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Thematic course: Hydrochemical synthesis of metal chalcogenide films. Part 28.

Comparative thermodynamic analysis of ligand influence on conditions of solid phase formation and hydrochemical deposition of Cu_2S films

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Abstract

Ionic equilibriums were analyzed in aqueous solutions «Cu^{2+} – L – N_2H_4CS», where (L – NH_3, Ac^-, $H_2NCH_2CH_2NH_2$, $C_6H_5O_7^{3-}$, SCN^-). The predominating complex compounds of copper(II) and copper(I) in the solution were defined in the range of pH values 8-14, that are potentially suitable for hydrochemical deposition of copper sulfide films. The formation of the films of stoichiometric composition Cu_2S was determined in ammoniac and acetated layer systems by energy-dispersive elemental analysis. The film composition almost corresponds to formula unit Cu_2S. Electron-microscopic research of the film morphology showed that the particles, which are formed the films of Cu_2S have average size ~10 nm.

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