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Mild template synthesis in the Cu(II)-dithiomalonamid-formaldehyde ternary system

Mikhailov O., Kazymova M., Shumilova T.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Complex formation in the ternary system Cu(II)-dithiomalonamide $H_2NC(=S)CH_2C(=S)NH_2$ -formaldehyde in aqueous ethanol containing copper(II) chloride, dithiomalonamide and formaldehyde, as well as in thin-layer gelatin-immobilized copper(II) hexacyanoferrate(II) matrix implants contacting with alkaline ($pH > 10$) aqueous solutions containing the same organic compounds was studied. In the first case, a Cu(II) bischelate complex with singly deprotonated dithiomalonamide is formed exclusively, whereas in the second case template synthesis occurs to form a macrocyclic CuL chelate (L is 1,11-diamino-1,11-disulfanyl-4,8-diaza-6-oxundeca-1,10-diene-3,9-dithione). In the latter case, dithiomalonamide and formaldehyde function as ligands. The above-mentioned chelate is not formed on direct contact of the reagents in aqueous ethanol both in the presence and in the absence of Cu(II). A scheme of chemical reactions that occur in the system under consideration was proposed. © 2008 MAIK Nauka.

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