

Template-based synthesis of Ni/NiO nanocomposites

N. Mironova-Ulmane¹, A. Kuzmin¹, M. Maiorov², I. Sildos³

¹ Institute of Solid State Physics, University of Latvia, Latvia

² Institute of Physics, University of Latvia, Miera street 32, LV-2169 Salaspils, Latvia

³ Institute of Physics, University of Tartu, Tartu, Estonia

e-mail: ulman@latnet.lv

Nanocomposites Ni/NiO have attracted strong attention for their promising use in supercapacitors [1], catalysis [2], biomedical applications [3], magnetic storage media [4] and spintronic devices [5]. Among different methods of materials synthesis, a template-based technique becomes popular during the last years due to its simplicity and often low cost [6]. Such approaches involve fabrication of the desired material within the pores or channels of a template.

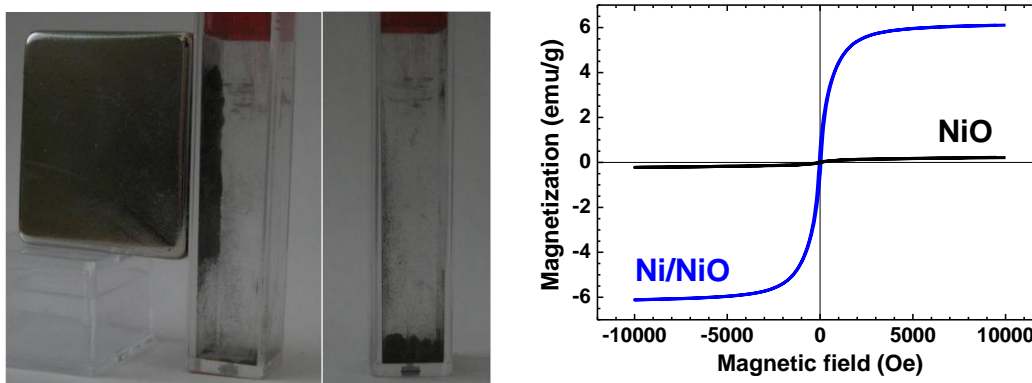


Fig.1 Left: Nanocomposite Ni/NiO powder attracted by neodymium magnet.
Right: the magnetic field dependence of magnetization for NiO and Ni/NiO powders.

In this study we report on a facile template-based synthesis of Ni/NiO nanocomposites from nickel nitrate solutions using cellulose templates. The samples morphology was probed by scanning electron microscopy and confocal spectromicroscopy. The formation of nanocomposites was evidenced by x-ray diffraction and magnetometry measurements. It is shown that a formation of nanocomposites depends on the concentration of nitrate solution.

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