MATEC Web of Conferences

Volume 5, 2013, Pages 4019-4020

Synthesis, characterization of cesium and cobalt substitutedwells–Dawson heteropolyoxotungstates salts and their photocatalytic applications

Adel Balaska Robila Belghiche, Mohamed Elhadi Samar, Toufik CHOUCHANE, Roland Haseneder

Abstract: Heteropoly compounds in the solid state are ionic crystals (sometimes amorphous) consisting of large polyanions, cations, water of crystallization, and other molecules. Heteropolyacids (HPAs) have several advantages as catalysts. On the one hand, they have a very strong Brønsted acidity, especially the cobalt and cesium salts; on the other hand they are exhibiting fast reversible multielectron redox transformations under mild conditions. The cobalt and cesium salts of wells–Dawson HPAs were synthesized and characterized using elemental analysis and spectroscopic techniques (31P-NMR, FT-IR).The wells–Dawson anions possess the ability to accept or release electrons through an xternal potential or upon exposure to UV radiation (photochemical reactions). The catalytic tests of these salts were investigated on phenol degradation where the UV photodegradation of acidified aqueous solutions (pH = 2) were studied in a batch photoreactor under ambient temperature and continuous circulation of phenol solution. The results reveal high catalytic activity for two HPAs, the best catalyst is the salt of cesium; where the presence of cesium improves significantly both the photcatalytic activity and the selectivity to oxalic acid.

Keywords : Characterisation Heteropolyacids Dawson- Type, Cesium, Cobalt Photo Catalysis