## **Supporting Information**

## Influence of acid site density on the Three-staged MTH Induction Reaction over HZSM-5 Zeolite

LiangQi<sup>ab</sup>, Jinzhe Li<sup>a</sup>, Yingxu Wei<sup>a</sup>, Yanli He<sup>a</sup>, Lei Xu<sup>\*a</sup> and Zhongmin Liu<sup>\*a</sup>

<sup>a</sup> National Engineering Laboratory for Methanol to Olefins, Dalian National Laboratory for Clean Energy, iChEM (Collaborative Innovation Center of Chemistry for Energy Materials), Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, People's Republic of China;

<sup>b</sup> University of Chinese Academy of Sciences, Beijing 100049, P. R. China;



Figure S1. XRD patterns of the HZSM-5 catalysts



Figure S2. SEM images of the samples for HZ-19 (a), HZ-49 (b) and HZ-99 (c).



Figure S3. N<sub>2</sub> adsorption-desorption isotherm of the samples for HZ-19 (a), HZ-49 (b)

and HZ-99 (c).



**Figure S4.** FT-IR spectra of pyridine-adsorbed HZ-19, HZ-49 and HZ-99 samples. Spectra were obtained by the subtraction of background spectra from those measured after adsorption and physical desorption procedures.



Figure S5. <sup>1</sup>H MAS NMR spectra of HZ-19, HZ-49 and HZ-99.