PREPARATIONS, REACTIONS, ABILITIES OF COMPLEXATION OF SULFUR COMPOUNDS CONTAINING PYRIDINE NUCLEI

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Recently, we found that sulfoximines like dimethylsulfoximine could be used as dipolar aprotic solvent like DMSO and DMF. The role of these solvents is considered to be strong solvation of cations and thus the counter anions are activated to work as strong nucleophiles. In order to develope further the roles of these organo-sulfur compounds as solvents, chelating agents or phase-transfer catalysts, several 2-pyridyl sulfides, sulfoxides, sulfilimines and sulfoximines were prepared by the usual methods. Furthermore, some 2,6-disubstituted sulfides and sulfoxides were also prepared.

These sulfoxides and sulfoximines were tested as either chelating agents or phase-transfer catalysts. Actually for example, 2-methyl pyridyl sulfoximine was found to give stable crystalline adduct with few Cu-salts.

Meanwhile, 2-methyl pyridyl sulfoxide was found to be used as a phase transfer catalyst for typical nucleophilic reactions such as the reactions between alkyl halides and several nucleophiles in either liquid-liquid or liquid-solid condition. Furthermore, this sulfoxide was also found to serve as a catalyst for alkylation reaction of active methylene compounds.

The stereochemistry was investigated for the nucleophilic reaction by using optically active 2-octyl bromide and thiophenolate anion in the presence of 2-methyl pyridyl sulfoxide proceeding more than 95% inversion, thus indicating clearly that the reaction proceeds via a typical S_N2 mechanism.