



LIV Zakopane School of Physics
International Symposium

BREAKING FRONTIERS:
submicron structures
in physics and biology

May 21st – 25th, 2019
Zakopane, Poland

Organized by



The Henryk Niewodniczański
Institute of Nuclear Physics Polish Academy of Sciences

CONTRIBUTED TALK, WED./15:40

Towards magnetic 1D nanostructures - magnetic field as a growth parameter

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Since ancient times, the magnetic field has been recognized as either an intrinsic material property or a parameter which describes the magnetic interactions between materials. However, it has been already proven that the magnetic field can also act as a reaction parameter, similar to conventional reaction conditions i.e. temperature, pressure, time, and chemical additives. In fact, such processes are known as a magnetic-field-induced synthesis and they lead to the formation of various magnetic wire-like nanostructures⁽¹⁾.

Most of the scientific works about the magnetic-field-induced processes describe the preparation of metallic nanowires like: iron nanowires⁽²⁾, cobalt nanowires⁽³⁾ or nickel nanowires⁽⁴⁾. Very few publications, which show how to manufacture bimetallic wire-like structures, have been published so far. This is associated with the fact that the synthesis of such materials is much more complicated than the simple metallic structures. Nevertheless, the novel magnetic-field-induced procedures leading to the formation of bimetallic iron-nickel nanochains are shown in this work. Besides that, the investigations of their morphological and structural properties using a scanning electron microscopy (SEM), a transmission electron microscopy (TEM), a powder X-ray diffraction (XRD), as well as magnetic properties carried out by a vibrating sample magnetometry (VSM) are also provided herein.

The authors acknowledge funding from the National Science Centre (Poland) (grant no. 2016/23/D/ST8/03268).

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