Crystallization Study of Zeolites by Means of ^{19}F MAS NMR

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Zeolites are crystalline solids consisting of $TO_{4/2}$ tetrahedra, usually of Si or Al, sharing corners, with channels and cavities of molecular dimensions. The synthesis of zeolites involves the use of organic molecules, usually amines or quaternary ammonium cations, which act as structure directing agents (SDA), filling the void space within the channels or cavities; and of hydroxyl groups or fluoride anions as mineralizing agents.

The isomorphous substitution of Ge for Si favours the crystallization of zeolites containing double four membered rings (D4R) units with constrained T-O-T angles below 140º [1-5]. Fluoride anions, if present in the synthesis gel, are incorporated into the smaller cages of the zeolite, compensating the positive charge of the organic structure directing agent, the ^{19}F NMR chemical shift depends on the type and chemical composition of the zeolite cage where fluoride anions are located, acting as NMR probe [1-5].

Taking into account the potential role of the fluoride anions in the investigation formation of Ge-containing zeolites with D4R [1-4], here, we have followed the crystallization of zeolites ITQ-7, ITQ-21 and ITQ-13, synthesized in fluoride media and with different amounts of Ge, by means of ^{19}F MAS NMR

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