**Scanning electron microscope**

completed by responsible coordinator of equipment

**Equipment:** Scanning elektron microscope Hitachi S4800

**No. of Equipment:** UFCH22

**Responsible coordinator:** Doc. Ing. Petr Krtil, CSc.,

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**Equipment Description**

Field emission scanning electron microscope FESEM model Hitachi S-4800

Technical parameters:

* electron source: Cold Field Emission Gun
* accelerating voltage: 500 V – 30 kV
* Magnification: 30x to 800,000x
* Resolution: 2 nm
* Specimen stage: tilting (0°- 45°) and rotation available (0°- 90°)
* Maximum specimen size: 4-5 cm (height 1-2 cm)
* microscope is equipped with EDS detector Noran System Six for elemental analysis
* Resolution for elemental mapping: cca 100nm diameter

**Specification of expertise relevant to NanoEnviCz work packages:**

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

**Detailed description of expertise**

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

SEM images are measured for the micro/ nano-scaled materials such as metal oxides with particle size down to 10-15nm.

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

Analysis of elementary composition of nanomaterials.Visualization of distribution of elements of composite materials is possible.

**Keywords describing research area:**

Scanning electron microscope (SEM), nanoparticles,Energy-dispersive X-ray spectroscopy (EDS), element mapping, chemical composition.

**Competence**

**Relevance for applied and industrial research:**

High resolution measurement of solid materials in the micro or nano-scale with qualitative and quantitative microanalysis of the elemental composition. Surface analysis of alloys, protective coatings, (photo)catalytically active films, determination of the size of the pores in filters, membranes, sorbents, thickness of nanofibers etc.Confirmation of chemical composition – elemental mapping, EDS spectra.

**Relevance for fundamental studies:**

The identification of low dimensional materials and their composites for heterogeneous catalysis – quality of production, size and shape of nanoparticles.

**Comments**