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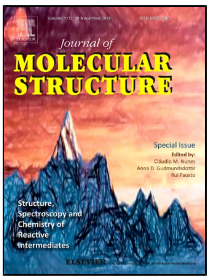

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Mansura Teyfur Huseynova, Mahizar Nacaf Aliyeva, Ajdar Akber Medjidov, Onur Şahin, Bahattin Yalçın

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Cu(II) complex with thiosemicarbazone of glyoxylic acid as an anion ligand in a polymeric structure

Mansura Teyfur Huseynova[1*], Mahizar Nacaf Aliyeva[1], Ajdar Akber Medjidov[2], Onur Şahin[3], Bahattin Yalçın[4]

Institute of Chemistry of Additives named after A.M.Guliyev. Azerbaijan National Academy of Sciences AZ 1029, Baku, Bigshor highway, Block 2062, Azerbaijan[1]

Institute of Catalysis and Inorganic Chemistry after named Acad. M. F. Nagiyev Azerbaijan National Academy of Sciences AZ 1143 Baku, H. Cavid Avenue, 113, Azerbaijan[2]

Sinop University, Scientific and Technological Research Application and Research Center 57000 Sinop, Turkey[3]

Marmara University, Faculty of Arts Sciences, Department of Chemistry 81040 Goztepe, Istanbul, Turkey[4]

huseynovamansura@gmail.com [1]

Abstract

A new complex of Cu(II), the composition $Cu(C_3H_7N_3O_4S)\cdot H_2O$, the reaction of thiosemicarbazone glyoxylic acid with copper nitrate in an aqueous medium was synthesised. X-ray diffraction analysis established the composition of the complexes was studied by IR, UV electronic absorption and EPR spectroscopy, and thermogravimetry. Thermogravimetry shows five stages of decomposition in the temperature range 90-990°C. The magnetic susceptibility of the complex is studied. The value of μ_{eff} for the complex is 1.76 BM, which is close to the value of one unpaired electron (1.73 BM). The ligand coordinates with the metal atom and consists of monoanionic $Cu(C_3H_7N_3O_4S)\cdot H_2O$ polymeric complex connected by Cu-N bonds with neighbouring molecules. The metal centre coordinates with the oxygen of carboxylic, sulfur of thiolic and nitrogen of the azomethine group. The X-ray data and ESR spectra specify a distorted square pyramidal environment around Cu(II) ion.

Keywords: Thiosemicarbazones; Cu-complex; Crystal structure