

Achieving electric field influence on thin films of antiferromagnetic CuMnAs

Michał J. Grzybowski¹, Magdalena Majewicz¹, Peter Wadley², Kevin W. Edmonds²,
Richard Champion², Bryan L. Gallagher², Tomasz Dietl^{1,3,4}, Maciej Sawicki¹

¹ *Institute of Physics, Polish Academy of Sciences, Aleja Lotników 32/46, PL-02668 Warsaw, Poland*

² *School of Physics and Astronomy, University of Nottingham, Nottingham NG7 2RD, UK*

³ *WPI-Advanced Institute for Materials Research, Tohoku University, Sendai 980-8577, Japan*

⁴ *International Research Centre MagTop, PL-02668 Warsaw, Poland*

Antiferromagnets attract a lot of attention due to potential applications in spintronics. It was shown that it is possible to influence the magnetic order in antiferromagnetic CuMnAs using electrical current, which exerts relativistic Néel order spin-orbit torque on spins of Mn ions [1-2]. The current pulses modify the domain structure of the material [3]. It is also possible to move the domain walls [4].

It is also known that there are many ferromagnetic systems that can couple the electric field and magnetic order [5]. Here, we report initial attempts to address the question what can be the influence of a static electric field on thin films of antiferromagnetic CuMnAs. The work comprises studying transport properties of gated devices (Fig. 1) and the gate voltage dependence of the resistivity. The investigation aims at studying anisotropic magnetoresistance, which can be a suitable tool to measure the magnetic order and its changes in the antiferromagnetic systems as shown in [2-4].

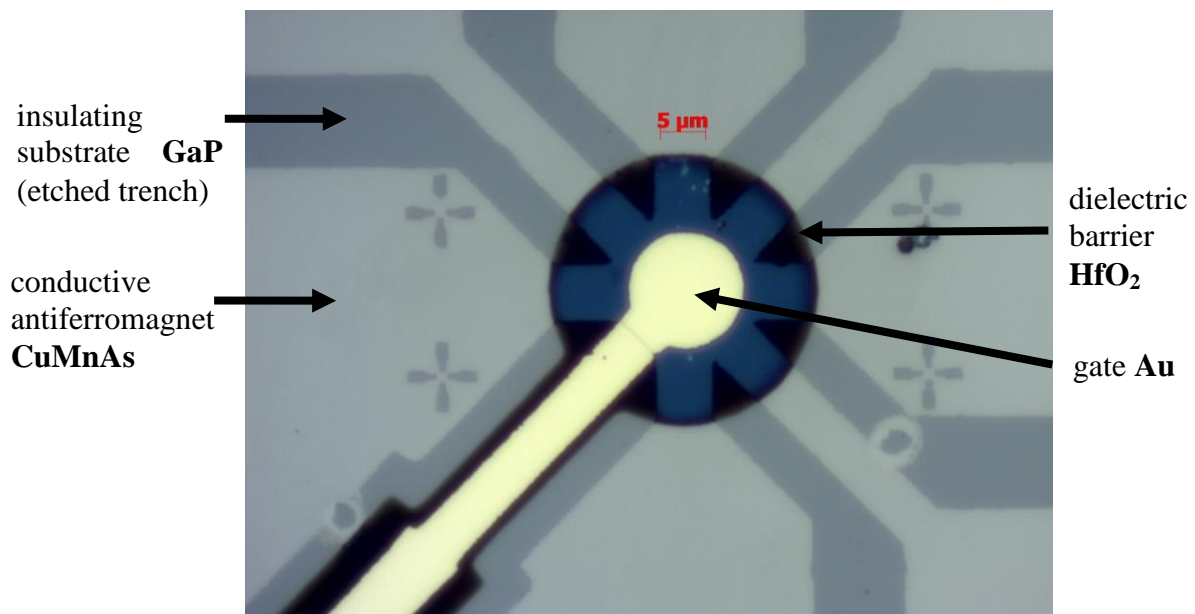


Fig. 1 The microphotograph of the gated device on CuMnAs thin layer.

Work supported by the Polish National Science Centre, grant No. 2016/21/N/ST3/03380.

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