

JOINT INTERDISCIPLINARY CONFERENCES

The 4<sup>th</sup> International Symposium  
on Art/Science/Technology

**MEDEA'2016**

The 1<sup>st</sup> International Symposium  
on Legal Implications of Cyber Society

**ISLICS'2016**

The 1<sup>st</sup> International Symposium  
on Physics Technology and Art

**PTA'2016**

Showcase of Polish self-edition posters  
and invited international artists

**ROLLER POSTER / ZAKYNTHOS 2016**

3–10 September 2016

Zakynthos, Greece

JOINT CONFERENCES ON ADVANCED MATERIALS

The 13<sup>th</sup> Conference  
on Functional and Nanostructured Materials

**FNMA'16**

The 7<sup>th</sup> Workshop on Nanotechnology

**PoWieFoNa'2016**

26–30 September 2016

Swornegacie, Poland

**ABSTRACT BOOKS**

## Magnetic Properties of Films of Gd-Fe Compounds and Gd/Fe Multilayers

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Films of binary compounds of a Gd-Fe system and a three-layer Fe/Gd/Fe film system were obtained by means of thermal vacuum evaporation of a polycrystalline mix material of a corresponding composition. The films, 5–50 nm in thickness, were evaporated on the splitting of NaCl, then NaCl dissolved in water. A part of the films was picked up at once on copper electron diffraction grids. The temperature of substrates had two values, 300 and 500 K. A UEMV-100K electron microscope and a PRON-2 high-temperature attachment were used for the structural investigation. The angle dependence of atomic factors of electron scattering was considered by atoms of gadolinium and iron.

The Curie temperature values, curves of specific magnetization and hysteresis curves for massive and thin-film samples were determined. It was spotted that the Curie temperature of massive samples corresponded to the references. A reduction in the Curie temperature was observed at examination of thin-film samples. Such depression of Curie temperature showed expansion of a crystalline lattice owing to the formation of microdefects (the films were amorphous-crystal).

The temperature dependences of magnetic saturation for compounds and films of the Gd-Fe system were determined. The given dependences were characteristic for materials of such class. The magnetic saturation of Gd<sub>2</sub>Fe<sub>17</sub> and GdFe<sub>2</sub> films at room temperature was measured.