PUBLICATIONS

Synthesis of monoesters and diesters using eco-friendly solid acid catalysts- M(IV) tungstates and phosphates

Indian Journal of Chemical Technology, **2008**, 15, 238.

The present study involves synthesis and characterization of amorphous M(IV) phosphates and tungstates [M(IV) = Zr, Ti and Sn] which are inorganic ion exchangers of the class of tetravalent metal acid (tma) salts. The presence of protons contained in the structural hydroxyl groups indicates good potential for application in solid acid catalysis. The catalytic activity of the materials abbreviated as ZrP, TiP, SnP, ZrW, TiW and SnW has been explored by synthesizing some monoesters and diesters. Good yields are obtained in the case of monoesters as compared to diesters. The results reveal the promising use of tma salts as solid acid catalysts.

Synthesis of coumarins via the Pechmann condensation using inorganic ion exchangers as solid acid catalysts

Journal of Scientific and Industrial Research (In press)

The present study involves synthesis and characterization of amorphous and crystalline M(IV)phosphates and tungstates which are inorganic ion exchangers of the class of tetravalent metal acid (tma) salts. The presence of protons contained in the structural hydroxyl groups indicates good potential for application in solid acid catalysis. The catalytic activity of the materials has been explored by studying Pechmann condensation as a model reaction wherein phenols, namely resorcinol,pyrogallol and phloroglucinol have been treated with methyl acetotcetate to give coumarins, under solvent free conditions. The catalytic activity has been compared and correlated with surface properties of the materials.

Friedel Crafts acylation and alkylation of aromatic compounds using M(IV) Phosphates and Tungstates as solid acid catalysts

Communicated to Green Chemistry Letters and Reviews

The present study involves synthesis and characterization of amorphous and crystalline M (IV) phosphates and tungstates which are inorganic ion exchangers of the class of tetravalent metal acid (tma) salts. The presence of protons contained in the structural hydroxyl groups indicates good potential for application in solid acid catalysis. The catalytic activity of the materials has been explored by studying Friedel Crafts acylation and alkylation as model reactions wherein acylation of anisole, veratrole and alkylation of toluene has been carried out using acetyl chloride (acylation) and benzyl chloride (alkyltion) under solvent free conditions. The catalytic activity has been correlated with surface properties of the materials.

Hydrogenation and Oxidation reactions involving Ruthenium supported catalysts

Communicated to Acta-Chimica Slovenica

The present study involves synthesis and characterization of M(IV)phosphates and tungstates which are inorganic cation exchangers of the class of tetravalent metal acid (tma) salts possessing structural hydroxyl groups, the H of the structural –OH being the cation exchange sites, which indicates good potential for application as supports in heterogenised homogeneous catalysis. Ru(III) has been exchanged onto these materials by ion exchange technique and catalytic activity investigated for oxidation of benzyl alcohol and styrene. Further Ru(III) has been reduced to Ru(0) and catalytic activity has been explored for hydrogenation of 1- octene, nitro benzene and cyclohexanone.