



InnoRenew CoE

Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Anton Paar MCR 302 rheometer

Analysis of flow and deformation behaviour of materials



Enables performance of rheology tests on a variety of materials in rotational and oscillatory mode using different measuring systems: cone-plate, plate-plate and concentric cylinders. Measuring system allows simulation of coating processes, polymer/gel cross-linking, etc.

Owner institution: University of Maribor - FERI

Location: Koroška cesta 46, Maribor

Contact: Manja Kurečič
manja.kurecic@um.si



InnoRenew CoE

Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Büchi B-395 Pro encapsulator

Formation of beads and core-shell microcapsules



Device disintegrates extrudable solutions into equally-sized droplets, followed by chemical or physical solidification. Beads are produced with single nozzle system (150 μm to 2000 μm), while concentric nozzles fabricate core-shell morphology (400 μm to 1800 μm in diameter).

Owner institution: University of Maribor - FER

Location: Koroška cesta 46, Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

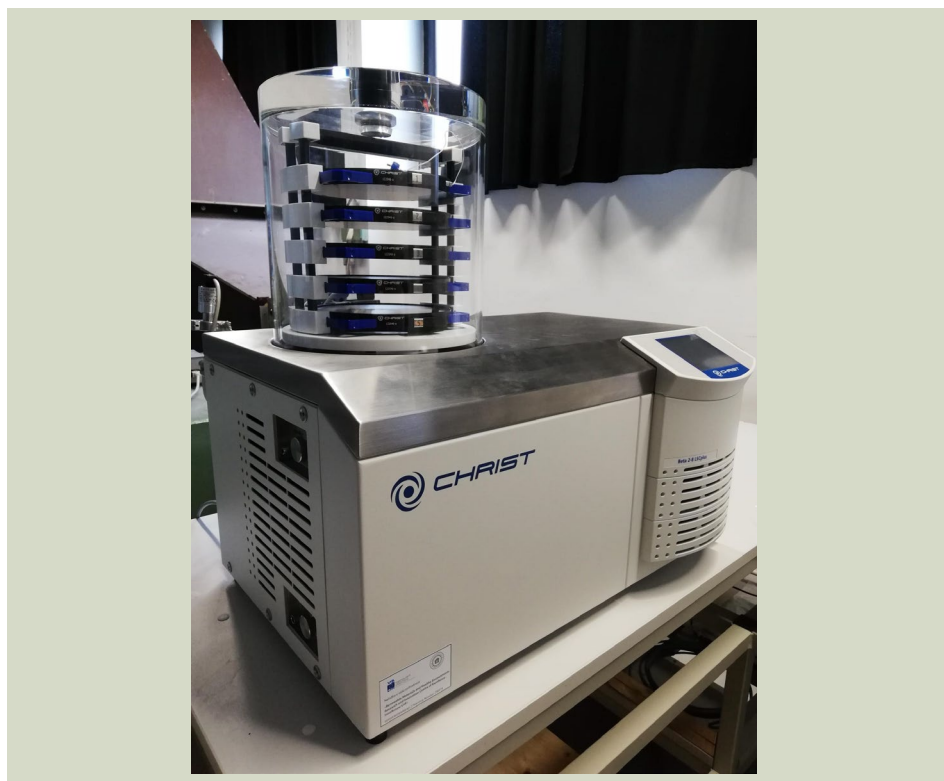
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Christ Beta 2-8 LSCplus freeze dryer

Preparation of porous materials



Freezeing solidifies samples and shapes their morphology; freeze drying removes frozen water through sublimation, preventing pore collapse and resulting in porous structures. Ice condenser can reach down to -90°C , while T-programmable shelves and temperature sensors enable a multi-phase design of the drying process and its control.

Owner institution: University of Maribor - FERl

Location: Koroška cesta 46, Maribor

Contact: Mojca Božič
mojca.bozic@um.si



InnoRenew CoE

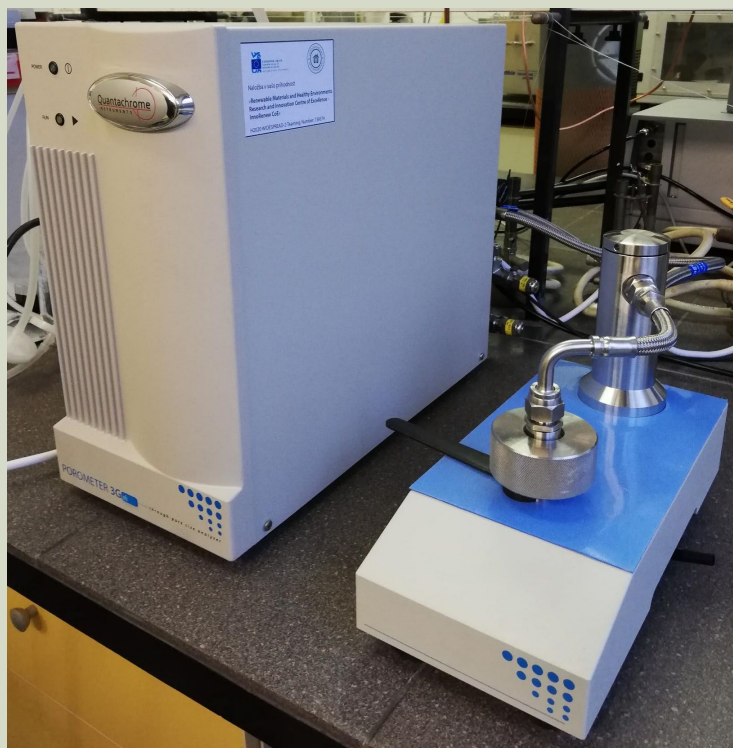
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Quantachrome Anton Paar 3G-ZH capillary flow porometer

Analysis of through pores in flat samples



Based on liquid expulsion technique it quantifies pore size distribution, permeability, mean pore size of through pores. Amount of flow through the sample is measured in dependence of the pressure applied. Pressure range: from ambient to 35 bar. Pore size distribution range: from 0.013 μm to $>500 \mu\text{m}$.

Owner institution: University of Maribor - FERl

Location: Koroška cesta 46, Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Optical Interrogator, Micron Optics Si155-ST-01-1460-1620

4 channel - Optical sensing spectrum interrogator



The si155 is an industrial grade fan-less optical sensing interrogator. Featuring both static and dynamic full spectrum analysis, the si155 provides long-term, reliable and accurate measurements of hundreds of sensors on 4 parallel, 160 nm wide channels.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Denis Donlagić
denis.donlagic@um.si



InnoRenew CoE

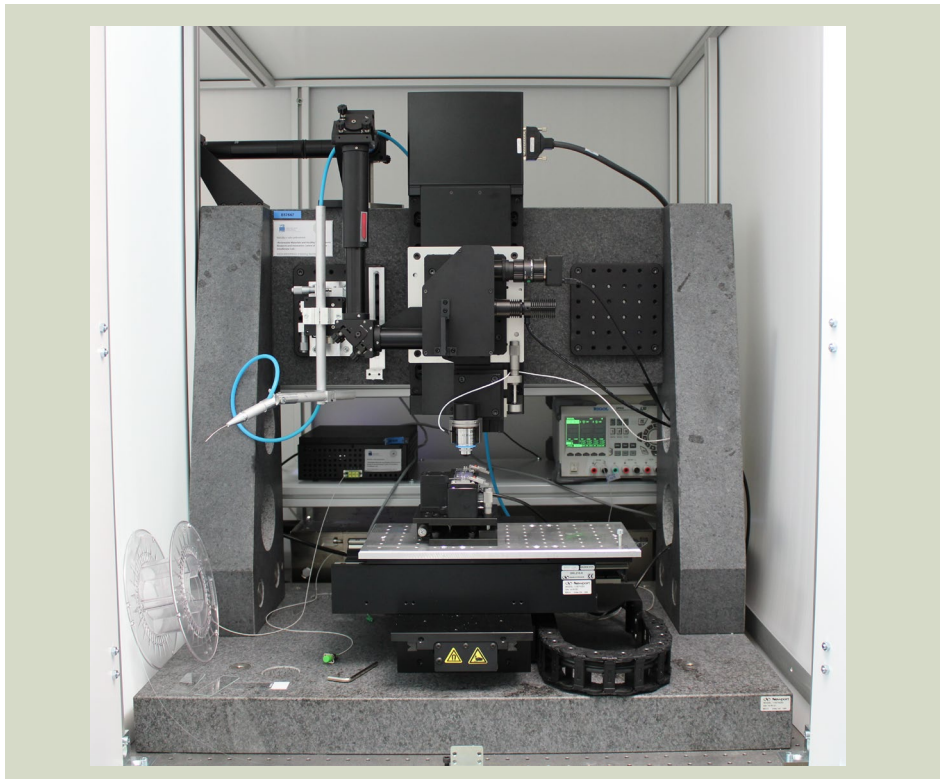
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Newport Femtosecond laser workstation

Femtosecond laser micromachining and FBG inscription workstation



Femtosecond laser system/workstation allow for:

- precision micromachining (micro-milling and micro-drilling) of various materials (glasses, ceramics, metals, plastics, etc.),
- inscription of Bragg gratings into optical fibers and bulk glass slides, and
- controlled photo-polymerization and structure creation in the micrometer scale range.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Denis Donlagić
denis.donlagic@um.si



InnoRenew CoE

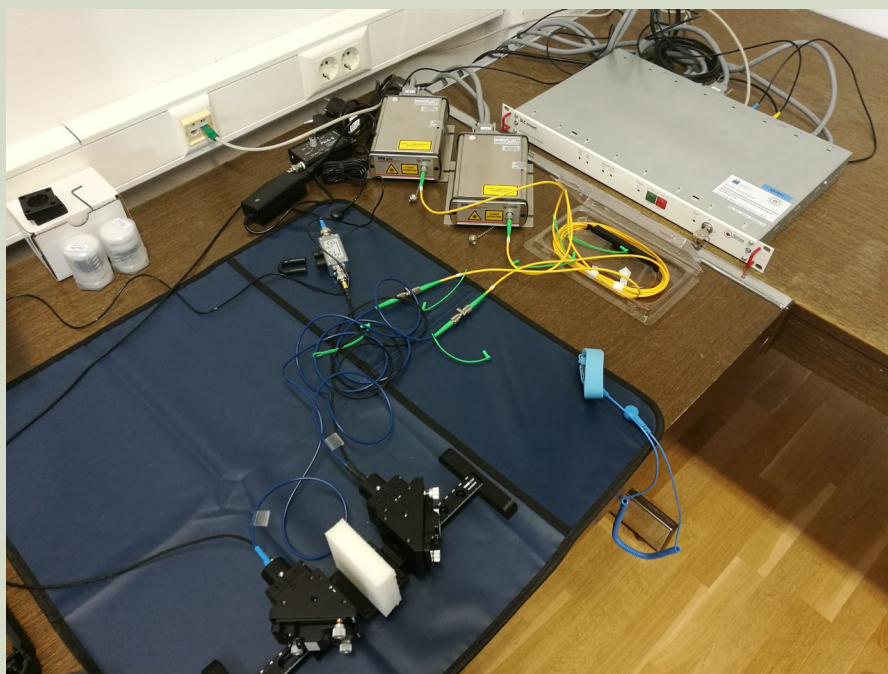
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Toptica TeraScan 1550

Frequency-domain terahertz platform for CW-THz spectroscopy



With high terahertz power and dynamic range TeraScan 1550 enables contact free industrial quality control, non-destructive testing with combination of imaging and spectroscopic methods, material research, gas detection and fundamental physics research.

Owner institution: University of Maribor

Location: Koroška cesta 46, Maribor

Contact: Dušan Gleich
dusan.gleich@um.si



InnoRenew CoE

Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

NYFORCE TECKNOLOGI AB Laser welder for optical fibres

Optical fibre welding



The welder is based on welding technology with the implementation of a CO₂ laser. A special technology called Axicon Splicing allows the user to "design" a laser beam i.e. changes the area and radius of the active zone and laser output. The latter enables welding of special optical fibers of different dimensions, producing long and even tapering of the fiber structures (so-called "tapering") and production of other special photonic structures.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Denis Donlagic
denis.donlagic@um.si



InnoRenew CoE

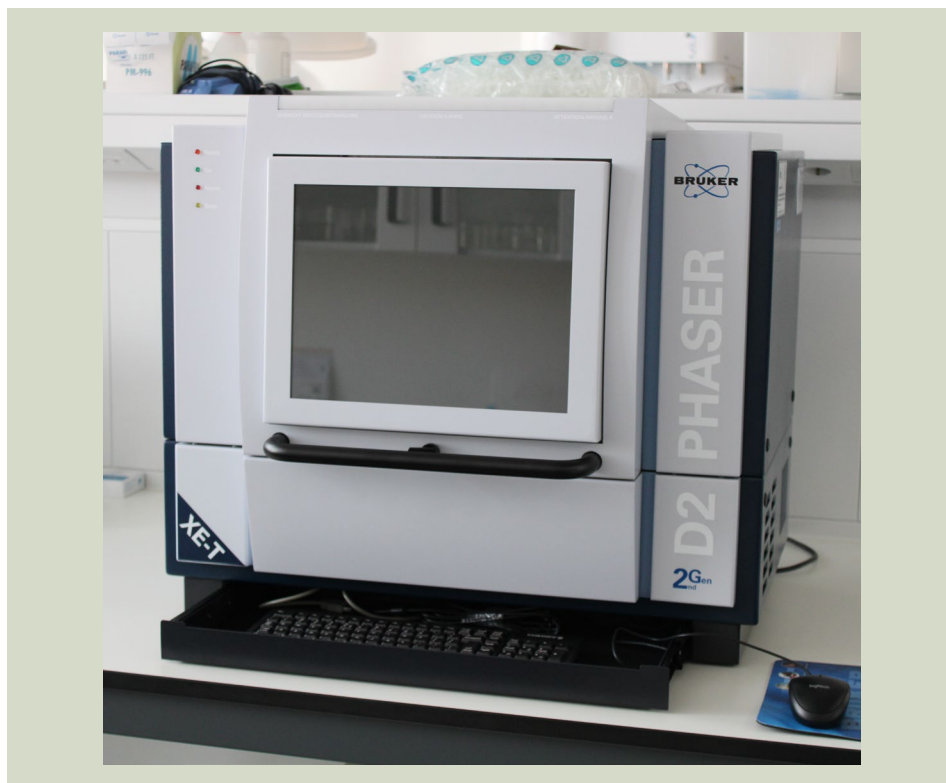
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

BRUKER D2 Phaser X-ray powder diffraction

Structure characterization



Desktop X-ray powder diffractometer for structural analysis of various materials; identification and quantitative analysis of various phases, crystallinity level, crystal lattice dimensions and crystal sizes.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

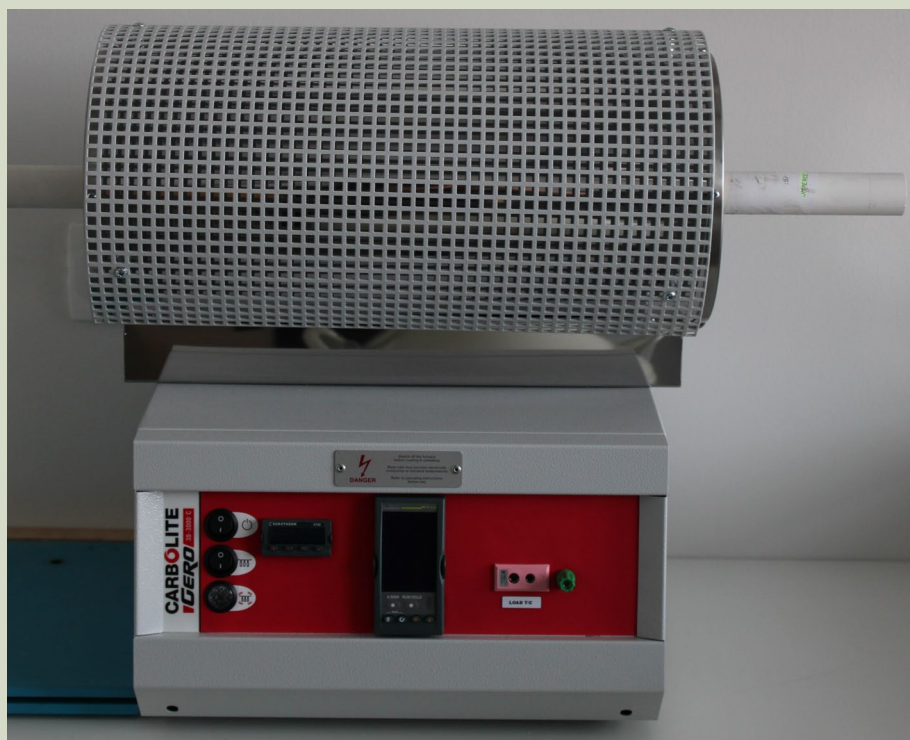
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

CARBOLITE MTF Tube Oven

Preparation of carbon materials



Single zone tube furnace with a maximum heating temperature of 1200° C with integrated ceramic work tube and an additional work tube made of impermeable aluminum ceramics for processes in inert atmosphere. The pyrolysis furnace enables calcination of inorganic particles and carbonation of polymeric materials.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

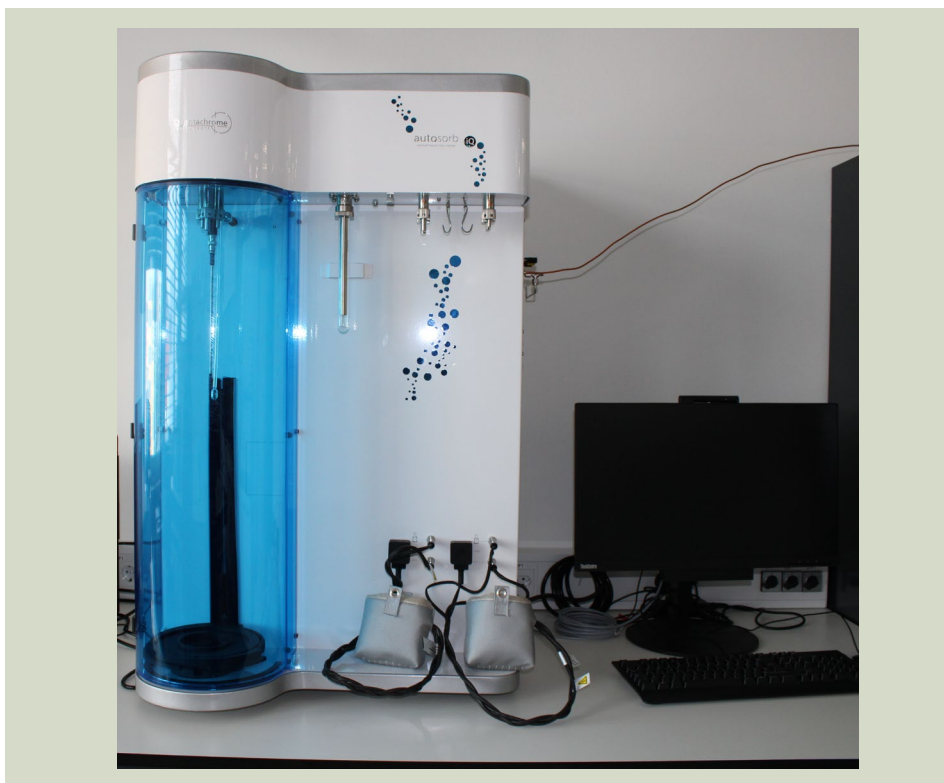
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Quantachrome Anton Paar AUTOSORB IQ physiosorption

BET analysis



Determination of the specific surface area, size and distribution of meso- and micro-pores of materials of different shapes in the pore diameter range from 0.5 to 500 nm via adsorption of gas molecules. The apparatus consists of three separate analysis stations which allow simultaneous analysis of three powder samples.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

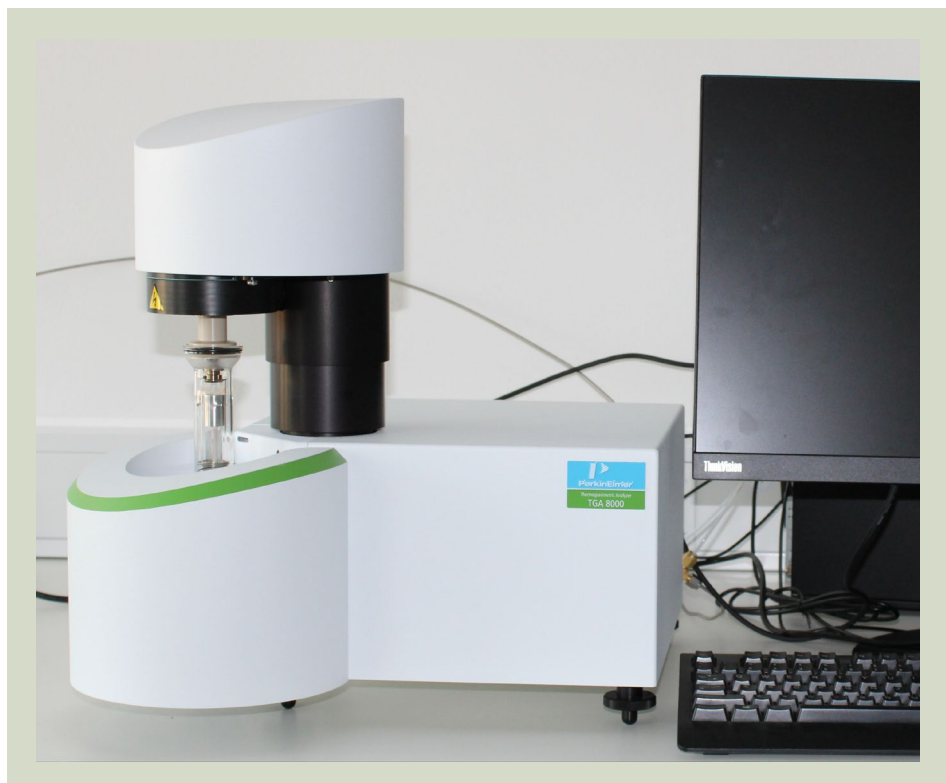
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Perkin Elmer TGA 8000

Thermal analysis



The TGA instrument enables reproducible determination of temperature decomposition and studies of material combustibility, sample volatility, moisture and solvent content, and oxidation stability. Measurements can be performed in the temperature range from -15°C to 1200°C .

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

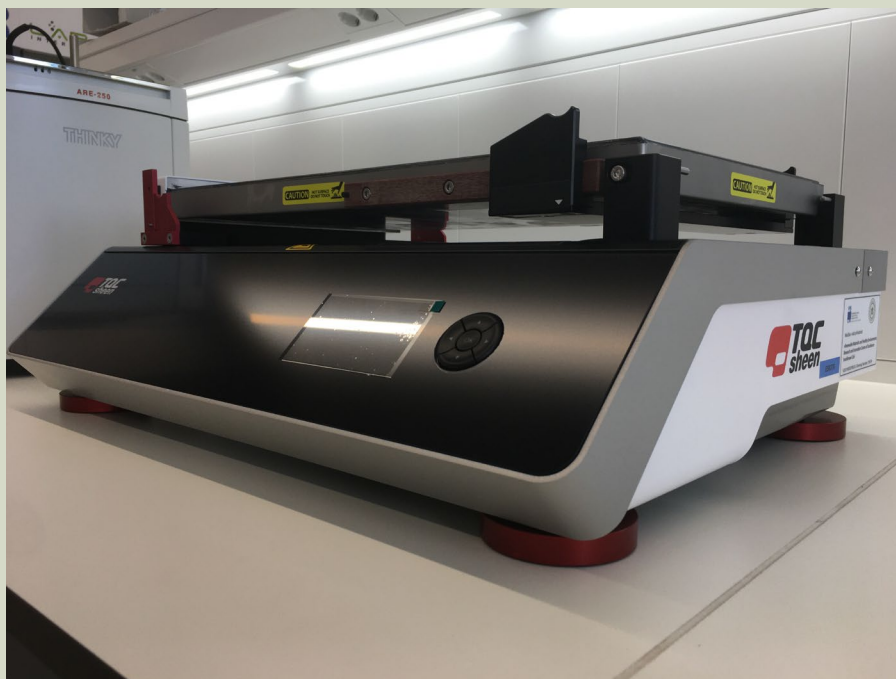
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Film applicator TQC Sheen

Thin films and coatings



Automatic film application device with a heated working surface and integrated vacuum pump for securing the samples. Films can be applied on various flat surfaces with different tools: baker-, bird-, wire bar-type knives, from 50 μm wet thickness up to 200 μm . Maximum sample size is A3 (approx. 30x40 cm).

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

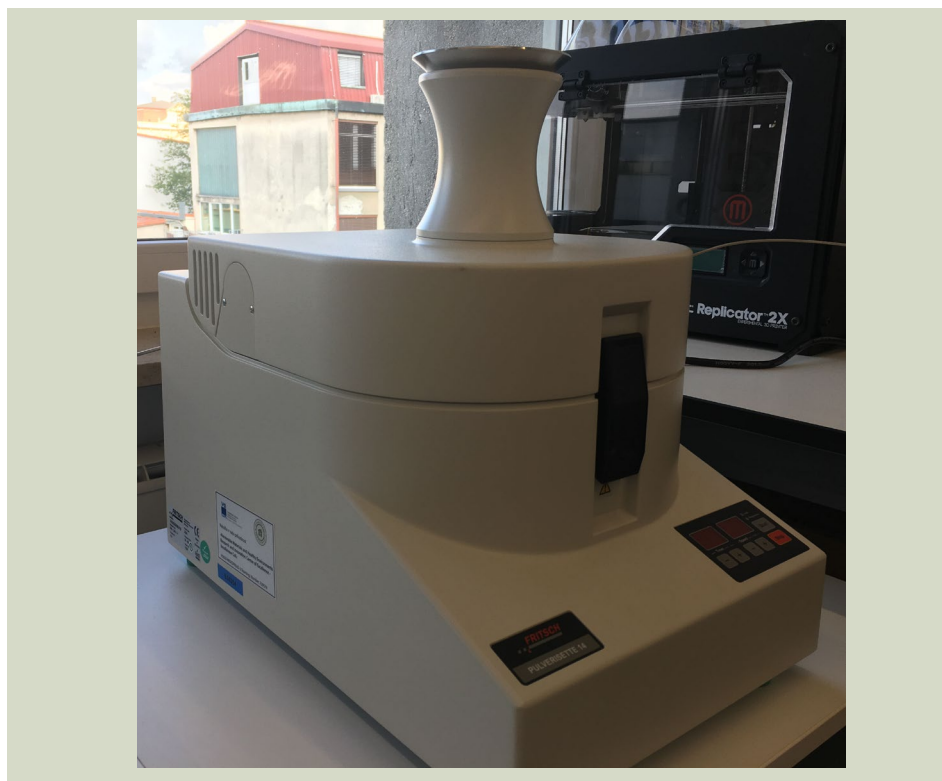
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Fritsch PULVERISETTE 14 classic line

Variable Speed Rotor Mill



Comminution of soft to medium-hard, brittle and fibrous materials as well as temperature-sensitive samples. sample is comminuted by impact on the ribs of the rotor rotating at a high speed and additionally sheared between the rotor-teeth and between the utilized sieve ring. Sieve perforation: from 0,08 mm to 1 mm.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Thinky ARE-250 planetary centrifugal mixer

polymer solution and dispersion homogenization



The centrifugal force of over 400G enables simultaneous mixing, dispersion, and deaeration of various materials from low to high viscosities. Preparation of homogenous polymer mixtures, particle dispersion with efficient air bubble removal.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Büchi B-90 Advanced Nano spray dryer

spray drying of liquid samples into submicron particles



Water-based samples (i.e. solutions, nanoemulsions and nanosuspensions) are atomized into fine droplets and dried in a flow of drying gas, resulting particles, ranging from 200 nm to 5 μm . Atomization takes place in nebulizers inside spraying head, droplets are dried within the drying chamber and particles are captured by the collecting electrode and deposited on the wall of the collecting cylinder.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

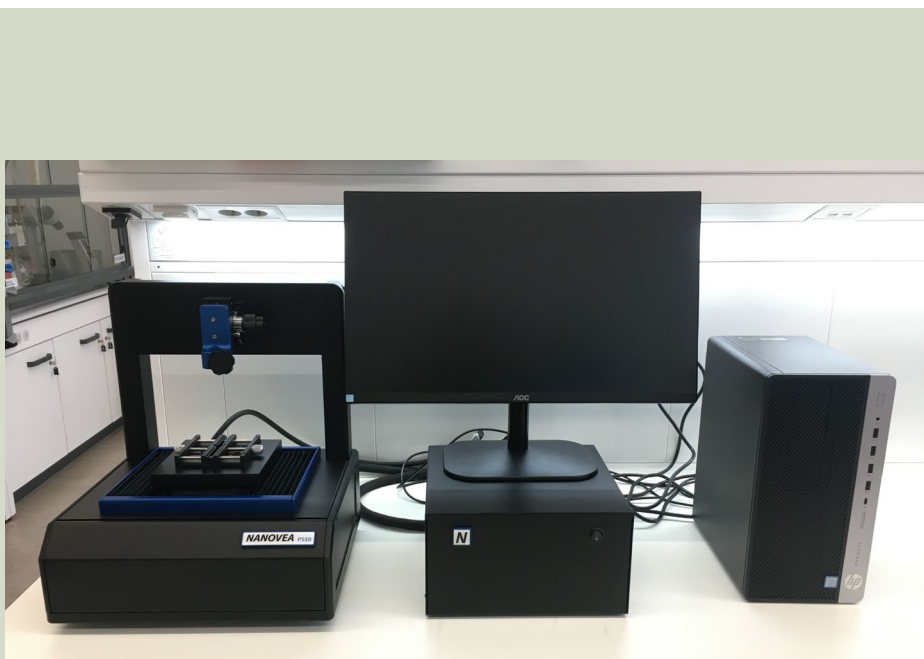
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Nanovea PS50 optical profilometer

optical non-contact profilometer for 2D and 3D morphology analysis



Optical profilometer for morphology analysis of flat samples of varying degrees of roughness, e.g. thin polymer films, polymer coatings on different substrates, porous membranes and electrospun fibrous mats. Measurements are performed in a non-contact mode using continuous scanning with no need for stitching and an ability to perform measurements on tilted, curved samples with varying degree of reflectivity.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si



InnoRenew CoE

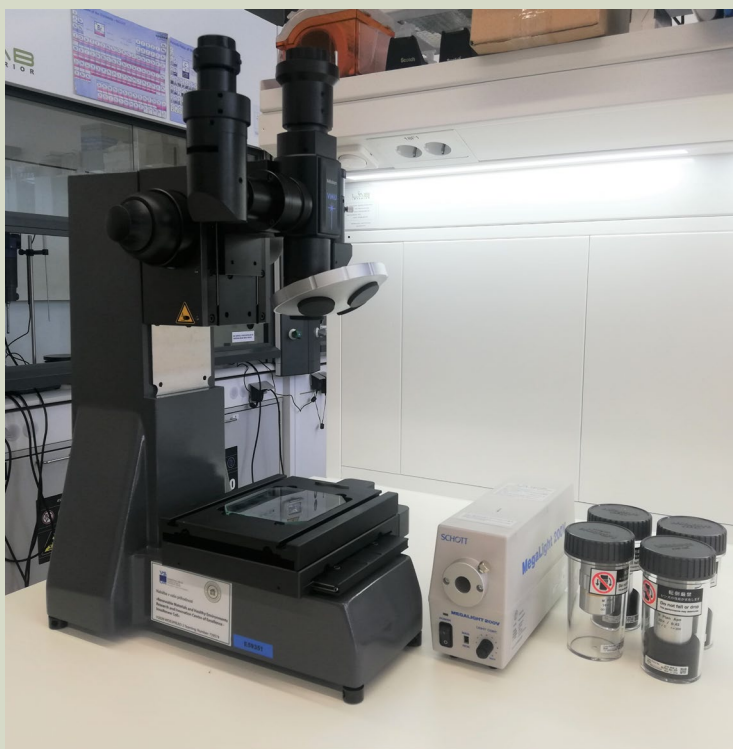
Template for presentation of new research equipment



EVROPSKA UNIJA
EVROPSKI SKLAD ZA
REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Mitutoyo VMU-L4B microscope

optical microscope for laser applications



Modular microscope unit with open configuration for integration of lasers with a wide applicable wavelength region: near-infrared-visible-near-ultraviolet radiation. Equipped with a set of apochromatic objective lenses (magnifications: 10X, 20X, 50X, 100X) which enable large working distances.

Owner institution: UM-FERI

Location: Koroška cesta 46, 2000 Maribor

Contact: Silvo Hribernik
silvo.hribernik@um.si