



METAL FLUORIDES: NEW MATERIALS FOR HETEROGENEOUS CATALYSIS

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Sol-gel method established for the synthesis of metal fluorides (MF_x) [1] has given a tremendous boost in preparation of nanoscopic materials with distinct structural and catalytic properties [2]. Introducing noble metal precursors during the synthesis generated highly dispersed nanoparticles in the metal fluoride matrices (NM/MF_x) and showed promising catalytic activities [3]. Analytical and spectroscopic methods have shown that metal fluorides prepared by the new sol-gel method possess not only extraordinary high surface areas but also nanoscopic, mesoporous and have highly distorted structures. We have investigated the catalytic applications of these fluorides for several reactions of academic and industrial interests such as dehydrofluorination of hydrofluorocarbons to fluoroolifines, Suzuki type cross coupling of aryl halides, oxidative fluorination of aromatics and one pot synthesis of menthol. Catalytic studies have shown a significant difference in activities of sol-gel samples to that of conventional methods like aqueous and impregnation [4]. All the results of catalytic activities, product selectivities and stabilities and their correlation with structural properties of catalyst will be presented in detail.