Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Electronic Supporting Information

Cu/SAPO-34 prepared by a facile ball milling method for enhanced catalytic performance in selective catalytic reduction of NO_x with NH_3

Huazhen Chang,[a] *Xuan Qin,*[a] *Lei Ma,*[b] *Tao Zhang,*[a,*] *Junhua Li*[c]

[a] School of Environment and Natural Resources, Renmin University of China, Beijing 100872, China

[b] Department of Chemical Engineering, University of Michigan, Ann Arbor, Michigan 48109, United States

[c] School of Environment, Tsinghua University, Beijing 100084, China

* Corresponding authors: E-mail address: zhangt@ruc.edu.cn

Tel.: +86 10 82502692, fax: +86 10 82502692

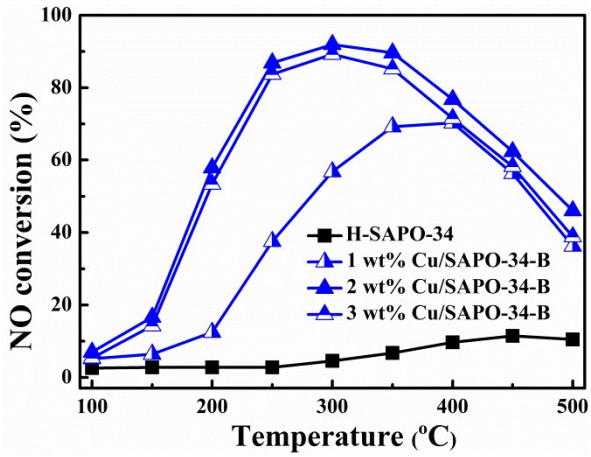

Fig. S1. NO conversion as a function of temperature over Cu/SAPO-34-B catalysts with different Cu loadings. Reaction conditions: [NO] = [NH_3] = 500 ppm, [O_2] = 5%, N_2 balance, total flow rate 200 mL min^{-1} and GHSV = 200 000 h^{-1}.

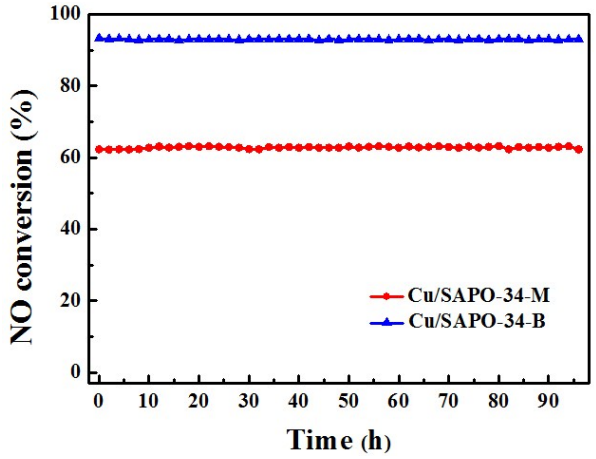

Fig. S2. NH_3-SCR lifetime tests of Cu/SAPO-34-M and Cu/SAPO-34-B at 400 and 350 °C, respectively. Reaction conditions: [NO] = [NH_3] = 500 ppm, [O_2] = 5%, N_2 balance, total flow rate 200 mL min^{-1} and GHSV = 200 000 h^{-1}.

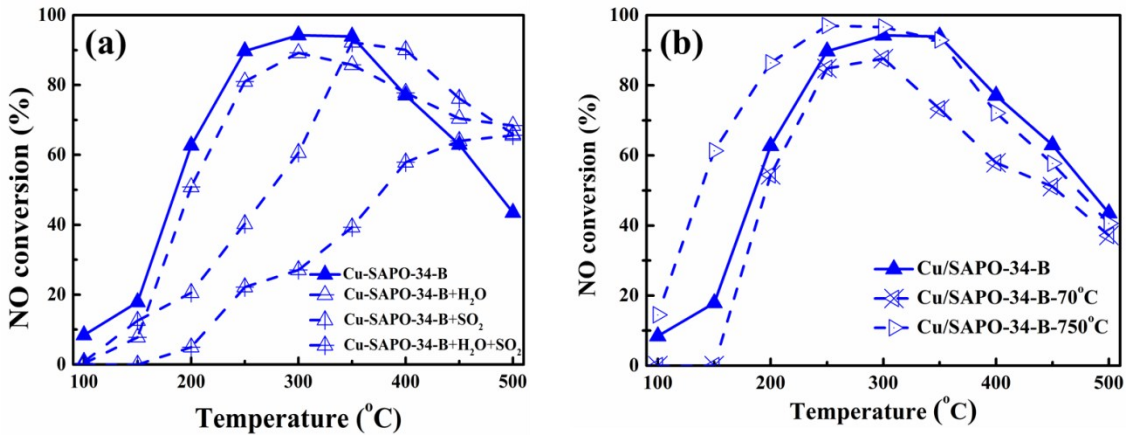

Fig. S3. (a) NO conversion as a function of temperature over Cu/SAPO-34-B catalyst in the presence of H_2O and SO_2. (b) NO conversion as a function of temperature over Cu/SAPO-34-B catalyst after hydrothermal treatments at high and low temperature. Reaction conditions: [NO] = [NH_3] = 500 ppm, [O_2] = 5%, [H_2O] = 5% (when used), [SO_2] = 100 ppm (when used), N_2 balance, total flow rate 200 mL min^{-1} and GHSV = 200 000 h^{-1}.

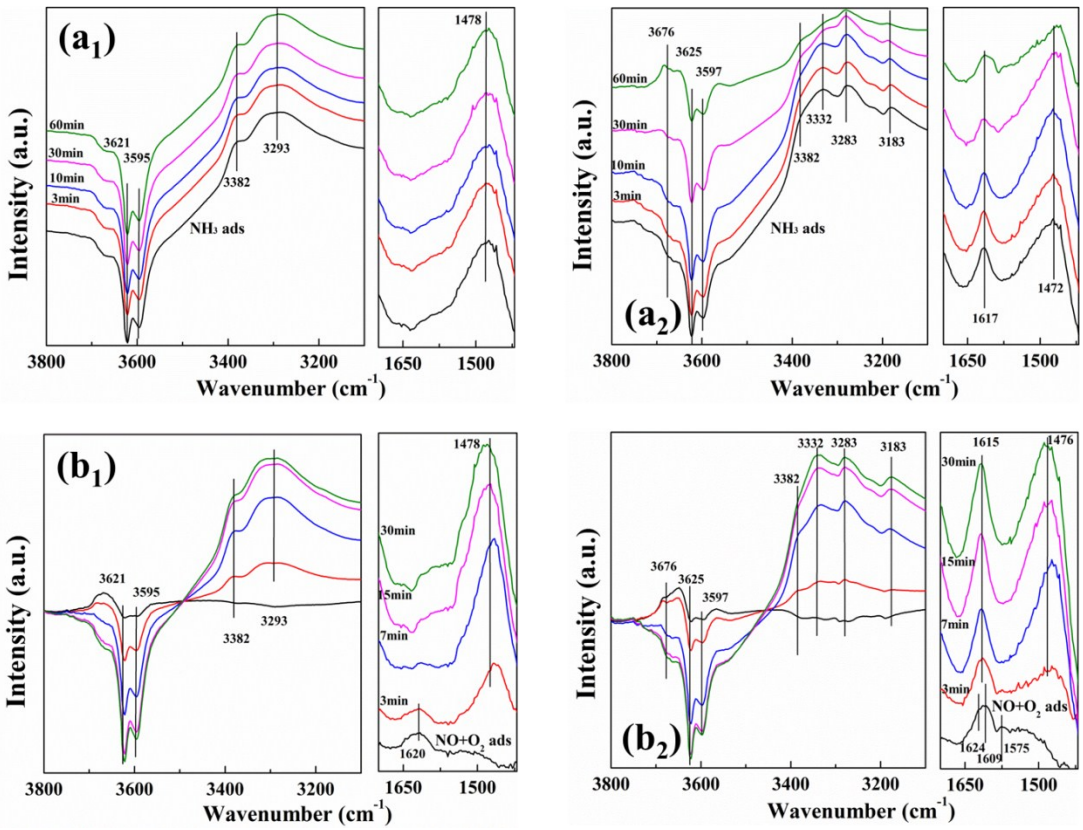

Fig. S4. Consumption of NH_4^+ ions and coordinated NH_3 at 150 °C upon passing $NO+O_2$ over Cu/SAPO-34-M (a_1) and Cu/SAPO-34-B (a_2) with preadsorbed NH_3. Consumption of the adsorbed NO_x species at 150 °C upon passing NH_3 over Cu/SAPO-34-M (b_1) and Cu/SAPO-34-B (b_2) with preadsorbed $NO+O_2$.

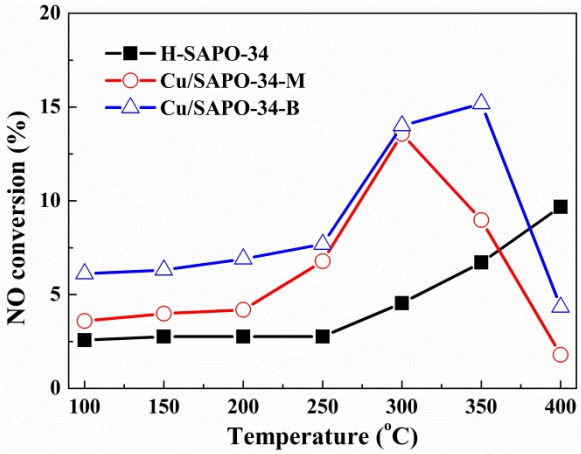

Fig. S5. NO conversion as a function of temperature over Cu/SAPO-34-M and Cu/SAPO-34-B samples before calcination. Reaction conditions: [NO] = [NH_3] = 500 ppm, [O_2] = 5%, N_2 balance, total flow rate 200 mL min^{-1} and GHSV = 200 000 h^{-1}.