

Synthesis of a Serie of Metallic Complexes Derived from bis(4-Amino-5-Mercapto-1,2,4-Triazol-3-yl)butane with First Raw Transition Metals

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Abstract : The present research work describes the synthesis, through a multi-step strategy, as well as the structural characterization of a polydentate organic ligand, namely the bis(4-amino-5-mercapto-1,2,4-triazole-3-yl)butane (BAMT). The bis-triazolic ligand was characterized by different spectroscopic studies, in order to enlighten its coordination mode, in the neutral and deprotonated forms, towards cobalt(II), nickel(II) and copper(II) sulfates, in both solution and solid state. The stoichiometry of the complexes [neutral BAMT-metal] and [deprotonated BAMT-metal] was first established in a solution of DMF with each of the three metallic cations and their complexation constants calculated, allowing us to compare the stability of the various prepared complexes. The various complexes were finally isolated in the solid state and the coordination mode of neutral and deprotonated BAMT explored towards each of the three metallic sulfates. The establishment of some ligand field parameters (Dq , B , β ...) by electronic spectroscopy finally allowed to compare the coordination modes of BAMT towards each of the three metals and to highlight the influence of the deprotonation on the complexing properties of the bis-triazolic ligand.

Keywords : 1,2,4-triazol, bis-1,2,4-triazol, metallic complexes, coordination in solution and solid state

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