**[ZetaSizer NanoS](http://www.jh-inst.cas.cz/nanocentrum/instruments.php?stav=view_detail&dokument=1" \o "Zobrazit)**

**Equipment:** *Zetasizes Nano (ZS)* for synthesis of nanomaterials

**No. of Equipment: UFCH1**

**Responsible coordinator:** Ing.Jiří Rathouský CSc.

**Name of Institution:** J. Heyrovsky Institute of Physical Chemistry of the ASCR, v. v. i.

**Address of Institution:** Dolejškova 2155/3, 182 23 Prague 8, Czech Republic,

**E-mail:** jiri.rathousky@jh-inst.cas.cz

**Telephone:** +420 26605 3945

**Homepage:** http://www.jh-inst.cas.cz

**Contact person:** Radek Žouželka M.Sc..

**E-mail:** radek.zouzelka@jh-inst.cas.cz

**Telephone:** +420 26605 3945

**Equipment Description**

**Description of equipment:**

Non-invasive back scatter (175 degrees) technology takes particles sizing to new levels of sensitivity in the nanometre to micron range size. ZS provides ability to measure three characteristics of particles or molecules in a liquid medium.

Specifications and technical features:

Little or no dilution necessary

Colloid size and size distribution

Zeta potential measurements

Molecular weight measurements

Nanoparticles

Emulsion

Size range maximum: 0,6 – 6000 nm

Size range for zeta potential: 3,8 – 100 000 μm

Volume range: 12 – 1500 μL

Temperature range: 0-90 °C

Maximum sample concentration: ˃ 30 w/v % (for sizing application)

Minimum sample concentration: 0,1 ppm

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

**WP3**a,c-g **WP5**c, **WP6**a,b,d, **WP9**a,b

**Detailed description of expertise**

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

* Wide range measurements of molecules and nanoparticles including proteins, emulsions and vesicles, as well as particles such as metals, metal oxides and/or hydroxides
* Measuring zeta potential of samples
* Measuring CMC
* Measuring the stability of colloidal solution

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

* Measuring of molecular weight

**Keywords describing research area:**

zeta potential, particle size, stability of material, particle charge

**Competence**

**Relevance for applied and industrial research:**

Determination of particle size distribution for research in the field of nanostructured materials.

Comparison of the particles size if is in agreement with electron microscopy.

Understanding of materials structure/stability for further novel research.

Waste water treatment-measuring of zeta potential is fundamental in the development and maintenance of optimized water treatment protocols.

**Relevance for fundamental studies:**

Studying kinetics of the formation of nanoparticles.

Studying the changes in zeta potentials of material in the presence of multivalent ions.