**System AFM-Raman**

**Equipment: System AFM-Raman**

**No. of Equipment: UPOL9**

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**Equipment Description**

**Description of equipment:**

Scanning probe microscope, NTEGRA Spectra which integrates common SPM and micro Raman scattering spectroscopy. AFM-Raman system delivers nondestructive analysis of the sample surface.

**Acquired information**

Available modes: AFM, phase imaging, MFM, CM, STM, EFM. All modes can be combined with Raman spectroscopy.

Raman spectra could be obtained from a single spot, defined area or as a depth profile (3D map).

Measurements available at ambient and liquid conditions with atomic resolution

System is equipped with lasers operating at 532nm (green) and 785nm (near IR)

Spectral resolution of the Raman system is lower than 1 cm-1

Spatial resolution of Raman system for 2D and 3D mapping is below 500 nm

System allows to perform an analysis of various chemical targets at ultra-low concentration levels using SERS (Surface enhanced Raman scattering)

**Specification of expertise relevant to NanoEnviCz workpackages:**

**WP3**a,c,d,h, **WP8**a-d,f,

**Detailed description of expertise**

**Please, specify the main research topics connected with equipment**:

Characterization of synthetized nanomaterials.

Characterization of topography, phase imaging, conductivity, magnetic properties, chemical composition.

**Please, specify the secondary research topics connected with equipment**:

Development of sensors for analysis of selected chemical targets including pollutants, physiologically active compounds, etc.

Analysis of chemical targets at ultra-trace concentration limits using Surface Enhanced Raman Spectroscopy.

**Keywords describing research area:**

AFM, Raman , characterization, sensors, SERS

**Competence**

**Relevance for applied and industrial research:**

Reliable characterization of advanced materials by AFM and Raman imaging. Characterization of sample topography, surface conductivity and magnetic properties. Raman mapping of advanced samples with a spatial resolution bellow 50 nm.

**Relevance for fundamental studies:**

Study of surface enhanced Raman scattering. Fundamental studies of interactions of advanced nanomaterials with biopolymers.