# EFFECT OF STRUCTURAL DISORDER ON THE ELECTRONIC STRUCTURES, MAGNETIC, MAGNETO-OPTICAL AND OPTICAL PROPERTIES OF $Ni_2MnGa$ AND $Co_2MnGa$ HEUSLER ALLOY FILMS

**Y. V. Kudryavtsev,[a] V. A. Oksenenko[a], J. Dubowik,[b] Y. P. Lee[c] and J. Y. Rhee[d]**

Amorphous (disordered) as well as $L2_1$-type (ordered) $Ni_2MnGa$ and $Co_2MnGa$ alloy films have been fabricated by flash evaporation onto substrates cooled by liquid nitrogen and warmed up to 720 K, respectively. The ordered films exhibit the physical [magneto-optical (MO), optical and magnetic] properties close to the properties of corresponding bulk alloys. The nature of the interband absorption peaks in the optical conductivity spectra for the ordered alloys was interpreted in terms of their band structures. The significant effect of the structural disorder on the optical, MO and magnetic properties of $Ni_2MnGa$ and $Co_2MnGa$ was experimentally observed and discussed in terms of electronic structure of alloys. Thus, for example, the disordered $Ni_2MnGa$ films show no ferromagnetic ordering down 5 K, while $Co_2MnGa$ ones noticeable reduce their magnetization.

9.7 cm

13.4 cm

**Subject category :**

2. Magnetic Films, Surfaces, Multilayers and Nanostructures

**Presentation mode :**
poster

**Corresponding author :**
Y. V. Kudryavtsev

**Address for correspondence :**
Institute of Metal Physics, National Academy of Sciences of Ukraine, Kiev-142, Ukraine

**Email address :**
kudr@imp.kiev.ua