Synthesis of zeolite MTT and MFI using linear and branched tertiary diamines

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During the synthesis of zeolite, it is desirable to form unique framework type with micropore using a peculiar structure directing agent (SDA). Various quaternary ammonium salts have been widely used as SDA, such as tetrapropyl ammonium hydroxide (TPAOH) etc.. In this work, we are attempted to prepare zeolite employing two type tertiary amines, linear N^1,N^1,N^3,N^3-tetramethylpropane-1,3-diamine (TMPD) and branched N^1,N^1,N^3,N^3,2,2-hexamethylpropane-1,3-diamine (HMPD), respectively. The result showed that MTT and MFI were derived from TMPD and HMPD, respectively. MTT and MFI type zeolite have same secondary building unit, 5-1, similar framework density and ring size # of T atoms. While, MTT contains 1-dimensional structure and MFI is 3-dimensional structure. It seems that a little change in the steric factor of SDA led to different zeolites.