An electric field at the surface of a ferromagnetic metal is expected to affect its intrinsic magnetic properties. In particular, the presence of an external voltage at the metal/dielectric interface should change the electron density of the interfacial metal atoms and, in a consequence, lead to modification of their hyperfine parameters. The aim of the proposal was to examine an electric field induced modification of the hyperfine structure in MgO/Fe/Cr.

A wedged shaped ^{57}Fe layer with sub-nanometer thickness range was grown on a 30 nm-thick Cr buffer on a MgO(001) substrate and capped with 2.5 nm of MgO. Following MgO a Cr/Au bilayer will be deposited as a top metallic electrode. All layers were grown with a use of molecular beam epitaxy in proposers' home laboratory. Rectangular top electrodes with areas of (1 x 2)mm^2 were be fabricated on the samples using masks mounted in a UHV chamber. As a result a matrix of elements with different Fe thicknesses was formed. The common bottom electrode was used for sample. Prior to the SMS experiments resistance-area product of the pillars will be measured in the current-perpendicular-to-plane geometry using standard two-probe method. The voltage control of hyperfine parameters was studied by the SMS measurements under different bias voltages. The SMS spectra were measured *ex-situ* in a grazing specular geometry. In a single measurement a signal from one pillar was collected. The bias voltage was adjusted between -2 V< U < 2V. Figure 1 shows exemplary SMS spectrum of MgO/Fe/Cr collected under a bias voltage of 10mV. Unfortunately, we did not register change in spectra measured under different bias voltages.

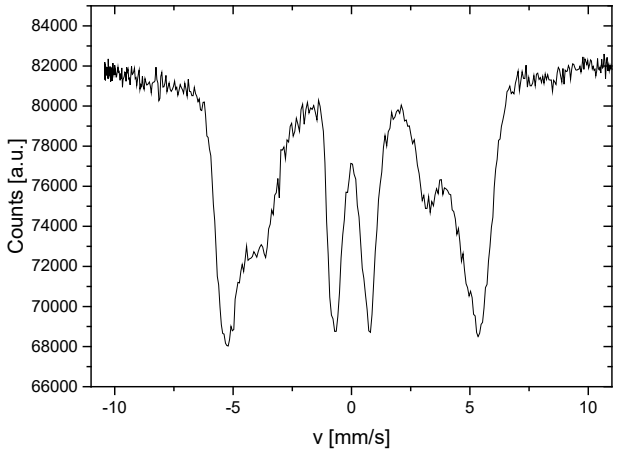

Figure 1 SMS spectrum collected for MgO/Fe/Cr under bias voltage of 10mV.