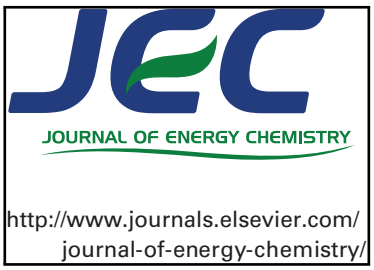

Fluoride-mediated nano-sized high-silica ZSM-5 as an ultrastable catalyst for methanol conversion to propylene

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Highlights

- Fluoride mediated nano-sized ZSM-5 (ZSM-5-F) with a high Si/Al ratio of 181 was fabricated using a seed-induction method in 1.5 h hydrothermal crystallization.
- Characterization by NH_3-TPD, Py-IR, OH-IR and ^1H MAS NMR techniques indicates that ZSM-5-F has fewer structural defects compared with ZSM-5-OH via hydroxide route.
- The enhanced catalytic performance of ZSM-5-F compared with ZSM-5-OH is attributed to fewer structural defects in the form of internal silanol groups and silanol nests.