

## Synthesis, structure and magnetic properties of composite powders UDD/Ni-P and UDD/Co-P

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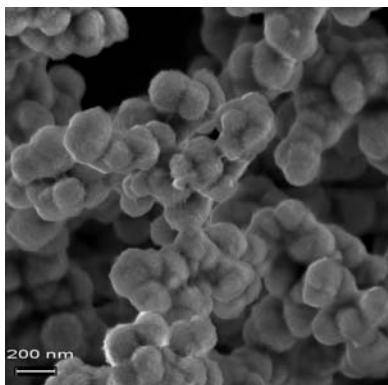
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A significant interest to composite powders is caused both by expectations to realize in compacted products a high level of physical and chemical properties (and consequently performance characteristics) and by structural features of this state, problems of its technological realization. In recent years chemical methods have been developed for obtaining nanostructural composite powders widely used for catalysts, sorbates, medical filters, magnetic media production, drug targeting [1, 2].

Ultradispersed diamond (UDD) powders were obtained by explosive method. Coatings of Co-P or Ni-P alloy on UDD powders were prepared by a chemical deposition method from water solutions of Co or Ni salt. Sodium hypophosphite ( $\text{NaH}_2\text{PO}_2$ ) was used as a reducing agent.

The structure and phase composition of the composite powders were studied by the X-ray diffraction method using  $\text{CuK}\alpha$  radiation. The morphology of the particles was studied by scanning electron microscopy (see Figure 1). Magnetization versus field measurements were carried out by means of a vibrating sample magnetometer in external fields up to 14.5 kOe. Ferromagnetic resonance properties were measured using conventional spectrometer with working frequency 9.2 GHz.



**Figure 1.** Scanning electron microscopy micrograph of composite powder UDD/Ni-P

- [1] Han M., Ou Y., Deng L., *J. Magn. Magn. Matter.* **321**, 1125 (2009).
- [2] Wu M., Zhangb Y.D., Huib S., Xiao T.D., Ge Sh., Hines W.A., Budnick J.I.6 *J. Magn. Magn. Matter.* **268**, 20 (2004).