

Synthesis of SAPO-34 catalyst with various templates for MTO reaction

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SAPO-34 catalysts were prepared by using a variety of templates and used for MTO (methanol-to-olefins) reaction. The effect of mixed template on the crystallinity, crystal size, acidity and Si distribution in framework of SAPO-34 was studied by N₂ isotherm, XRD, SEM, NH₃ TPD and ²⁹Si-NMR. It was found in this study that mixed templates give well developed SAPO-34 structure and a good control on crystal size within 1 to 4 micron under the same synthetic conditions as that of single template. These effects of mixed templates might be caused by the seeding role of a template in the mixture of other templates. Also, we could find that SAPO-34 catalysts prepared by mixed templates have superior catalytic activity and life in MTO reaction compared to those prepared by single templates. It might be because of well distribution of Si, acidity and optimal crystal size improved by the use of mixed template.