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Laboratory for magnetic measurements

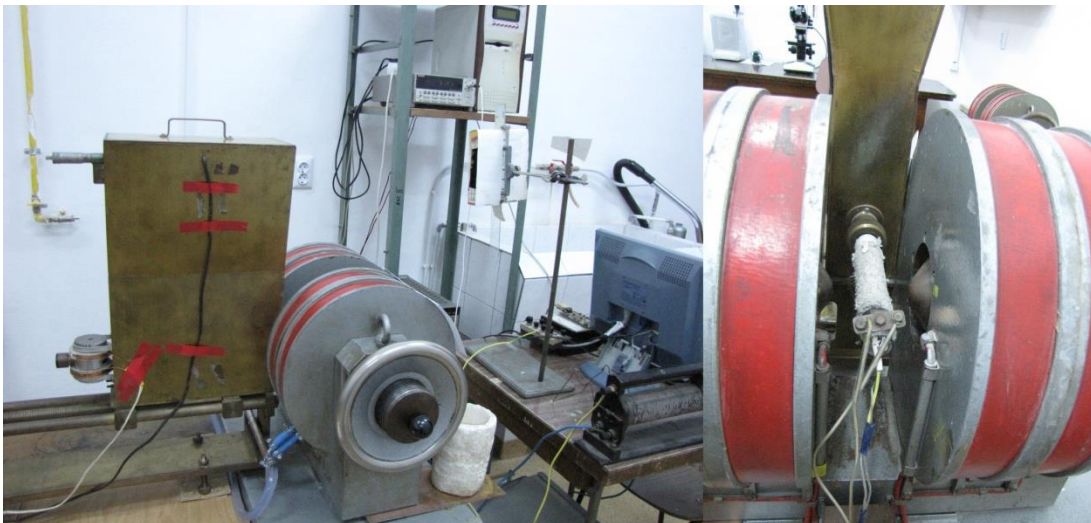
The laboratory for magnetic measurements is comprised of 3 installations: a vibrating sample magnetometer (VSM) made by Cryogenics, an extraction magnetometer made by Oxford and a horizontal Weiss balance which was developed here in our institute. The VSM allows us to perform various measurements such as DC magnetization, and DC/AC susceptibility at temperatures between 4 and 700 K in applied magnetic fields of up to 12 T DC and 1 mT (10 kHz) AC. The magnetic field is obtained using a cryogen-free superconducting magnet system, therefore liquid helium is not necessary for operating the instrument.



The Oxford MagLab 2000 extraction magnetometer contains a superconducting magnet system cooled with liquid helium. With this installation we can measure DC magnetization, DC/AC susceptibility, specific heat and transport properties. The measurements can be made at temperatures between 4 and 400 K in applied fields of up to 9 T DC and 2 mT (10 kHz) AC.



The horizontal Weiss balance allows us to perform quantitative and qualitative susceptibility measurements at temperatures between 77 and 1000 K. The main advantage of the Weiss balance is its high sensitivity and low cost of operation.



The research activities undertaken in this laboratory are focused on fundamental and applicative studies of alloys, nanocomposites and thin films with applications in magnetism (exchange coupled nanocomposites), spintronics (multilayers, Heusler alloys), and magnetic refrigeration (magnetocaloric effect in perovskites and various rare earth - transition metal alloys).