

## Supporting information

### **Distinguish external and internal coke depositions on a micron-sized HZSM-5 *via* catalyst-assisted temperature-programmed oxidation**

Ting Wang,<sup>a</sup> Mengyao Chen,<sup>a</sup> Xiaohao Liu,<sup>a</sup> Zhan-Guo Zhang,<sup>b</sup> and Yuebing Xu<sup>\*a</sup>

<sup>a</sup> School of Chemical and Material Engineering, Jiangnan University, 214122 Wuxi, China

<sup>b</sup> National Institute of Advanced Industrial Science and Technology (AIST), 16-1 Onogawa, Tsukuba, Ibaraki 305-8569, Japan

\* Corresponding author: E-mail address: [xuyuebing@jiangnan.edu.cn](mailto:xuyuebing@jiangnan.edu.cn).

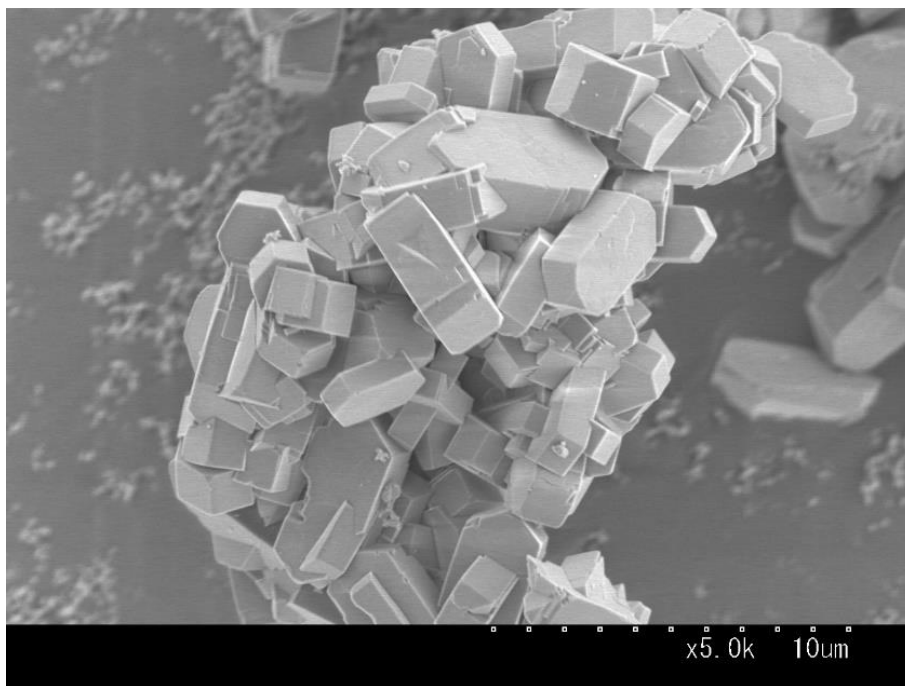


Fig. S1. SEM observation of micro-sized HZSM-5 (Si/Al = 20).

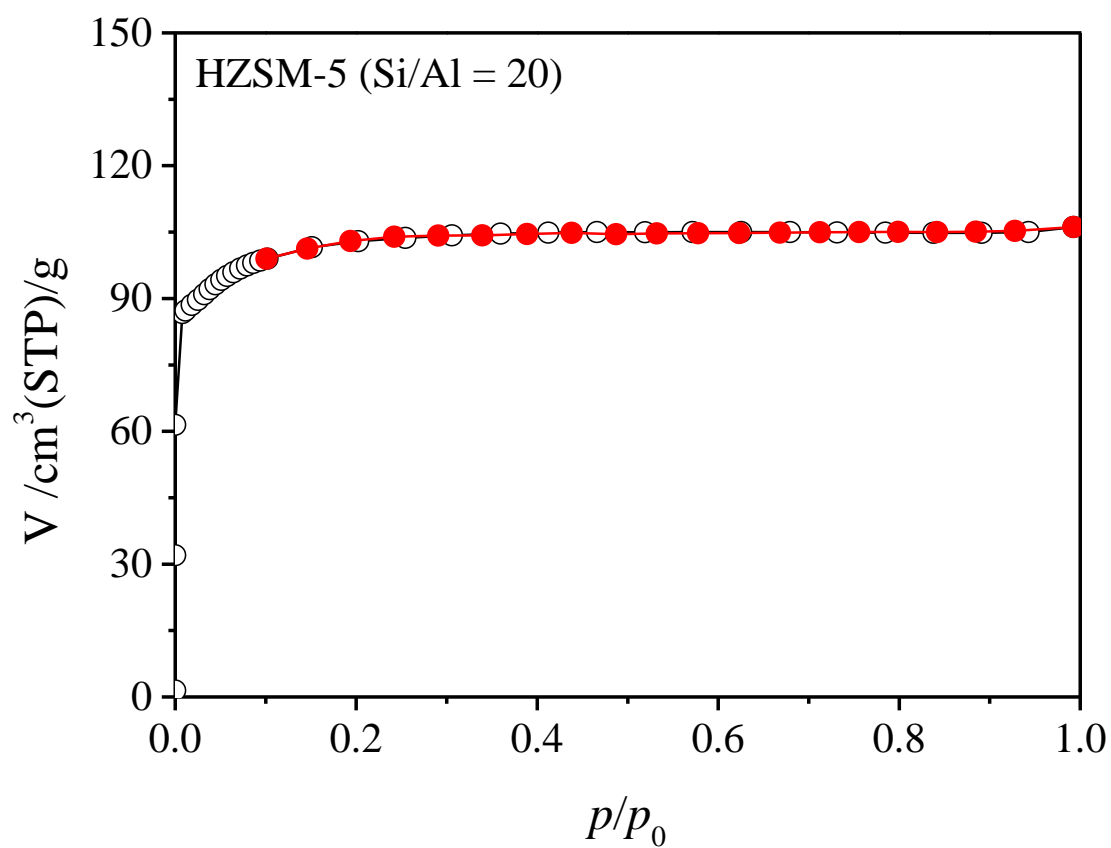
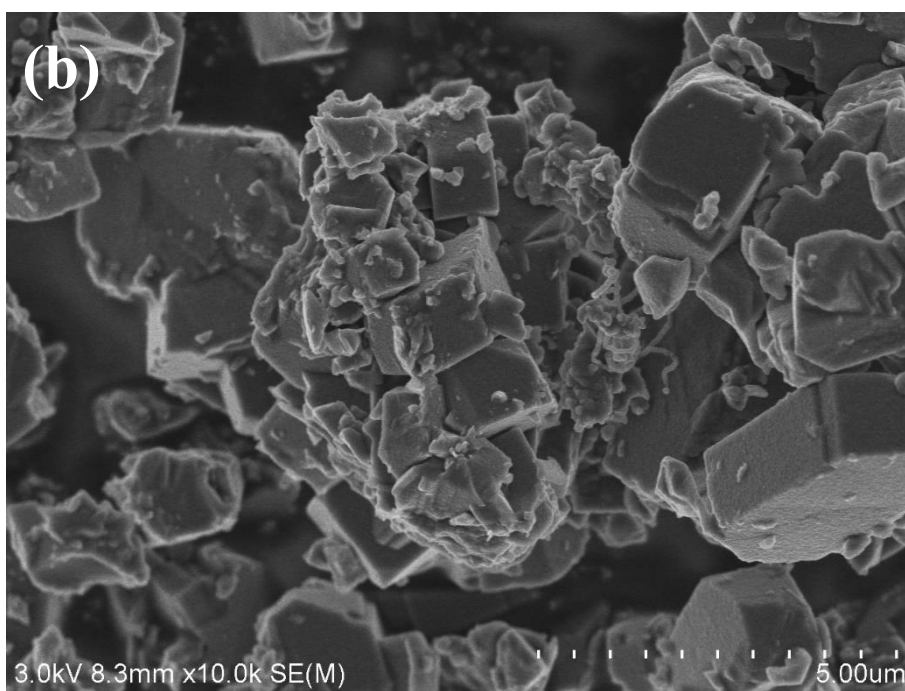
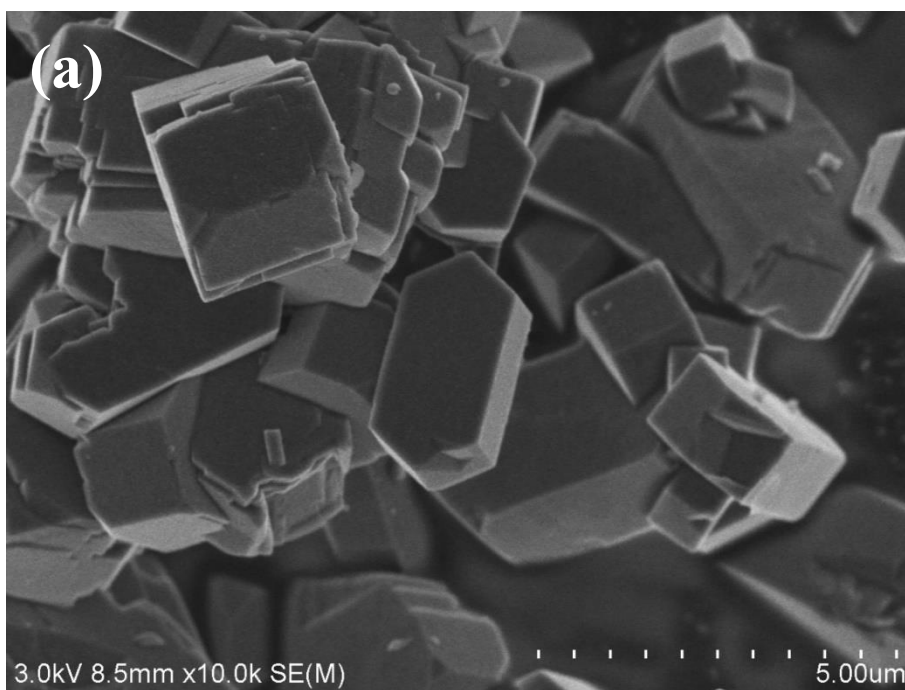
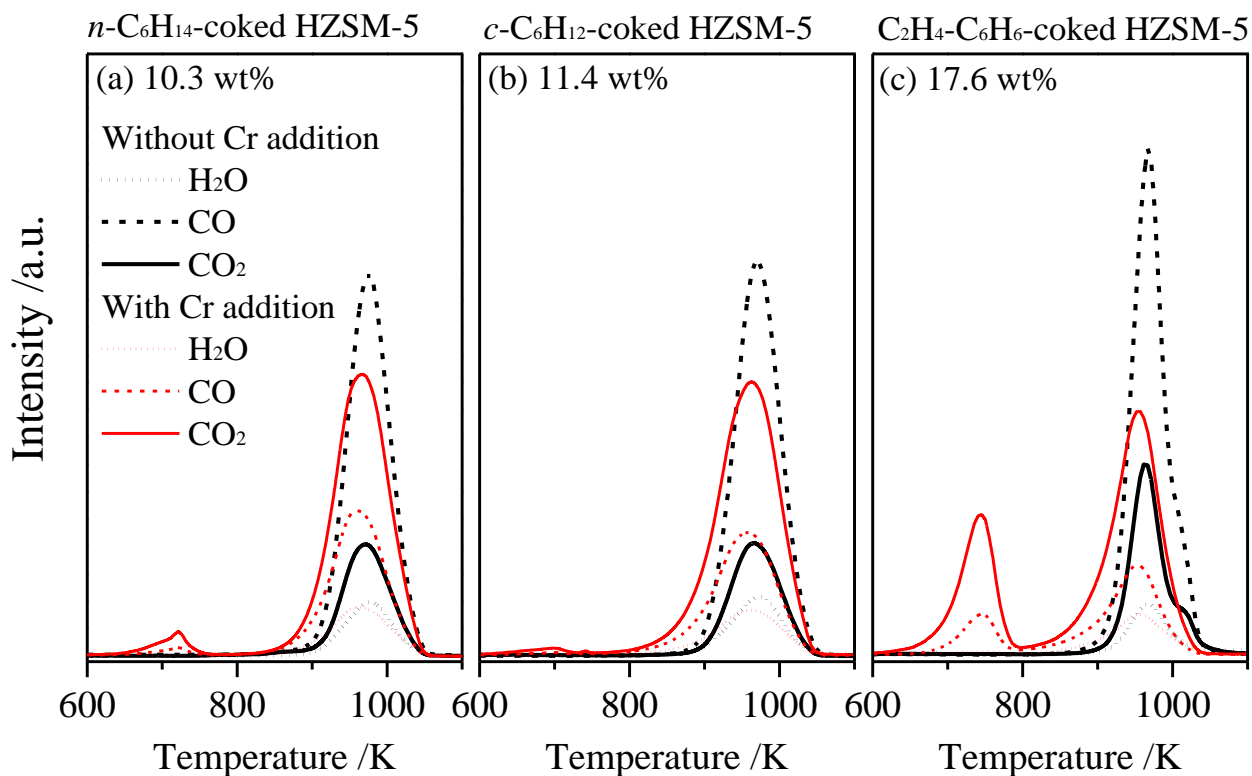


Fig. S2. N<sub>2</sub> desorption and adsorption isotherms of the micro-sized HZSM-5 zeolite



**Fig. S3.** SEM observations of (a) C<sub>2</sub>H<sub>4</sub>-coked and (b) C<sub>6</sub>H<sub>6</sub>-coked zeolite samples.



**Fig. S4.** TPO profiles of (a) *n*-C<sub>6</sub>H<sub>14</sub>-, (b) *c*-C<sub>6</sub>H<sub>12</sub>-, and (c) C<sub>2</sub>H<sub>4</sub>-C<sub>6</sub>H<sub>6</sub>-coked HZSM-5 samples with and without Cr addition. The cracking reaction over HZSM-5 was performed at 1073 K.