

## **RNDr. Klára Beranová, Ph.D**

**Date of birth:** 6. 12. 1985

**Place of Birth:** Jihlava, Czech Republic

**Citizenship:** Czech

**Marital status:** married

**Maiden name:** Ševčíková

**Children:** 2 (born 19. 9. 2017 and 7. 10. 2020)

**Permanent residence:** Náměstí Osoboditelů 1364/3, Praha 16 – Radotín, 15300, Czech Republic

### **Scientific identifications:**

- **ORCID ID:** 0000-0001-5024-6349
- **SCOPUS ID:** 57197765121
- **Researcher ID:** W-5939-2018

### **Education:**

- **RNDr.** 9. 12. 2015, Physics of Surfaces and Interfaces, Charles University, Czech Republic
- **Ph.D.** 22. 9. 2015, Physics of Surfaces and Interfaces, Charles University, Czech Republic
- **Mgr.** 2010, Physics of Surfaces and Plasma, Charles University, Czech Republic
- **Bc.** 2008, General Physics, Charles University, Czech Republic

### **Current position:**

1. 1. 2020 – present

Researcher at the FZU - Institute of Physics of the Czech Academy of Sciences, Division of Solid State Physics, Department of Optical Material

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### **Previous positions:**

1. 1. 2017 – 31. 12. 2019

Post-doctoral fellow at the Department of Optical Materials of the Institute of Physics at Czech Academy of Sciences, Prague, Czech Republic (financial support awarded by “Program for supporting promising human resources – financial support for post-doctoral researchers at Czech Academy of Sciences, L100101701”)

1. 12. 2015 – 30. 11. 2016

Post-doctoral fellow at the Materials Science beamline, synchrotron Elettra, Trieste, Italy  
Supporting users and providing assistance with the experiments at the Materials Science beamline designed for soft X-ray photoelectron spectroscopy and X-ray absorption spectroscopy. Own research focused on synthesizing and characterizing the Au@CeO<sub>2</sub> core@shell nanostructures.

12. 6. 2011 – 13. 6. 2012

Special research student at the NIMS Beamline Station, synchrotron SPring-8, Sayo, Japan  
Providing assistance with the photoemission experiments at the NIMS Beamline Station (BL15XU) and operating the HEAP Lab experimental station designed for hard X-ray photoelectron spectroscopy. Own research focused on studying cerium oxide thin films doped by rhodium.

### **Leaves of absence:**

- 2<sup>nd</sup> maternity leave (24. 8. 2020 – 31. 12. 2021)
- 1<sup>st</sup> maternity leave (11. 8. 2017 – 1. 10. 2018)

**Fields of expertise:**

Surface science, surface chemistry and catalysis, synthesis of nanoparticles, cerium oxide.

H-index 12, 34 scientific papers in international journals with impact factor with more than 750 citations (589 citations without self-citations).

Experienced in analysing electronic structure and chemical composition of solids, identifying bonding states of adsorbates by means of X-ray Photoelectron Spectroscopy (from hard to soft X-rays), Resonant Photoelectron Spectroscopy (RPES), X-ray Absorption Spectroscopy (XAS) and Near-Edge X-ray Absorption Spectroscopy (NEXAFS). Additionally, experienced in analysing surface chemistry by means of Temperature Programmed Desorption/Reaction and UV-vis spectroscopy.

**Language proficiency:**

- **Czech:** native language
- **English:** standard
- **French:** basic

**Recent activities related to the project:**

My research has been revolving around cerium oxide since my studies. I started with the system comprising of rhodium particles supported by cerium oxide thin films and focused on the interaction of these two components and how this interaction influences surface chemistry of the whole system. I led two successful student projects (funded by GAUK) regarding this topic and used the results in my thesis.

After graduation in 2015, I started researching Au@CeO<sub>x</sub> core@shell nanoparticles as a post-doctoral fellow under supervision of Prof. Kevin C. Prince at Materials Science Beamline (MSB) at Elettra in Italy. I was learning how to synthesize nanoparticles and investigating the interaction of methylene blue with CeO<sub>x</sub> and Au model systems (including Au nanoparticles). I succeeded in coating the Au nanoparticles by uniform shell of cerium oxide only after moving to FZU – Physical Institute of Czech Academy of Sciences. Since the primary purpose of my research was studying photocatalytic activity of the Au@CeO<sub>x</sub> core@shell nanoparticles, I focused my experiments on investigating changes induced by visible light irradiation. I noticed that illuminating the Au@CeO<sub>x</sub> core@shell nanoparticles by green light leads to significant increase of Ce<sup>3+</sup> concentration in cerium oxide shell. Further experiment had to be postponed because of my two consecutive maternal leaves.

Recently, I resumed working at FZU as a part of a well-established scientific group and I am continuing with my research regarding the Au@CeO<sub>x</sub> core@shell nanoparticles.