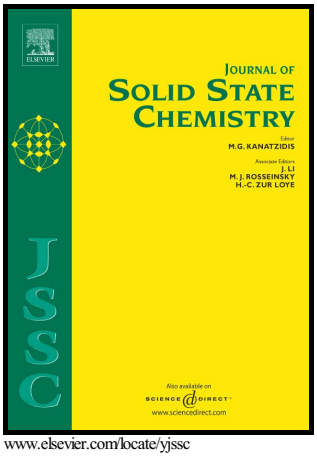

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Huili Liu, Zhuxiu Zhang, Jihai Tang, Zhaoyang Fei, Qing Liu, Xian Chen, Mifen Cui, Xu Qiao

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Quest for pore size effect on the catalytic property of defect-engineered MOF-808-SO_4 in the addition reaction of isobutylene with ethylene glycol

Huili Liu,[a] *Zhuxiu Zhang,*[a] *Jihai Tang* [a,b*] *Zhaoyang Fei,*[a] *Qing Liu,*[a] *Xian Chen,*[a] *Mifen Cui,*[a] *and Xu Qiao*[a,b*]

[a] State Key Laboratory of Materials-Oriented Chemical Engineering, College of Chemical Engineering, Nanjing Tech University, Nanjing 210009, China

[b] Jiangsu National Synergetic Innovation Center for Advanced Materials (SICAM), Nanjing 210009, China

* Corresponding Author, E-mail: jihaitang@njtech.edu.cn (J. Tang), qct@njtech.edu.cn (X. Qiao); Tel: +86 025-83172298; Fax: +86 025-83587168.

ABSTRACT

In this article, we use defect engineering approach to fine-tune the pore size of MOF-808-SO_4. A series of defective MOF-808-SO_4 with different pore size were prepared by varying the amount of isophthalic acid as the defective ligand during the synthesis. We obtained a linear correlation between the concentration of the defective ligand and the pore size via regression analysis. The pore size exerts a signicant effect on the catalytic activity in the addition reaction of isobutylene with ethylene glycol. The highest conversion of ethylene glycol was found over MOF-808-20%-SO_4 (2.25 nm) with the largest pore size, whereas MOF-808-5%-SO_4 (1.46 nm) and MOF-808-10%-SO_4 (1.53 nm) exhibited higher selectivity toward ethylene glycol mono-tert-butyl ether. There is a linear correlation between the pore size and catalytic