

Laboratory of Microscopy and Image Analysis

Principal goals and activities

- Identification of materials.
- Metallographic analysis of steels, aluminium alloys, iron aluminides, etc.
- Assessment of defects in heat treatment technologies, assessment of the failure mode in machinery components.
- Chemical analyses of metallic materials (iron alloys, iron aluminides, copper alloys).
- Chemical analysis of phase in metallic materials.
- Identification of phase presence, grain size, shape and size of graphite in cast metals, measurement of layers.

General focus of laboratory

- Metallography – expert analyses in metallic materials.
- Research and development in alloys based on iron aluminides for high-temperature applications – structural analyses in iron aluminides of different composition, the effects of additives on mechanical properties and corrosion resistance in iron aluminides, the effects of heat treatment on the structure and properties of iron aluminides.
- Corrosion testing in metallic materials under high temperatures in the air or molten glass.

Specific instruments and outcomes

- DELTA PROFESIONAL handheld X-ray fluorescence analyzer for chemical analysis.
- Tescan Vega 3 SBH scanning electron microscope with Oxford 20 mm². EDS analytical module
- Optic microscopes with NIS-Elements image analysis (Nikon Epiphot 200, Neophot 32).
- Stereomicroscope.
- Instruments for preparation of metallographic cuts and samples for SEM (angle grinder, precision saw, press, sanders, polishers).
- MICROMET 2100 microhardness meter, Zwick 3212 hardness meter.

