



8-Hydroxyquinoline Complexes of Silicon: Synthesis, Characterization and Reactivity

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ABSTRACT

A series of complexes were formed starting from the reaction of 8-hydroxyquinoline with chlorotriethoxysilane and phenyltrichlorosilane to give penta coordinate complexes, namely 8-(triethoxysilyloxy)quinoline (1) and 8-(dichloro(phenyl)silyloxy)quinoline (2) respectively. Complex (1) was reacted with tripodal ligands like 2,2',2''-nitrilotriacetic acid and tris(2-hydroxy-3,5-dimethylbenzyl)amine leading to the synthesis of silatranes (3-4). Further, the reactions of complex (2) with potassium isothiocyanate, catechol and N-methyldiethanolamine yielded novel hypervalent complexes of silicon (5-7). All the complexes have been characterized by elemental analyses, infrared spectroscopy, ¹H, ¹³C NMR spectroscopy and mass spectrometry. The spectral data showed that 8-hydroxyquinoline acted as a monobasic bidentate ligand with N,O-donor sites. The thermal stability of the complexes was studied by thermogravimetric analysis and the experimental results have been correlated with computational studies.

Keywords: 8-hydroxyquinoline; chlorotriethoxysilane; phenyltrichlorosilane; silatrane; hypervalent; thermogravimetric analysis.
