

Ion driven magnetic and structural modifications of ultrathin Co films with various covers

P. Mazalski,^{1,2} R.P. Socha,¹ L. Ohnoutek,³ L. Beran,³ Z. Kurant,²
A. Wawro,⁴ J. Fassbender,⁵ M. Veis,³ and A. Maziewski²

¹*Jerzy Haber Institute of Catalysis and Surface Chemistry
of the Polish Academy of Sciences, Cracow, Poland*

²*Faculty of Physics, University of Bialystok, Bialystok, Poland*

³*Faculty of Mathematics and Physics,*

Charles University in Prague, Prague 2, Czech Republic

⁴*Institute of Physics Polish Academy of Sciences, Warsaw, Poland*

⁵*Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

Magnetic and chemical properties of Co ultrathin films covered with Pt or Au cap and buffer layers magnetized in the sample plane were modified by ion irradiation . A strong dependence of the interface type on magnetic properties in irradiated films was observed. Anisotropy modification but no out-of-plane magnetization component were found for Au, contrary to Pt adjacent layers. Magnetic properties were correlated with chemical changes with use of magneto-optical and X-ray photoemission spectroscopies. Experimental observations were supported by calculations (Tridyn package) of layered structure evolution with the ion fluence.

Supported by the NCN FUGA project (DEC-2015/16/S/ST3/00450).