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Copper and cobalt nanoparticles stabilized by hyperbranched polyester polyols

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Abstract

A method for synthesis of copper nanoparticles Cu/H30 and cobalt Co/H30, which are stabilized by hyperbranched third-generation polyester polyol based on 2,2-bishydroxymethylpropionic acid, was developed. According to the results of X-Ray phase analysis and UV-spectrophotometry it was established that samples of Cu/H30 nanoparticles contain metallic copper. In Co/H30 nanoparticles, along with metallic cobalt, oxide phase is present. By transmission electron microscopy method for copper nanoparticles sample Cu/H30 in HBP H30 matrix, spheric particles with diameter of 4 nm and hexagonal aggregates of metallic copper with the size of 12-26 nm were observed. For Co/H30 ribbons with the size of 166.7×2083.3 nm of prolonged shape were observed. Each ribbon is assembled from oriented cobalt heteronanoparticles of 3-9 nm in size.