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# Supporting Information

# Ionothermal Synthesis of Magnesium-containing Aluminophosphate Molecular Sieves and Their Catalytic Performance

Lei Wang,[*a] Yun-Peng Xu,[a] Bing-Chun Wang,[a] Shao-Jun Wang,[b] Jia-You Yu,[b] Zhi-Jian Tian,[*a] and Li-Wu Lin[a]

[a] *Dalian National Laboratory for Clean EnergyState*
*Key Laboratory of Catalysis*
*Dalian Institute of Chemical Physics*
*Chinese Academy of Sciences*
*457 Zhongshan Road, Dalian, 116023 (China)*

[b] *Department of Chemical Engineering*
*Dalian Institute of Light Industry*
*Dalian, 116034 (China)*

## Supplementary Data

## Characterizations

Powder X-ray diffraction spectra were collected by using a Phillips X'Pert Pro X-ray diffractometer with nickel-filtered Cu Kα radiation (λ = 1.54 Å) at 40 kV and 40 mA. The 2θ angles were scanned from 5° to 55° at a rate of 5° $min^{-1}$. The sample morphology was examined by SEM (JEOL JSN-6460LV model). Elemental analysis was conducted by XRF (PANalytical MagiX). BET specific surface areas (by nitrogen adsorption) were characterized using a Micromeritics ASAP 2010 instrument. Thermogravimetric analysis (TG) was accomplished on a Perkin-Elmer Diamond analyzer at a rate of 10°C $min^{-1}$ under flowing air. Temperature-programmed desorption of ammonia ($NH_3$-TPD) experiments were conducted using Micromeritics Autochem 2910 automated catalyst characterization system. Mass spectrum was used to monitor the desorption process of ammonia. $^{27}Al$ and $^{31}P$ MAS NMR spectra were recorded on Bruker DRX-400 spectrometer at 104.3 and 161.9 MHz, respectively.

The Typical XRD patterns of the MAPO samples prepared in this study are shown in Figure S1.

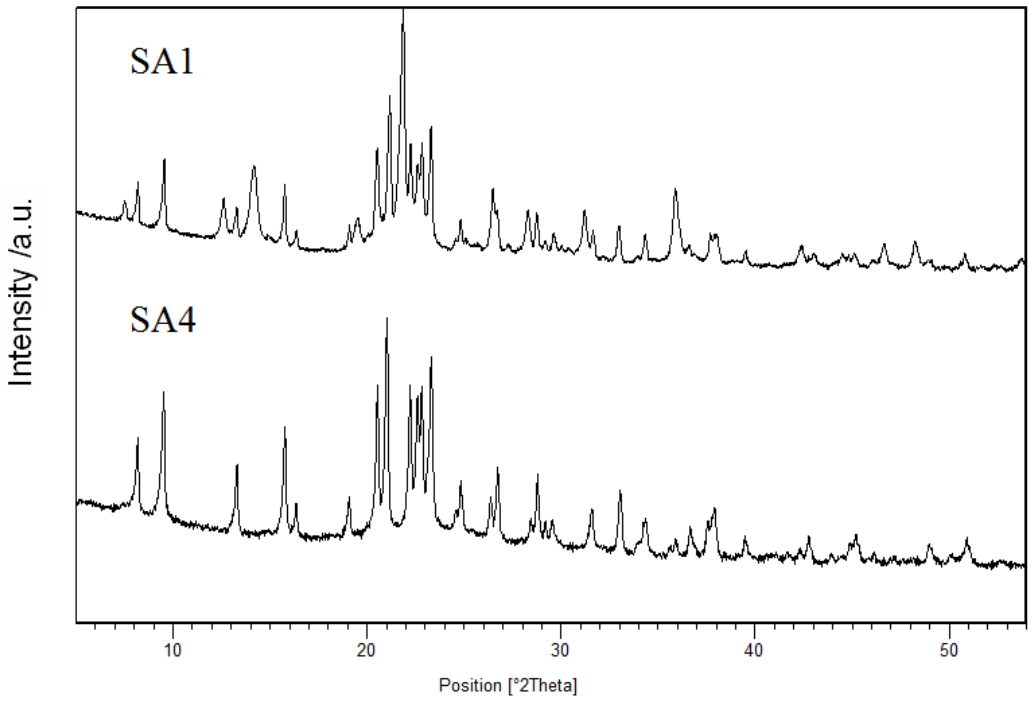


Figure S1. Typical XRD patterns of the MAPO mixture (MA1) and MAPO-11 (MA4) samples prepared in this study.

TG/DTG profiles of two MAPO samples representing the MAPO mixture and MAPO-11, respectively, are shown in Figure S2. Three different regions can be distinguished: one is around 110°C, corresponding to the removal of physically adsorbed water. The other one presents in the 110-500°C temperature range, corresponding to decomposition of occluded [bmim]Br and n-DPA. Another one in the

500-700°C temperature range should be attributed to the decomposition of protonated [bmim]Br and n-DPA that neutralized the negative charges of the framework, due to the substitution of $Mg^{2+}$.

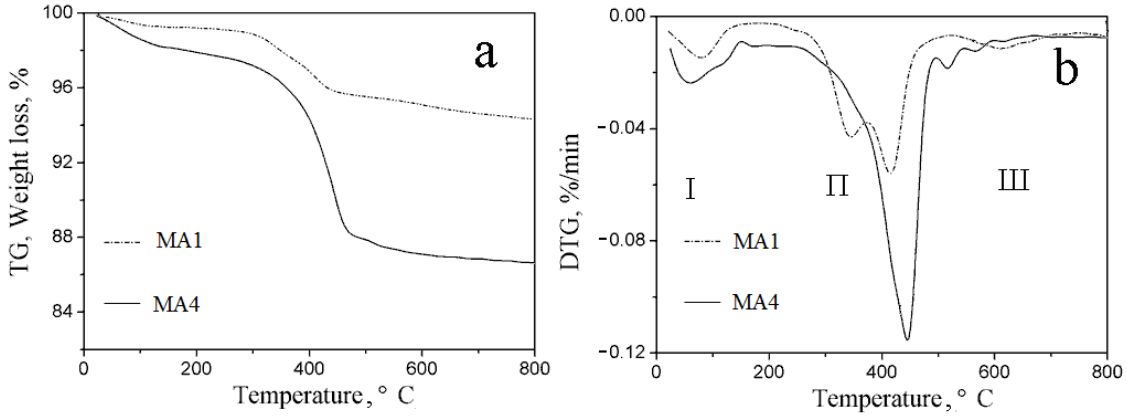


Figure S2. TG (a) / DTG (b) profiles of MA1 and MA4.

Table S1. Percent weight loss from TG analysis.

| Sample | Weight loss (wt %) | | | Total weight loss (wt %) |
|---|---|---|---|---|
| | I | II | III | |
| MA1 | 0.8 | 3.6 | 1.3 | 5.7 |
| MA4 | 1.8 | 10.3 | 1.5 | 13.6 |