Nanocomposites and nanomaterials

Optical properties of nanoparticles produced by pulsed electric discharge in water

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It is well known, that properties of nanoparticles strongly depend on their method of production. One of the most promising methods for nanomaterial's producing is spark erosion treatment of the material in water and formation of colloidal solutions with nanoparticles [1]. This method allows obtaining large amounts of high purity nanoparticles of different materials.

The nanoparticles were produced by the setup, which consists of discharge chamber, electric pulse generator, electrodes, mounted into the discharge camera, with the gap filled by metal granules [1]. The discharge camera was filled by deionized water. For specific voltage and frequency the short-term sparks occur in the water, accompanied by erosion of the electrodes.

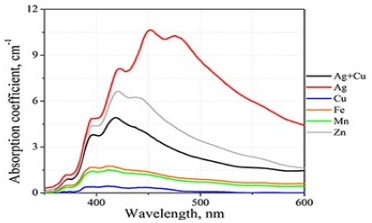

Fig. 1. Absorption spectra of colloidal solution with nanoparticles

Ag, Cu, Fe, Mn and Zn were used to produce nanoparticles.

Fig. 1 shows the absorption spectra of colloidal solution obtained by SDH-IV spectrometer using CCDTool software. Figure shows that the samples absorb light in the visible range. Obtained results are in good agreement with other ones presented in literature [2-4].

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