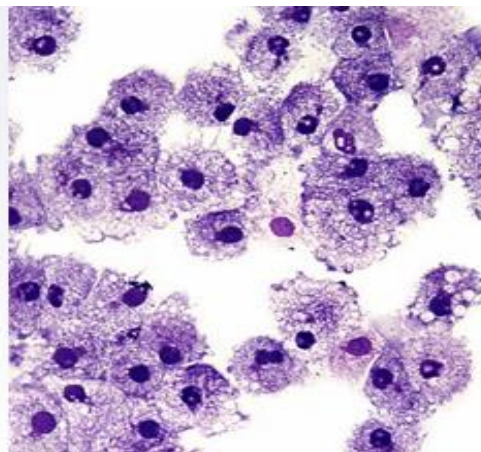




The University of West Bohemia has nine faculties with more than 60 departments and two institutes of higher education. Nearly 15,000 students can choose from a wide range of Bachelor, Master and PhD study programmes.



NEW TECHNOLOGIES RESEARCH CENTRE

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Engineering of Special Materials

NEW TECHNOLOGIES RESEARCH CENTRE

The University of West Bohemia, Univerzitní 8, Pilsen, Czech Republic

<http://ntc.zcu.cz/en/>

► **Material science topics**



► **Synthesis of self-design materials**



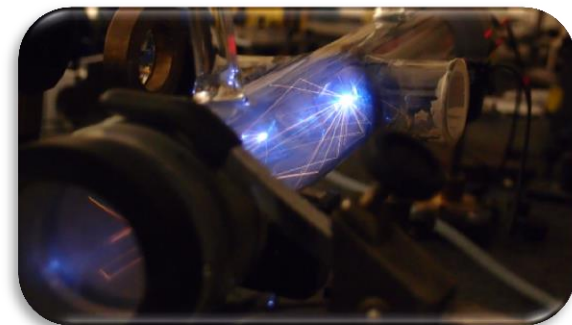
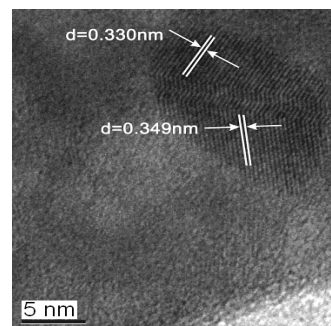
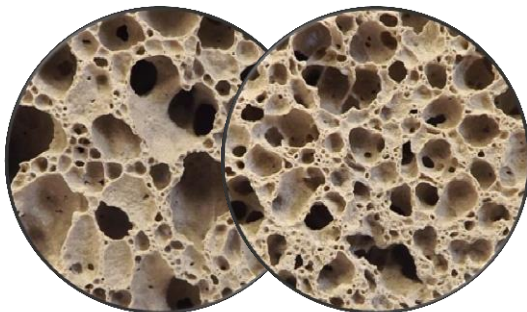
► **Hierarchically porous materials as a variable ceramic substrates**



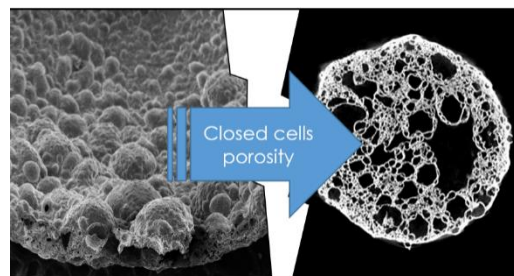
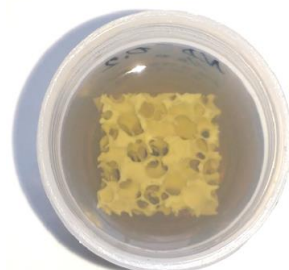
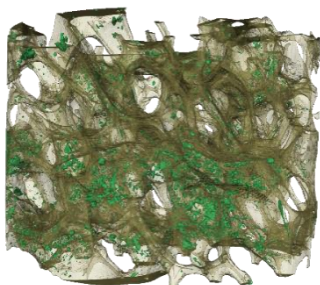
► **Preparation of catalytic colloids through laser ablation techniques**



► **Fundamental research of surface functionalization**



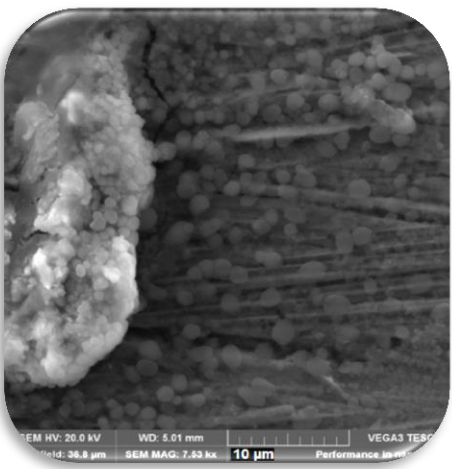
- ▶ We are developing nanomaterials and nanocomposite materials for the decomposition of **resistive organics in waste water** (ATB, and the other pharmaceuticals pesticides ...)
- ▶ We are focusing on AOP (**Advanced Oxidation Processes**) such as Fenton/Fenton-like reactions and on **photocatalytic** processes.
- ▶ Preparation of catalytic colloids.
- ▶ Formation catalytic **geopolymeric porous filters** for adsorption and degradation of resistive organics.
- ▶ Research of permeability, mechanical properties and catalytic activity of obtained **nanocomposite porous materials**.



Example of the preparation:

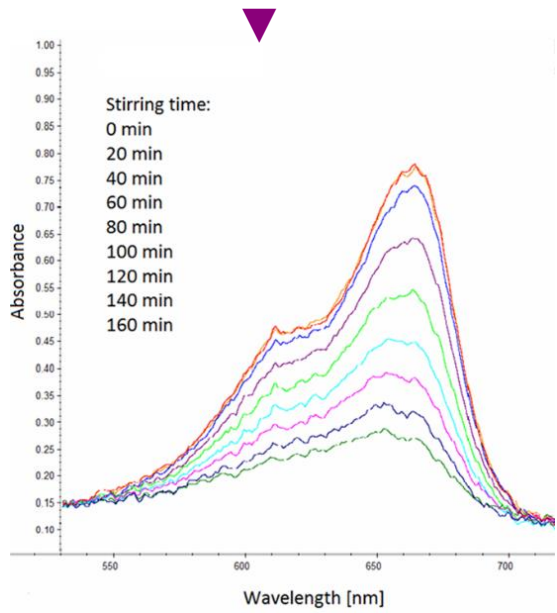


- ▶ Preparation of catalytic colloids (magnetite, selected spinels, cobalt and iron sulfides...)
- ▶ Adsorption of catalytic NPs on ceramic porous substrate
- ▶ Alumina foam before adsorption
- ▶ Alumina foam after adsorption



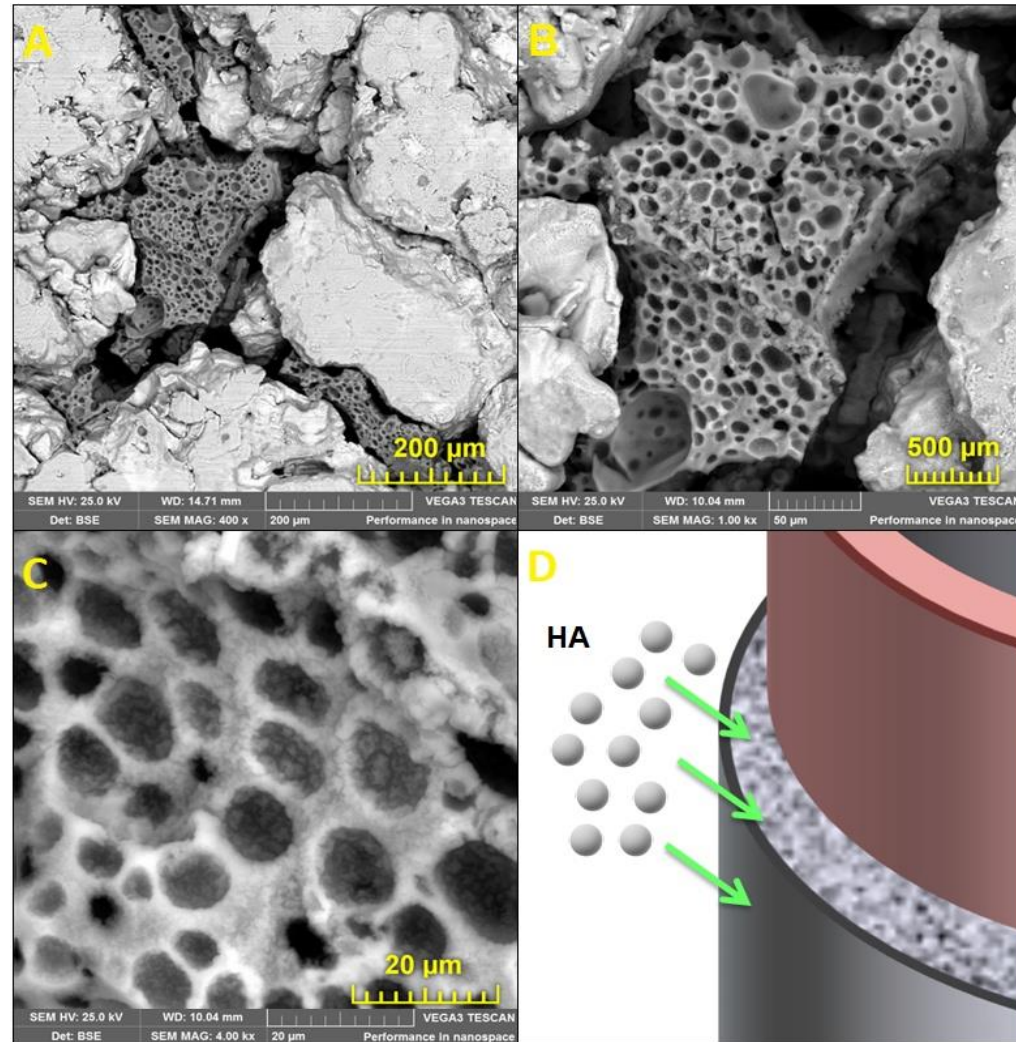
- ▶ Morphology of adsorbed catalytic particles

- ▶ **Measurement of catalytic efficiency – methylene blue decomposition**
- ▶ **Decomposition of selected antibiotics**



In the field of biocompatible materials we are developing:

- ▶ Catalytic nanoparticles for enhancing osseointegration.
- ▶ Textured surfaces with suitable morphology for bone cells growing.
- ▶ Bioactive glasses improving interface between metal implant and the bone.



- ▶ Particle size distribution from nm → mm
 - ▶ Surface characterization
 - ▶ Chemical composition
- ▶ Thermal and viscoelastic properties



SAXS/GISAXS



PSD



DVS



IGC-SEA



WDXRF



DMA



INTER-ACTION (VES19IZRAEL)

<http://www.msmt.cz/vyzkum-a-vyvoj-2/vyhlaseni-verejne-souteze-ve-vyzkumu-vyvoji-a-inovacich-2?lang=1>

Bilateral cooperation

Deadline: 31 Jan 2019 (1 mil. EUR)

Call CE-NMBP-25-2019: Photocatalytic synthesis (RIA)

Deadline: 03 Sep 2019

https://www.up2europe.eu/calls/photocatalytic-synthesis-ria-ria-research-and-innovation-action-ce-nmbp-25-2019_2064.html

Call NMBP-21-2020: Custom-made biological scaffolds for specific tissue regeneration and repair (RIA)

Focus area topic(s) for 2020 will defined (122 mil. EUR)

https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/h2020-leit-nmbp-2018-2020_pre-publ.pdf



EuroNanoMed III: announced transnational call for proposals (2019) for European innovative projects in Nanomedicine

<https://etp-nanomedicine.eu/euronanomed-iii-announced/>

Submission deadline for pre-proposals: 31st January 2019

University of West Bohemia

New Technologies – Research Centre

Univerzitní 8 | 306 14 | Plzeň | Česká Republika

Contact person:

Ing. Tomáš Kovářík, Ph.D.

E-mail: toko@ntc.zcu.cz

Tel.: +420 702 210 188

Web: <http://ntc.zcu.cz/en/>