Spin-resolved electron spectroscopy for spintronic materials analysis

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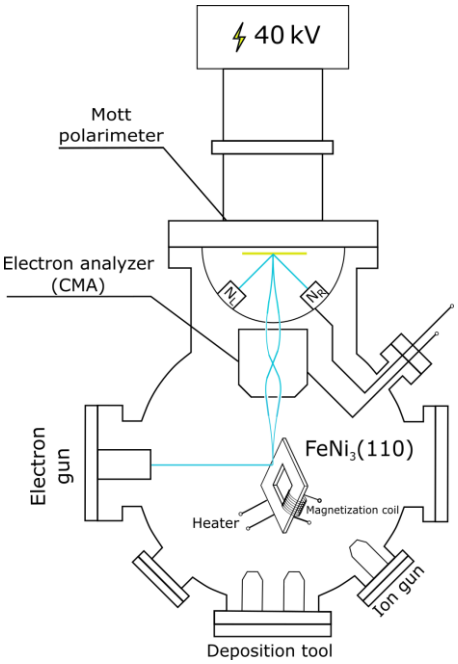
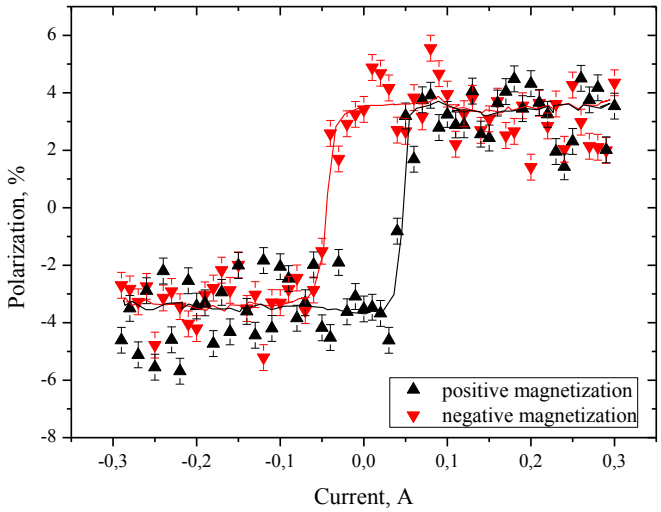
Creation of new spintronic devices requires research in the field of surface magnetism. For building them not only ferromagnetic (FM), but also non-magnetic (NM) or antiferromagnetic (AFM) materials have to be used.

One of the possible method for studying the properties of layered NM/FM material systems is spin-resolved electron spectroscopy. Use of the classical Mott detector (left figure) [1] makes it possible to obtain secondary electron polarization curves for different sample's magnetization and at different electron energies (right figure) and spin-resolved Auger spectra.

Experimental measurements of spin relaxation processes have shown that LiF and Pd are substances with spin relaxation length exceeding mean free path [2]. For extending set of spin relaxation length studies our group conducted experimental investigation of the AFM/FM (Cr/$FeNi_3$) system which shows interesting magnetic properties and is eligible for application in electronic devices.





References:

[1] Petrov, V. N., Galaktionov, M. S., & Kamochkin, A. S. Review of Scientific Instruments, 72(9), (2001)

[2] Pavlov, A., Ustinov, A., & Petrov, V., Journal of Electron Spectroscopy and Related Phenomena, (2017)