**X-ray difractometer Panalytical X**

**Equipment: X-ray difractometer Panalytical X Pert PRO MPD**

**No. of Equipment: UJEP5**

**Responsible coordinator**: prof. RNDr. Pavla Čapková, DrSc.

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**Equipment Description**

**Description of equipment:**

Universal XRD powder diffractometer, with Cu Kα x-ray tube. Measurements could be done in reflection and transmission mode. The device is equiped with smart detector, kolimator , Göbbel mirror and Euler stage.

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

**WP3**a,c-g, **WP4**a,b, **WP6**a,b,e, **WP7**a-d,g,h

**Detailed description of expertise**

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

Identification of unknown crystalline phase; Qualitative and quantitative phase analysis of polycrystalline materials;

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

Determining the degree of crystallinity in partially amorphous materials - applicable to polymeric materials including nanofibers; Profile analysis of diffraction lines for estimation of lattice strain and the size of crystallites. Texture analysis in polycrystalline materials including nanofibers and nanocoatings.

**Keywords describing research area:**

Phase analysis of materials, structure analysis of nanomaterials, lattice parameters, lattice strain, crystallinity.

**Competence**

**Relevance for applied and industrial research:**

Structure and phase analysis of polycrystalline or partially crystalline materials, including nanomaterials (thin films, nanofibers) for a wide scale of industrial applications.

**Relevance for fundamental studies:**

Understanding the relationship technology-structure-properties of materials and nanomaterials in order to optimize the technology for desirable properties of materials.