Electronic Supporting Information

Cu/SAPO-34 prepared by a facile ball milling method for enhanced catalytic performance in selective catalytic reduction of NO\textsubscript{x} with NH\textsubscript{3}

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

\textsuperscript{a} School of Environment and Natural Resources, Renmin University of China, Beijing 100872, China

\textsuperscript{b} Department of Chemical Engineering, University of Michigan, Ann Arbor, Michigan 48109, United States

\textsuperscript{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$_2$O 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$_2$O] = 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] = [NH₃] = 500 ppm, [O₂] = 5%, N₂ balance, total flow rate 200 mL min⁻¹ and GHSV = 200 000 h⁻¹.