

# Curriculum Vitae



Romana Mikšová

## Personal data

**Born** 1.11. 1982, Rakovník, Czech Republic  
**Nationality** Czech  
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**Family** 3 children (2012, 2014, 2018)

## Education

**2011 – 2018** Faculty of Science, J. E. Purkyně University in Usti nad Labem  
Doctoral program: Physics  
Field: Computer methods in science and technology  
(2017 – PhD, 2018 – RNDr title)

**2004 – 2009** Faculty of Pedagogy, J. E. Purkyně University in Usti nad Labem  
Master's degree program: Pedagogy at secondary schools a Physics  
Field: Mathematics and Pedagogy of physics at secondary schools  
(2017 – PhD title, 2018 – RNDr title)

## Work experiences

**2022 – Present** Nuclear Physics Institute of the CAS in Řež, Department of Neutron Physics  
- A senior scientist  
- Deputy head of the Department of Neutron Physics

**2018 – 2022** Nuclear Physics Institute of the CAS in Řež, Department of Neutron Physics  
- A postdoc position (2018-2020 – part-time job due to maternity).

**2011 – 2018** Nuclear Physics Institute of the CAS in Řež, Department of Neutron Physics  
- PhD student (2012-2016 – part-time job due to maternity)

**2008 – 2011** Nuclear Physics Institute of the CAS in Řež, Department of Neutron Physics  
- Master student

**2020 – 2022** Regional methodist for physics in Usti nad Labem  
- Popularization of physics, organizing lectures and physical experiments in schools.

**2010 – 2012** The primary school Nová in Ustí nad Labem  
- teacher of mathematics and physics

## Scientific experience

I have experience with accelerator technology for the synthesis of nanostructures and the characterisation of amorphous and crystalline materials with energetic ions. My work includes:

- Study and measurement of the electronic energy loss and straggling of the energetic ions in polymers, crystals, and graphene. Comparing with the existing semi-empirical approaches in simulation programs SRIM, TRIDYNE,

MSTAR and theoretical approaches (Bohr, Bethe-Livingston et al.). The completion of the international database (Paul's database);

- Material characterisation with ion beam analytical methods, Rutherford backscattering spectroscopy (RBS) and elastic recoil detection analysis (ERDA) for determining samples stoichiometry and atoms depth profiling, focusing on the study of synthetic polymers implanted metal ions;
- UV-Vis measurements analysis, determination of the surface concentration of composed of (Zr (W, Nb)-B-C, DLC etc.), analysis of samples of carbon allotropes;
- Ion implantation with medium energy ions into amorphous and crystalline materials, preparation of nanostructures in the crystalline materials with metal ion implantation, improvement of the instrumentation parts of the implantation chamber;
- The RBS in channelling mode is employed for the crystal structural characterization, enabling the determination of the relative quantity of displaced atoms within implanted crystals and the precise localization of dopant positions, special focusing on crystalline materials such as ZrO<sub>2</sub>, Si, SOI, GaN or ZnO, comparison with the MC simulation FLUX code;
- The characterization of polymeric membranes featuring 2D chalcogenide layers involves optimizing their structures for utilization as photocatalytic filters.

### International experience and cooperation:

- In the frame of my work, we have a long-term collaboration with Ion Beam Center in Helmholtz Zentrum Dresden-Rossendorf, Germany. We are also collaborating with the RADIATE consortium of European ion beam centres. I visited this workplace twice for measurements (2012, 2020: 2 weeks);
- In the frame of my Master's study, I completed a retreat in Krakow at the Pedagogical University of Krakow, where I studied Physics, Mathematics, English and Polish (2005: 6 months).

### Scientific awards:

2017 - University J. E. Purkyně Rector's Prize for Students for Extraordinary Results in Research, Development, Artistic or other Creative Activities

2013 - University J. E. Purkyně Rector's Prize for Students for Extraordinary Results in Research, Development, Artistic or other Creative Activities

### Projects participations:

1. OP JAK CZ.02.01.01/00/22\_008/0004558, The advanced multiscale materials for key enabling technologies (2024-2028)
2. OP JAK CZ.02.01.01/00/22\_008/0004583, Ferroic multifunctionalities (2024-2028)
3. GAČR 23-06702S, Graphene oxide electronic structure modulation by intentional doping and defect introduction by ion beams for microelectronics, catalysts and sensors (2023-2025)
4. GAČR 22-10536S, Advanced hierarchical nano/microstructures for microfluid and lab-on-chip applications prepared by electron and 3D ion beam lithography (2022-2024)
5. GAČR 19-02482S, Synthesis of advanced microstructures in the innovative polymers and nanocomposites by the method ion beam microstructuring (2019-2021)
6. UJEP-SGS-162-07-01, Nanostructured materials based on crystals and amorphous materials for optics and optoelectronics (2016 - 2017)
7. GAČR 18-03346S, Optical active centres and microstructuring in ZnO and cubic ZrO<sub>2</sub> (2018-2020)
8. GAČR 15-01602S, Preparation and characterization of optical nanostructures by energetic ion beams (2015 – 2017)
9. UJEP-SGS-53-222 15 0001 01, Study of the interaction of energetic ions with a solid and preparation of nanostructures with significant properties for photonics and spintronics (2014-2015)
10. UJEP-SGS-53222-15-0003-01, Study of nanostructures in amorphous and crystalline materials prepared by ion implantation (2012- 2013)

Articles with citation data: 57

The sum of the times cited (WOS): 457

H-index (WOS): 13

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