

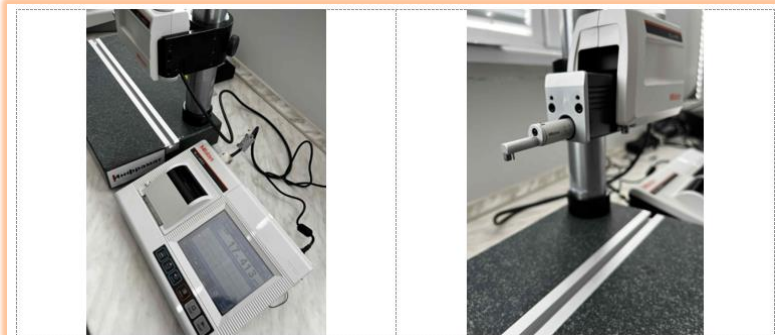
Microplate reader, model: MRX A2000; Manufacturer K Lab CO. LTD – Korea

The device is used for simultaneous examination and precise spectrophotometric analysis of many samples with very small volumes, ensuring absolutely identical experimental conditions. Some of the applications of the device are: detection of drugs and other active molecules, validation of bioanalysis, quantitative determination of proteins.



MRX A2000 microplate reader and specialized consumables

High-resolution roughness tester, model: Surftest SJ-411; Manufacturer Mitutoyo – Japan



High-resolution roughness tester Surftest SJ-411

The device is suitable for measuring various types of surfaces, from ground to polished:

- It measures the minimum deviations of a perfectly smooth surface, taking into account the presence of scratches, dents, ripples, and other micro-irregularities;
- It allows the measurement of roughness parameters such as Ra, Rz, Rq, etc.

Glow Discharge Optical Emission Spectroscopy (GDEOS)



GDA 750 HR (Spectruma Analytik GmbH) – new and unique for the Bulgarian scientific community equipment, funded under contract D01-172/2022 with the Ministry of Education and Science of the Republic of Bulgaria.

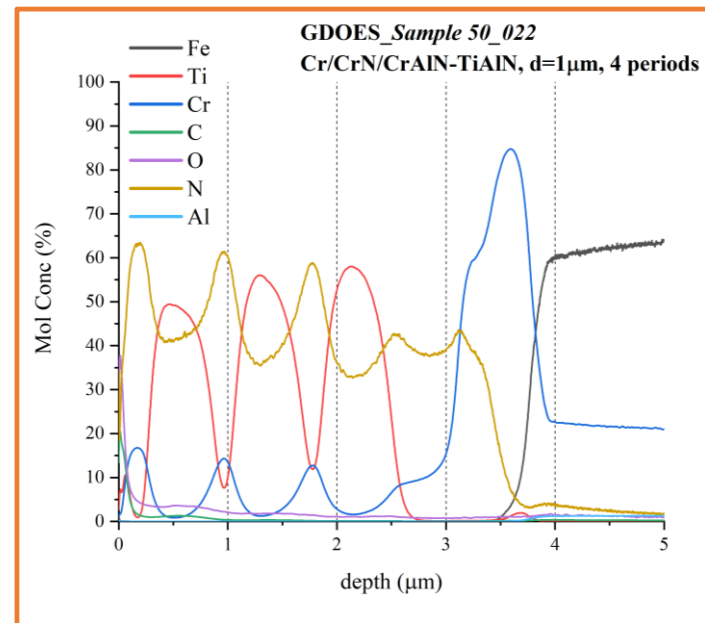


Glow Discharge Optical Emission Spectroscopy (GDEOS)

Analytical determination in volume and depth profiles of 47 chemical elements, including difficult-to-analyze light elements such as hydrogen, lithium and boron in a wide range of concentrations, from ppb to 100%.

AREAS OF APPLICATION:

- determination of elemental composition of metals, and alloys
- determination of the composition and thicknesses of single- and multilayer coatings and thin films in microelectronics
- layer-by-layer study of corrosion products
- quantification of light elements in metals such as phosphorus in the production of hard disks, lithium ion batteries, sulphur in metals, etc.
- determination of purity in precious metals such as gold, platinum, silver, etc.
- elemental composition and thicknesses of coatings on non-conductive substrates such as glass for buildings and automobiles.



Laboratory for Preparation of Metallographic Samples



Complex possibilities for sample preparation, suitable for optical and scanning electron microscopy and application of X-ray methods, including X-ray fluorescence analysis.



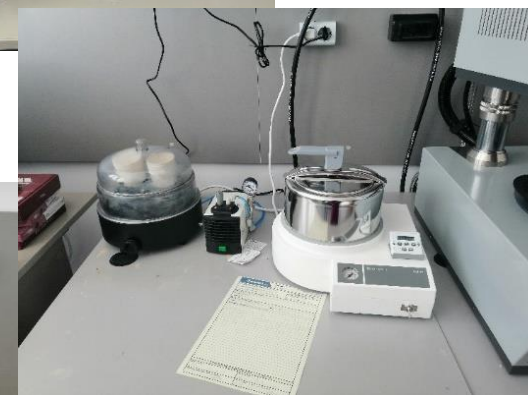
- ❑ Compact wet abrasive cutting machine **Brillant 220** (QATM, Germany) for cutting ceramics, composites, minerals, metals, electronic components, etc.
- ❑ Infiltration (impregnation) device for cold grinding of samples (flooding and hardening) (QATM, Germany) using vacuum, including desiccator with mechanical dosing handle and vacuum pump.
- ❑ Polishing and grinding machine **Saphir 250 A1 Eco** (QATM, Germany), equipped with a large variety of abrasive liquids and discs.



Wet abrasive cutting machine

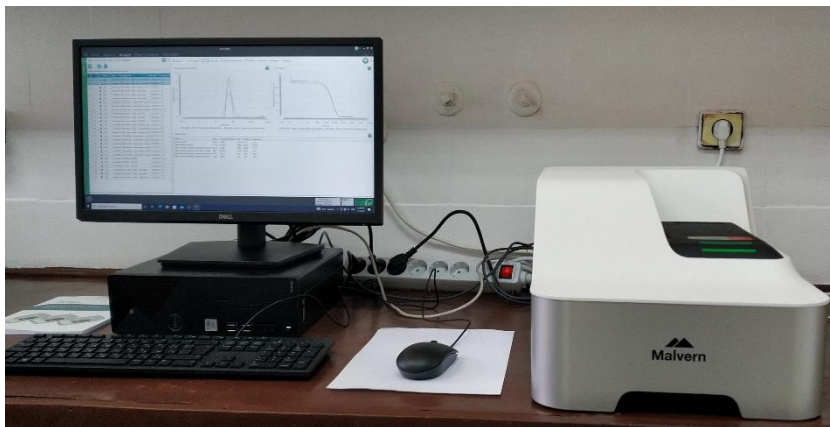


Polishing and grinding machine



Infiltration device

Dynamic Light Scattering (DLS) Zetasizer Pro Red, Malvern Zetasizer Advanced series



Advantages

- ❑ small sample volume
- ❑ individual cells to keep sample purity during measurement
- ❑ measurements can be carried out in a temperature range from 0 to 120°C
- ❑ multi-angle DLS enables a more reliable and accurate representation of the particle size distribution of a multicomponent sample
- ❑ a fluorescence filter for accurate and reliable size determination of fluorescent samples



Information about size, size distribution and zeta-potential of particles emulsions or molecules dispersed in a liquid medium (proteins, nucleic acids, micelles, polymers, polyelectrolyte complexes, carbon dots, metal oxides, clays, tc.):

- particle sizes in the range of 0.3 nm to 15 μm
- particle concentration from 10^8 to 10^{12} particles/ml
- molecular weight in the range 980 Da - 20 MDa