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Synthesis, Characterization and Catalytic Application of Acid Functionalized Mesoporous Silica

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ABSTRACT

MCM-41 materials were synthesized by room temperature co-precipitation method by mixing a silica precursor to a clear solution of surfactant which acts as structure directing agent. In order to increase acidic sites, it is functionalized with sulphonic acid and phosphotungestic acid to yield SO_3HMCM-41 and PWMCM-41 respectively. The synthesized materials were characterized by XRD, BET, FTIR and SEM-EDAX techniques. Materials have been found to have mesoporous character. PXRD studies confirmed the hexagonal arrangement and SEM images revealed spherical morphology of the materials. The catalytic behaviour of MCM-41 and acid functionalized MCM-41 has been investigated towards the synthesis of imines. SO_3HMCM-41 is found to be an efficient catalyst for the synthesis of imines giving moderate to excellent yields with very short reaction times.

Keywords: Functionalized MCM-41, mesoporous character, catalysis, imine synthesis.
