

Catalytic performance of NH_3 -SCR reaction over high-silica erionite zeolite

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ERI zeolite possesses a $[4^{12}.6^5.8^6]$ cage formed by interconnecting a three dimensional channel system having 8-MR opening (5.1 x 3.6Å), which may be a highly efficient catalyst material for selective catalytic reduction of NO_x with NH_3 (NH_3 -SCR). High silica Erionite (ERI) has been known to be difficult to synthesize without unique charge density mismatch method in which multiple OSDAs are used for relatively long hydrothermal synthesis time. Here, we developed an efficient approach to synthesize the zeolite containing the Si/Al ratio of 5.8 through conventional hydrothermal method using 1,1'-(butane-1,4-diyl)bis(1-methylpyrrolidin-1-ium)dihydroxide as a structure directing agent. Further, the complete crystallization has been achieved at 170 °C within 6 hr. The resulting sample was characterized with XRD, BET, SEM-EDX and solid NMR. Also, the selective catalytic reduction of NO_x with NH_3 has been measured over high silica ERI.