**High resolution transmission electron microscope**

**Equipment:** High resolution transmission electron microscope HRTEM FEI Talos F200X

**No. of Equipment:** UACH16

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**Equipment Description**

High resolution transmission electron microscope HRTEM FEI Talos F200X

Technical parameters:

* electron source: X-FEG
* accelerating voltage: 80–200 kV
* point to point resolution in TEM mode: 0,12 nm
* STEM-HAADF resolution: 0,14 nm
* microscope is equipped with SuperX for analytic methods EDS
* special sample holders: double-tilt holder with low background for EDS
* Plasma cleaner for holders, so it is possible to purify the surface of samples
* CETA with 4k resolution

**Specification of expertise relevant to NanoEnviCzworkpackages:**

**WP3**a,c-h, **WP4**a,b, **WP5**c, **WP6**a,e, **WP7**a-c,h,i

**Detailed description of expertise**

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

TEM images with height resolution are measured for the nanomaterials as metal oxides, carbon based samples for particle size up to 100nm.

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

Control of elementary composition of nanoparticles and visualization of distribution of elements of nanocomposite materials.

**Keywords describing research area:**

High resolution transmission electron microscope (HRTEM), nanoparticles, Scanning transmission electron microscope (STEM), Energy-dispersive X-ray spectroscopy (EDS), element mapping,chemical composition

**Competence**

**Relevance for applied and industrial research:**

High resolution measurement of powder materials in the atomic scale with confirmation of the elemental composition and crystal structure for particle size up to 100nm.

**Relevance for fundamental studies:**

The identification of nanoparticles – quality of production, size and shape, determination of d-spacing, projection of atomic structure

Confirmation of chemical composition – elemental mapping, EDS spectra