



InnoRenew CoE

Template for presentation of new research equipment



EMXnano X-band Bench-top CW EPR Spectrometer System

detection of paramagnetic species



Source: <https://www.bruker.com/>

- detection of unpaired electrons in **free radicals** (formed in chemical reactions) and **compounds with transition metal elements**, and **defects in the crystal net**
- **analysis of samples in solid, liquid, gas**
- **minimal sample preparation**
- suitable for the study of metal centres and radicals involved in chemical processes as well as light induced kinetics of degradation processes by following the formation of radicals in organic binder systems as well as paramagnetic ions

Owner institution: ZVKDS IPCHS

Location: Poljanska cesta 40, Ljubljana

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Template for presentation of new research equipment



FT-Raman Spectrometer "MultiRAM,, coupled to SENTERRA II Raman microscope

flexible rapid scanning spectrometer for FT-Raman applications in the analytical and research laboratory



- FT Raman system MULTIRAM:
1064 nm laser excitation
- dispersive SENTERRA Raman microscope:
785 and **532 nm** laser excitation
- versatile laser excitations → characterisation of many different materials, including complex organic pigments (synthetic or natural organic pigments and dyes) and logwood inks

Owner institution: ZVKDS IPCHS

Location: Poljanska cesta 40, Ljubljana

Contact: Klara Retko
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Source: <https://www.bruker.com/>



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Template for presentation of new research equipment



FT-IR spectrometer TENSOR II and HYPERION 3000, Infrared Microscope

Powerful and robust mid-IR spectrometers for material analysis



Source: <https://www.bruker.com/>

Bruker HYPERION 3000, Infrared Microscope equipped with Focal Plane Array Detector System → high resolution micro-images and can be used in characterisation of cross-sections.

The microscope is equipped also with a Grazing Angle Objective → very precise surface analyses as the penetration of IR light is only of a few nm, which is important in surface degradation studies.

Owner institution: ZVKDS IPCHS

Location: Poljanska cesta 40, Ljubljana

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Template for presentation of new research equipment



Confocal microscope LSM 800

3D analysis of materials and identification and mapping of macromolecules.



- equipped with 405, 488, 561, 638 nm lasers → immunofluorescence materials characterisation and topographic analysis
- for characterisation of proteins in cross-sections, their degradation and observation of their eventual migration towards the surface

Owner institution: ZVKDS IPCHS

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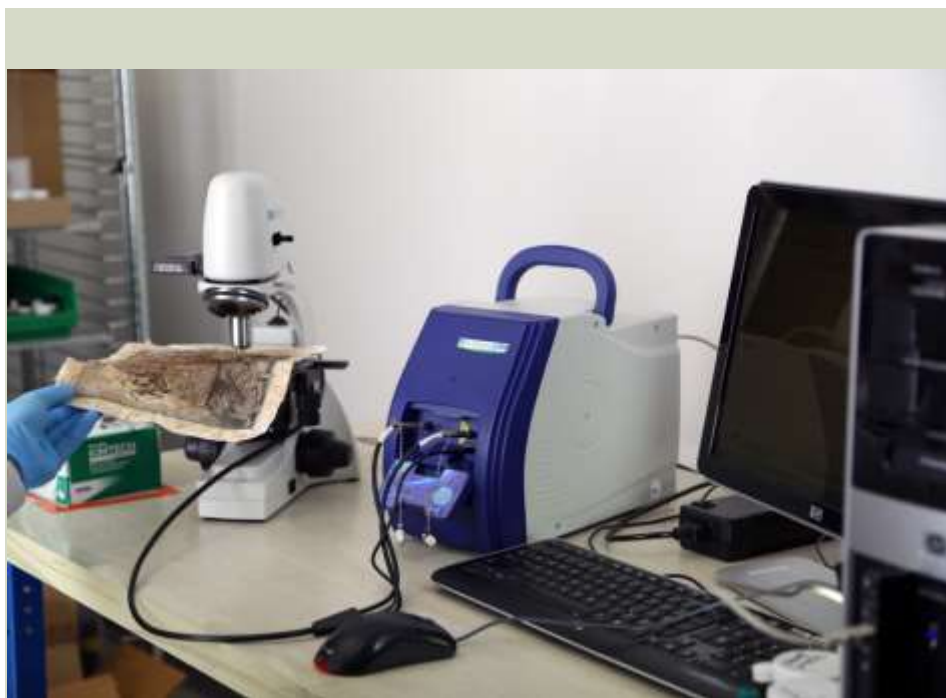
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B&WTEK, model iRaman Plus

material identification (mainly inorganic), qualitative and quantitative Raman analysis



- Highly Sensitive, High Resolution Fiber Optic Raman System
- portable, hand held Raman spectrometer
- 532nm laser excitation
- delivers an improved signal to noise ratio for up to 30 minutes of integration time, making it possible to measure weak Raman signals

Owner institution: ZVKDS IPCHS

Location: Poljanska cesta 40, Ljubljana

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Source: <http://bwtek.com/products/i-raman-plus/>



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Template for presentation of new research equipment



BRAVO Handheld Raman Spectrometer

material verification and identification (including dark, fluorescing and weak scattering samples)



- BRAVO features Duo LASER™ excitation with two wavelengths resulting in high sensitivity across the entire spectral range
- an automated wavenumber calibration for highly precise measurements

Owner institution: ZVKDS IPCHS

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Source: <https://www.bruker.com/>



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Template for presentation of new research equipment



X-Ray Fluorescence Spectrometer ELIO (Bruker)

The compact and portable X-ray fluorescence spectrometer for elemental analysis of valuable materials.



- It delivers high performance, accuracy and precision in the most demanding applications.
- for in-situ, fast, non-destructive and non-invasive analyses on **printed materials**, (documents, books, parchments, manuscripts), metals, jewels, ceramic objects, seals, glass objects, paintings, frescos, marbles, material research and elemental analysis in general.

Owner institution: ZVKDS IPCHS

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Source: <https://www.bruker.com/>