

The effect of hydrothermal treatment on Cu/SAPO-34 and SAPO-34

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Cu/SAPO-34 is recently commercialized as selective catalytic reduction (NH₃-SCR) of NO_x using NH₃ as a reductant for diesel engine exhaust. Generally Cu/SAPO-34 catalysts were synthesized using solution ion exchange method of Cu²⁺ ion on SAPO-34 zeolites. However, it was known that SAPO-34 undergoes the irreversible hydrolysis during the aqueous solution ion exchange and these moisture sensitivity is also related to the long term stability of these materials. In this work, we investigated the hydrothermal stability of Cu/SAPO-34 and SAPO-34 using XRD, SEM and BET. Also, ²⁷Al, ²⁹Si and ³¹P MAS NMR after hydrothermal treatment at different conditions. We also confirmed the NH₃-SCR activity and selectivity of Cu/SAPO-34 before and after hydrothermal treatment.