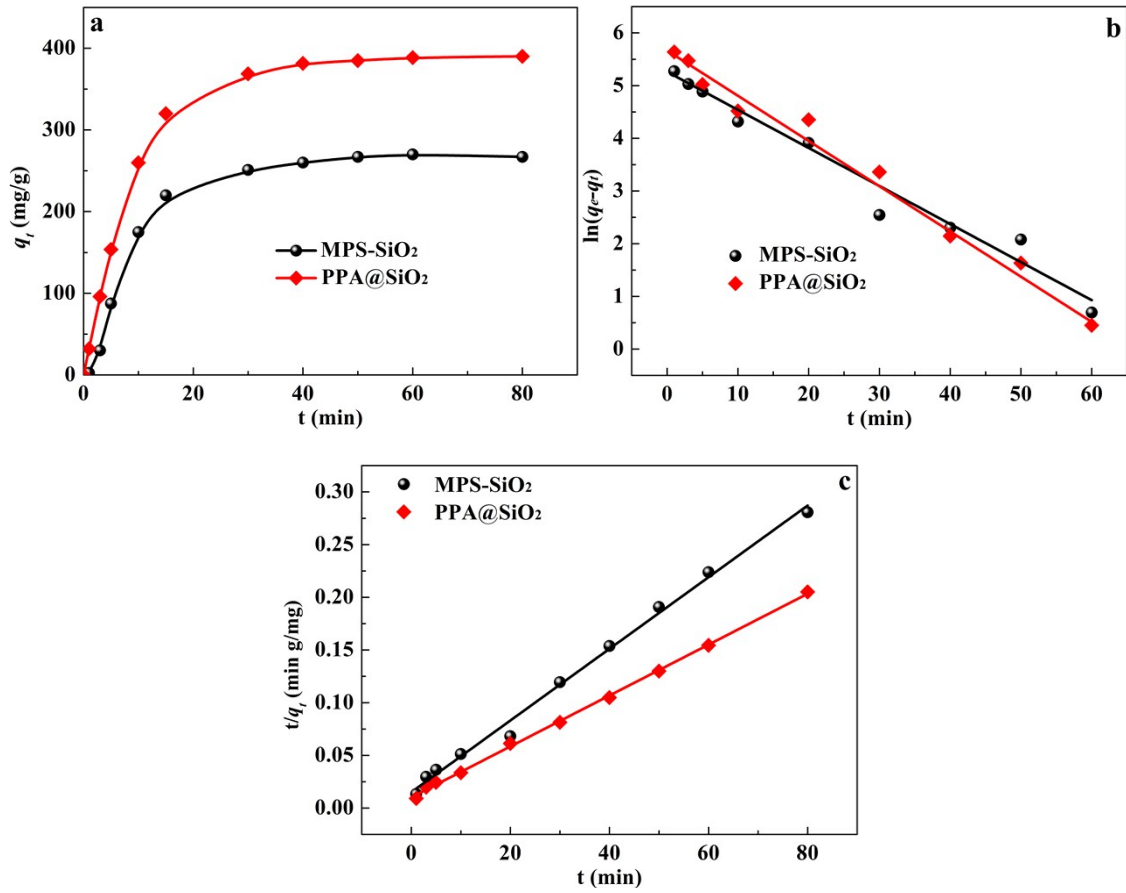


Fig. S1 Effect of contact time on oil adsorption (a); adsorption kinetics of oil onto MPS-SiO₂ and PPA@SiO₂ microspheres fitted with pseudo-first order and pseudo-second order models

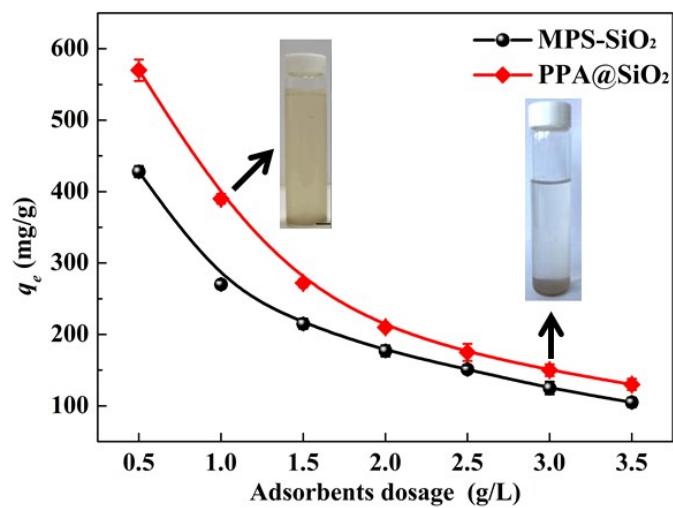


Fig. S2 Effect of adsorbents dosage on the oil adsorption capacity

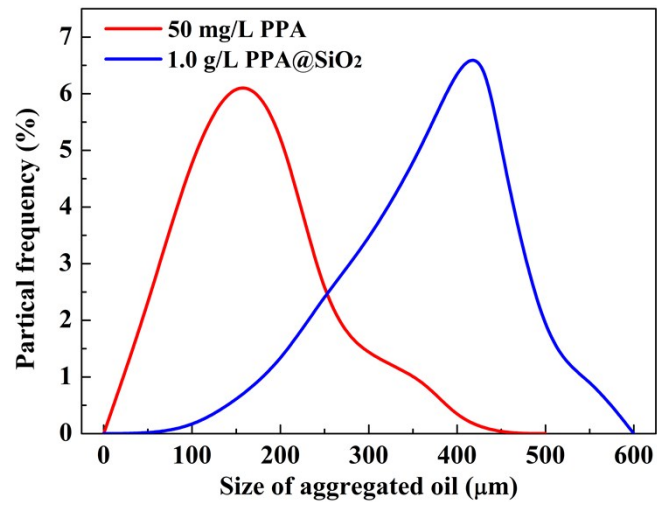


Fig. S3 Oil droplet size distributions at 50 mg/L PPA dosage and 1.0 g/L PPA@SiO₂ dosage

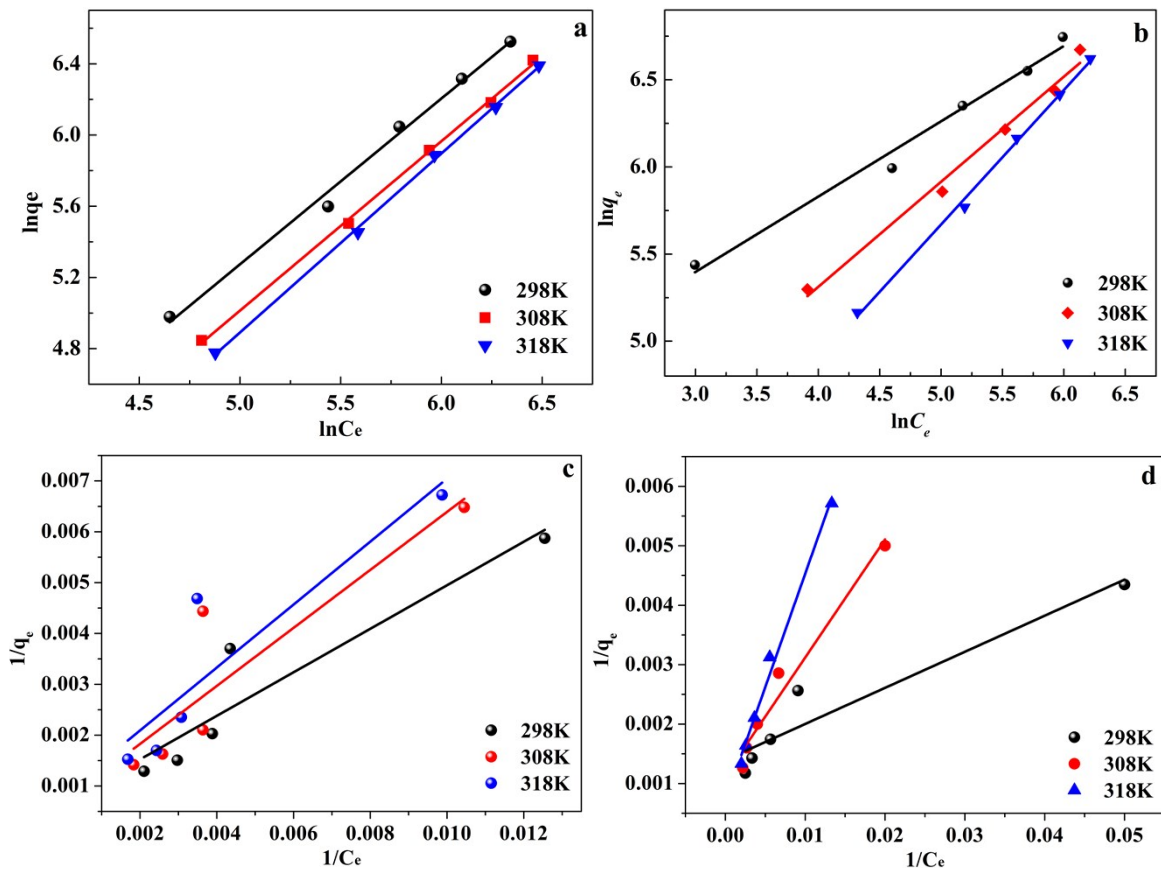


Fig. S4 Freundlich model plots of a. MPS-SiO₂, b. PPA@SiO₂ microspheres and Langmuir model plots of c. MPS-SiO₂, d. PPA@SiO₂ microspheres at various temperatures

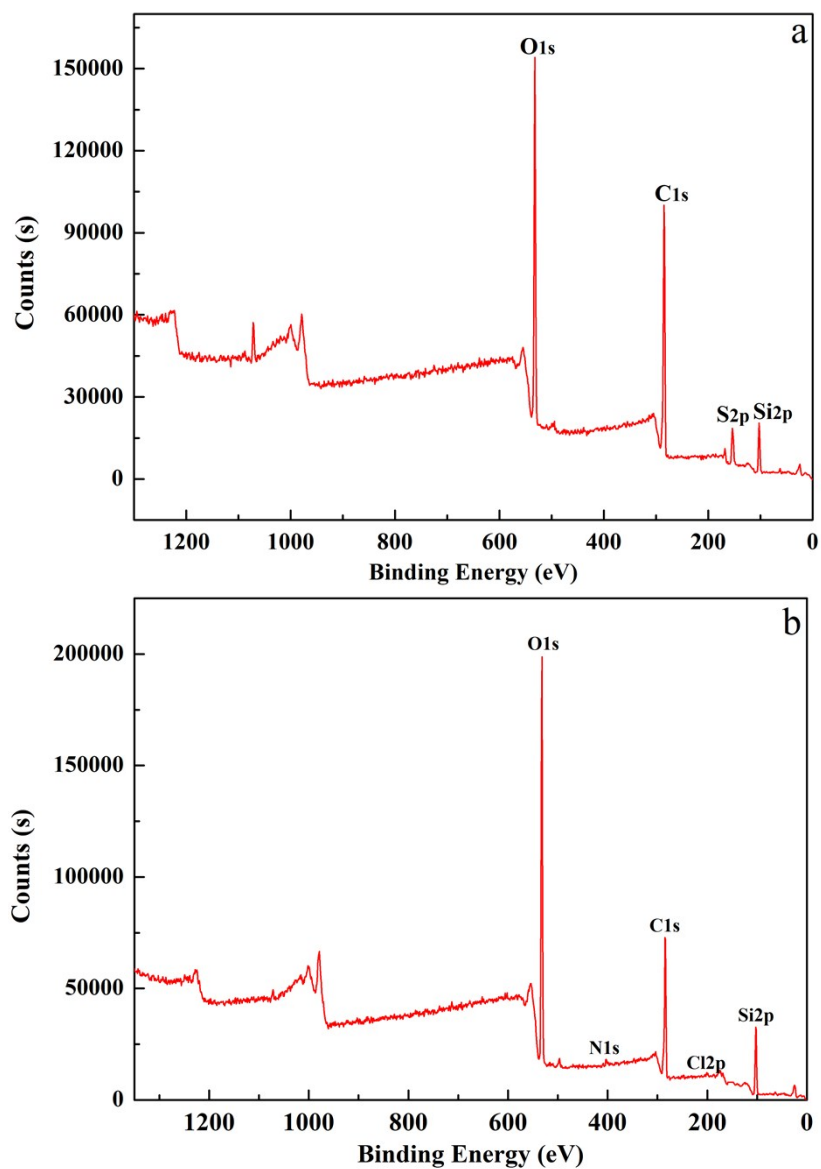


Fig. S5 XPS spectrum of the oil-loaded (a) PPA@SiO₂ and (b) recycled carrier particles