Thesis Title Synthesis and Characterisation of Copper(I) Thiourea and Substituted Thiourea Complexes

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Abstract

Copper(I) thiourea complexes were synthesized by 3 methods according to the literature. Two methods claimed to obtain $Cu_2(tu)_6SO_4.2H_2O$ and the third method was reported to give $Cu_2(tu)_5SO_4.2H_2O$. However , the results of this investigation showed that the formulae for the complexes prepared by the first method should be $Cu_2(tu)_5SO_4$ and the second method should be $Cu_2(tu)_6SO_4$ and the third method gave the same formular as reported in the literature. It was found that when calcined and uncalcined Thai-kaolin clay, Mae-rim clay and English kaolin clay were added in the preparation of the complexes by the 3 methods , there was no change to the formulae of the complexes. Complexes of copper halide (CuX_2 ; X = F , Cl) and thiourea were also synthesized and $Cu(tu)_2F$ and $Cu(tu)_3Cl$ obtained . The synthesis of copper(I) substituted thiourea $Cu_2(atu)_3SO_4.2H_2O$, $Cu_2(etu)_6SO_4$ and $Cu_2(S\text{-}dptu)_4SO_4$ was also carried out. Infra-red spectra of the complexes showed that thiourea , acetylthiourea, sym-diphenylthiourea and ethylenethiourea used sulphur atom in the coordination with copper(I) .