

## MAGNETIC PROPERTIES OF Ni<sub>2</sub>MnGa HEUSLER ALLOY FILMS

J. Dubowik <sup>a</sup>, I. Gościańska <sup>b</sup>, Y. V. Kudryavtsev <sup>c</sup>, P. Sovák <sup>d</sup>, M. Konc <sup>d</sup>

<sup>a</sup>Institute of Molecular Physics, Polish Academy of Sciences, Poznan, 60-179, Poland

<sup>b</sup>Dept. of Physics, A. Mickiewicz Univ., Umultowska 85, 61-613 Poznań, Poland

<sup>c</sup>Institute of Metal Physics, Natl. Academy of Sciences of Ukraine, Kiev-142, Ukraine

<sup>d</sup>Dept. of Physics, P. J. Šafárik University, Park Angelinum 9, 041 54 Košice, Slovakia

Ni–Mn–Ga Heusler alloys have recently attracted a great attention since they reveal a magnetically driven shape memory effect. We report our results concerning structure and magnetic properties of off - stoichiometric Ni–Mn–Ga films prepared by magnetron sputtering or flash-evaporation. The aim of this contribution is to investigate the effect of ordering on the magnetic properties of Ni-Mn-Ga films. The films with composition Ni<sub>x</sub>Mn<sub>y</sub>Ga<sub>z</sub> ( $x = 50 \pm 5, y = 25 \pm 5, z = 25 \pm 5$ ) were deposited on mica or glass substrates at room temperature. The films were annealed in a high vacuum at 770 - 780 K for 0.1 to 1 hr. XRD at room temperature reveals the presence of B2 (or L2<sub>1</sub>) type of structure. Magnetic properties were studied by ferromagnetic resonance (FMR) at temperatures from 78 K to 500 K. It is shown that the magnetic properties of the films critically depend on structural ordering. The as-received films are practically nonmagnetic with no trace of a martensitic transformation while those annealed at the highest temperatures show the magnetization  $M(78K) \approx 600$  G, the Curie temperature  $T_C \approx 390$  K and the martensitic transformation at  $T_M = 200 - 300$  K depending on composition. Results show that both the effective magnetization and FMR linewidth are useful for monitoring structural ordering in these films.

9.7 cm

13.4 cm

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### Corresponding author :

J. Dubowik

### Address for correspondence :

Institute of Molecular Physics, Polish Academy of Sciences, Poznan, 60-179, Poland

### Email address :

dubowik@ifmpan.poznan.pl