

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Microwave plasma synthesis of magnetic nanoparticles¹ VIT KUDRLE, ONDREJ JASEK, PETR SYNEK, Department of Physical Electronics, Masaryk University, BOHUMIL DAVID, NADEZDA PIZUROVA, Institute of Physics of Materials, AS CR — We focused on synthesis of specific iron compounds in nanoparticle form produced in microwave plasma. Due to a small size of the nanoparticles causes unique properties of the material, including magnetic properties. We used two types of microwave discharges – atmospheric plasma torch and low pressure surface wave plasma. Using XRD (X-ray diffraction), HR-TEM (high resolution transmission electron microscope), Raman spectroscopy and Mossbauer spectroscopy we identified the elemental and phase composition of the nanoparticles. The magnetic properties of the prepared nanoparticles were measured, too. During the plasma synthesis process we carried out a plasma diagnostics using optical emission spectroscopy. Finally, we correlated the external and internal parameters of the plasma synthesis process with the properties and composition of the nanoparticulate product.

¹This work was supported by projects GA202/08/0178 of Czech Science Foundation and MSM0021622411 of Ministry of Education.

Vit Kudrle
Department of Physical Electronics, Masaryk University

Date submitted: 14 Jun 2010

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