

CV - Barbara Pacáková (born as Bittová)

*12 March 1987, Trenčín, SR
Čimická 883/143, 181 00, Prague 8, CZ

barbara.pacakova@gmail.com
+ 420 732 976 489 (CZ) +47 485 09 263 (NO)

Education

2015, June **Ph.D. in Physics of Nanostructures**

- Faculty of Mathematics and Physics, Charles University in Prague (MFF UK) and Institute of Physics of the CAS, v.v.i. (FZU).
- Ph.D. thesis '*Structure and magnetic interactions in nanomaterials with application potential*'

2010, June **MSc. in Condensed Matter Physics**

- MFF UK, Dept. of Condensed Matter Physics. Master thesis '*Magnetic nanostructures with application potential*'.

2008, June **BSc. in General Physics**

- MFF UK. Bachelor thesis '*Superparamagnetism in nanomaterials*'.

Employment/Research

2017-now **Norwegian University of Science and Technology Trondheim, Norway**

- **Researcher, Post-doc Researcher** (March 2017 – now)
Research in the field of nanomaterials – clays (layered silicates), graphene, capture of antibiotics, gases and toxic dyes in layered materials. Design of experiments, sample synthesis, synchrotron diffraction experiments, SPM, XRD (SAXS/WAXS) and XPS.

2022 – now **Visiting Researcher** in a group of prof. Babak Anasori, **Purdue University, USA**. MXene synthesis and applications.

2011– 2017 **Czech Academy of Science; Institute of Physics of the CAS, v.v.i. (FZU), and J. Heyrovsky Institute of Physical Chemistry, Prague, Czech Republic**

- **Researcher** (June 2015 – March 2017, Full-time FZU), **Junior researcher** (January 2011-June 2015, Full-time FZU). Research in the field of magnetic nanoparticles (NPs), NP based systems, carbon materials (carbon nanotubes, graphene).
- **Scanning Probe Microscopy** (AFM, MFM, C-AFM, EFM, TERS). SPM at ambient/low temperature/high magnetic field. Veeco Multimode V, Bruker Dimension Icon, Attocube attoAFM, AIST-NT OmegaScope and CombiScope + Horiba Raman spectrometer. Experiment + maintenance/training + advanced data analysis (MATLAB, Gwyddion, Inkscape etc). **Diffraction techniques** (X-ray + synchrotron + neutron diffraction and reflectivity). Experiment and refinement of crystal/magnetic structure, NP size/size distribution (FullProf, MStruct). **Magnetometry** (SQUID, PPMS9/14: TqM, VSM, Resistivity). Powders, ferrofluids; interacting NP systems. **Synchrotron experiments** (ARPES, EXAFS).

Publications/review activity

- **ResearcherID: H-1302-2014** • 30 publications with IF (1 invited review, 1 book chapter, 14 publ. as 1st author, 7 as 2nd author)
• ACS Nano, Nanoscale, Phys. Rev. B, J. Phys. Chem. C, Carbon, Sci. Rep. etc. • > 460 citations, H-index = 13 • reviews for *Applied Surface Science*, *Journal of Magnetism and Magnetic Materials*, *npj 2D Materials*

Grants

Principal investigator: • GAUK no. 1302313 (2013 – 2014) - '*Study of graphene-nanoparticle based systems*', grant by Charles University.

Key member of the research team (at FZU): • MULTIFUN (2012 – 2015) - '*Multifunctional Nanotechnology for Selective Detection and Treatment of Cancer*', European 7th Framework Research Programme. • Grants no. P204/10/1677 (2010 - 2014) and no. GA15-01953S (2015 - 2017), Czech Science Foundation.

Teaching

2023-now **Researcher on a screen, NTNU** • popular lectures for high school students

2021-2024 **Lectures in Soft and Complex matter course, NTNU**

2014, 2016 **Introduction to Condensed Matter Physics (lecture exercises)** • Faculty of Science, Charles University.

2006 – 2011 **Summer School for Young Physicists and Mathematics (MFF UK)** • Head of the scientific program (2007, 2010, 2011).
• Lecturer, advanced courses in Physics (2010 - Optics, 2011 - Basics of Condensed Matter Physics), Mathematical Analysis (2006, 2007); Consultant – projects in Physics.

Training

2014 **BESSY II (Helmholtz Zentrum Berlin, Germany)** • U49-2_PGM-2 beamline (PES, UHV system), 1 month.

2012 **HERCULES 2012** • ESRF, ILL and CNRS ; PSI Villigen. School of neutron and synchrotron techniques, 1 month.

2009 **European School on Magnetism, Timisoara, Romania**

2008 **CSIC Madrid, Spain** • Preparation of superparamagnetic nanoparticles and their characterization. 3 weeks.

Neutron Scattering Course Julich, Germany

Schola Ludus, Czech Republic • Int. summer school, Nové Hradky, Czech Republic. AFM – force spectroscopy. 1 month.

Awards

- The best poster Geilo Winter school 2023 • Nomination for the best poster prize MRS Boston Fall meeting 2022 • prize Milan Odehnal Prize 2012. • Best poster prize ICC3 Osaka 2010 (poster '*Magnetic Force Microscopy Studies of Superparamagnetic Nanoparticles*'). • 2nd prize at Czechoslovak Student Scientific Conference 2010 (Bratislava, Slovakia). • Dean Award for the Best Bachelor Work in 2008 (MFF UK, Bachelor work '*Superparamagnetism in Nanomaterials*').

Conferences

- Oral talks (invited) – International workshop in Soft and Complex Matter physics 2020-2024 • NanoOstrava 2021, IWAN (2011-2013). • Posters – MRS Boston (2018-2023), NanoNet (2016), Graphene week (2013, 14, 24), Microspheres 2014, Euro-nanoforum 2013, ICC3 2012, ICM 2009, ICFPM 2010, Intermag 2008 and others.

Other: • programming (**Matlab**, Python), **Machine learning** (Stanford University, CS229-online, 2021, 4 months), LaTeX