

## Supporting Information

### **Full-crystalline monolithic EU-1 zeolite: sustainable synthesis and its applications in hydroisomerization of ethylbenzene with *mata*-xylene**

Guanghua Liang,<sup>a,b</sup> Jianyi Chen,<sup>a,b,\*</sup> Tao Dou,<sup>a</sup> Zhijie Wu,<sup>a</sup> Xiaofeng Li,<sup>c</sup> Yuanshuai Liu<sup>c,d,\*</sup>

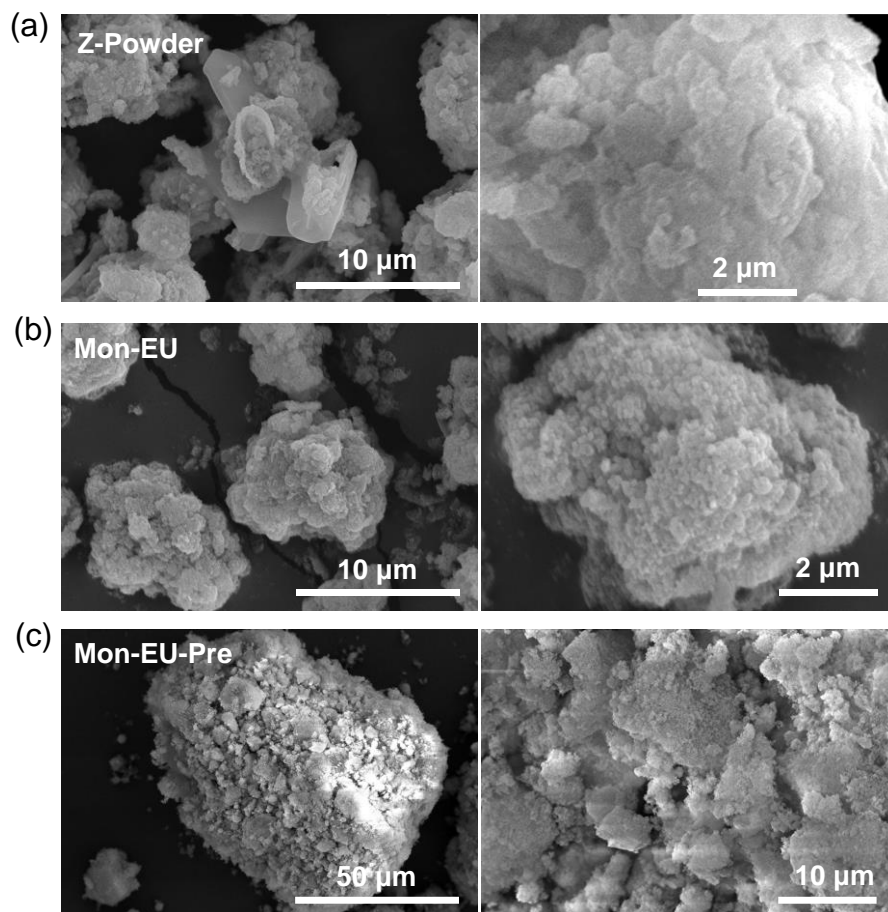
<sup>a</sup> State Key Laboratory of Heavy Oil Processing, China University of Petroleum, Beijing 102249, PR China

<sup>b</sup> Beijing Key Laboratory of Process Fluid Filtration and Separation, 102249, PR China

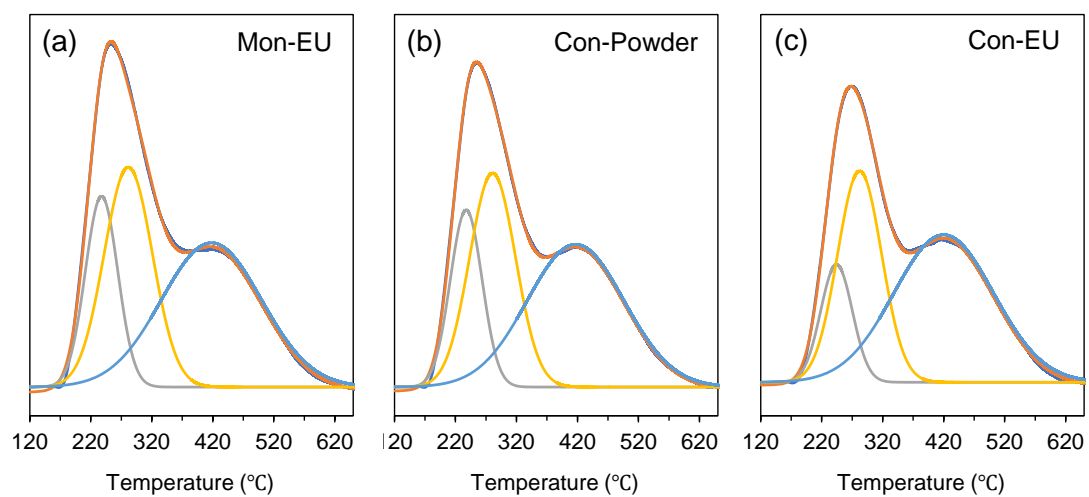
<sup>c</sup> Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences, Qingdao, 266101, China

<sup>d</sup> Shandong Energy Institute, Qingdao, 266101, China

<sup>e</sup> College of Chemistry and Chemical Engineering, Taiyuan University of Technology, Taiyuan 030024, Shanxi, China



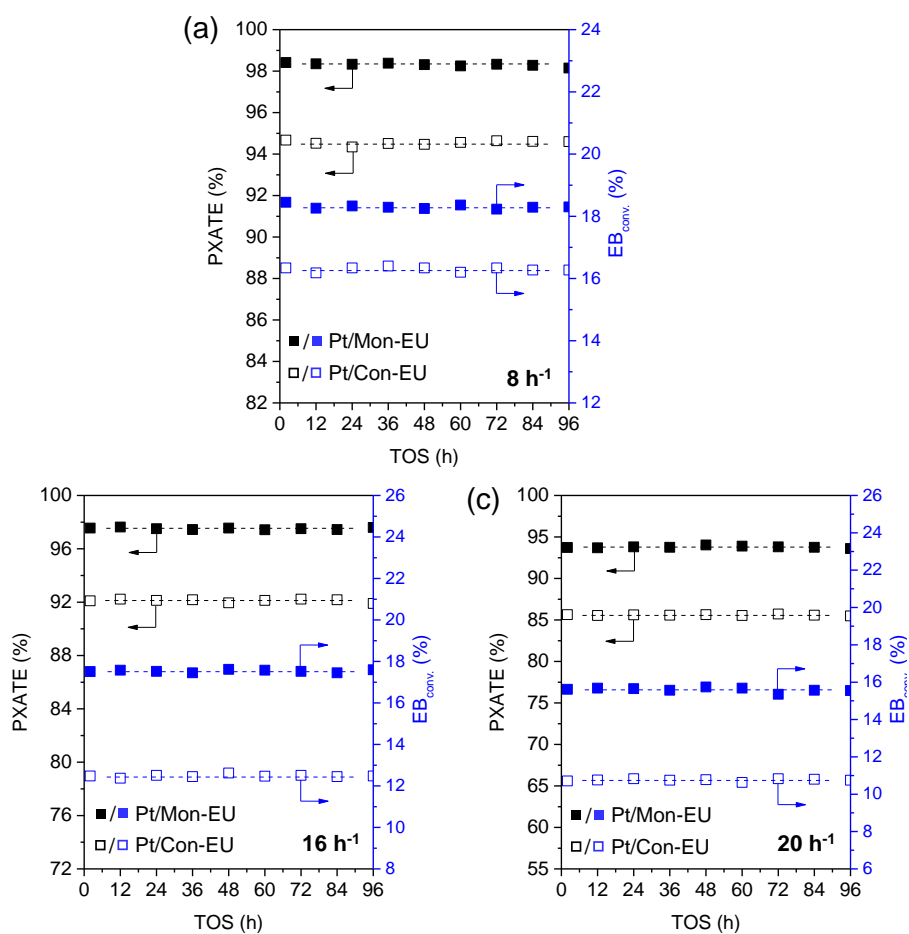
**Figure S1.** SEM images of (a) Z-Powder, (b) Mon-EU, and (c) Mon-EU-Pre samples. Note that Mon-EU and Mon-EU-Pre were crushed into powders for SEM measurements.



**Figure S2.** The Gaussian-function-based peak deconvolution results of  $\text{NH}_3$ -TPD curves for (a) Mon-EU, (b) Con-Powder, and (c) Con-EU samples.

**Table S1.** The Gaussian-function-based peak deconvolution results of  $^{29}\text{Si}$  MAS NMR spectra for Mon-EU-Pre and Mon-EU samples.

Mon-EU		Q <sup>4</sup>	Q <sup>4</sup>	Q <sup>3</sup>	Q <sup>4</sup> /Q <sup>3</sup>
	Peak position (ppm)	-115.4	-111.5	-103.6	
	Peak fraction	16 %	69 %	15 %	5.7
Mon-EU-Pre		Q <sup>4</sup>	Q <sup>4</sup>	Q <sup>3</sup>	Q <sup>4</sup> /Q <sup>3</sup>
	Peak position (ppm)	-114.9	-109.9	-103.2	
	Peak fraction	9 %	47 %	44 %	1.3



**Figure S3.** PXATE and conversion of ethylbenzene over Pt/Mon-EU and Pt/Con-EU at different WHSV. (a) WHSV = 8 h<sup>-1</sup>; (b) WHSV = 16 h<sup>-1</sup>; (c) WHSV = 20 h<sup>-1</sup>; Reaction conditions: 1.0 g catalyst, mass ratio of ethylbenzene/*meta*-xylene was 7:93, T = 365 °C, P = 0.5 MPa H<sub>2</sub>