

## **Supporting Information**

### **Mechanistic insights into hydrodeoxygenation of acetone over Mo/HZSM-5 bifunctional catalyst for the production of hydrocarbons**

Kai Miao <sup>a</sup>, Tan Li <sup>a</sup>, Zhigang Zhao <sup>a</sup>, Jing Su <sup>a</sup>, Cong Wang <sup>a</sup>, Kaige Wang <sup>a,\*</sup>

<sup>a</sup> State Key Laboratory of Clean Energy Utilization, Zhejiang University, Hangzhou 310027, China

\* Corresponding authors. E-mail address: kaigewang@zju.edu.cn

#### Detailed description of GC system

GC (Agilent 8860) with a FID (Flame ion detector) and a TCD (Thermal conductivity detector) detector was applied to the online analysis. The split ratio of the GC inlet is 20:1. A DB-1701 capillary columns were used to separate C5+ condensable liquid products. The DB-1701 column (60 m, 0.250  $\mu$ m, 0.250  $\mu$ m) was connected to a flame ionization detector (FID) for product quantification by calibration with external standards. A total of 30 chemical substances are calibrated by the external standard method. A GS-GasPro column (60 m, 0.320 mm) was connected to a thermal conductivity detector (TCD) to measure non-condensable gas (NCG) products (CO, CO<sub>2</sub>, C1-C4 hydrocarbons). A standard gas mixture consisting of these NCG compounds was used to calibrate the yield of NCG.

For each run, the GC oven was programmed for a 8 min hold at 30 °C then ramped at 6 °C/min to 150 °C, followed by ramped at 10 °C/min to 250 °C, after which temperature was held constant for 10 min.

**Table S1.** Summary of detailed calibration coefficient.

Compounds	Calibration	R <sup>2</sup>
<b>Atmosphere</b>	H <sub>2</sub>	
<i>Vapors</i>		
Hexene	20568463	0.99
Benzene	16085882	0.99
Toluene	16533299	0.99
Xylene	16892825	0.99
Mesitylene	17584758	0.99
Propylbenzene e	18646125	0.99
Diethylbenzene	19883564	0.99
Indane	18008583	0.99
Indene	17651304	0.99
Naphthalene	19292294	0.99
Naphthalene, methyl-	19893623	0.99
Naphthalene, dimethyl-	20295627	0.99
Anthracene	22567494	0.99
<i>Gas</i>		
Ar	456834	0.99
CO	517683	0.99
CO <sub>2</sub>	320698	0.99
CH <sub>4</sub>	612597	0.99
C <sub>2</sub> H <sub>6</sub>	320698	0.98
C <sub>2</sub> H <sub>4</sub>	416924	0.99
C <sub>3</sub> H <sub>8</sub>	320698	0.99
C <sub>3</sub> H <sub>6</sub>	457757	0.99
C <sub>4</sub> H <sub>10</sub>	359398	0.99
C <sub>4</sub> H <sub>8</sub>	374328	0.99

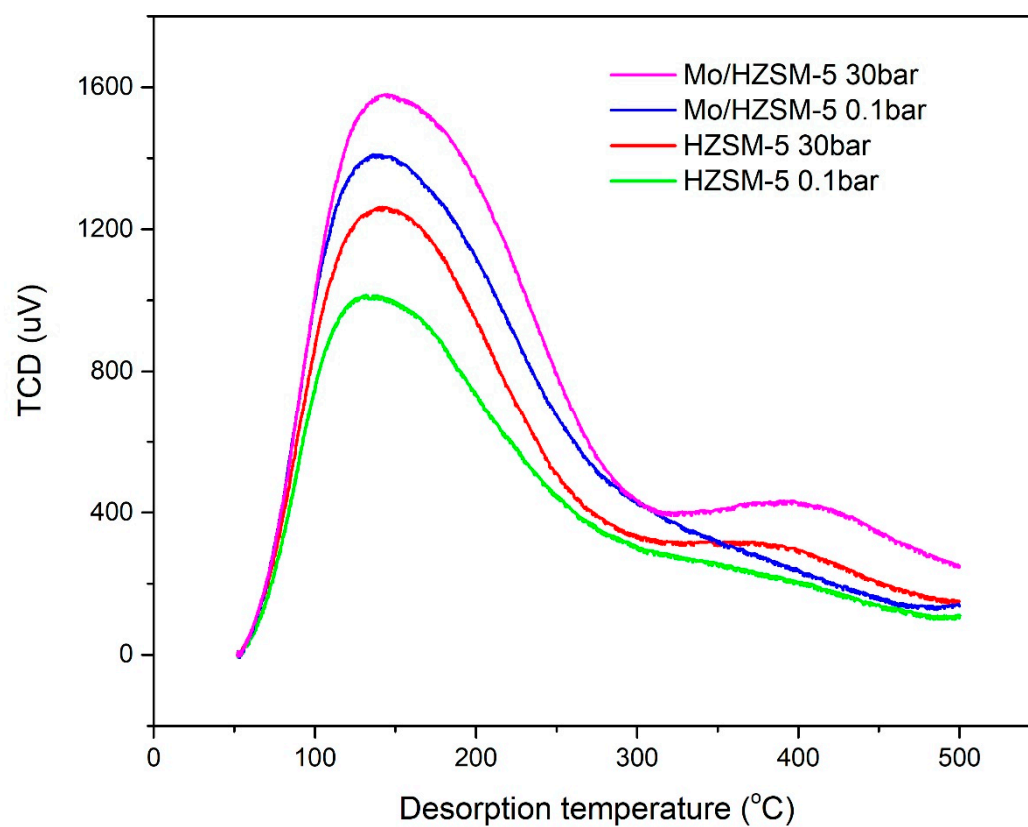


Figure S1. The results of NH<sub>3</sub>-TPD for spent catalysts.