



Luděk Vyšín

Age: 41, married
Nationality: Czech

Postdoctoral researcher

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Education

- Feb. 2019** **Czech Technical University in Prague,**
Faculty of Nuclear Sciences and Physical Engineering (FNSPE)
- Ph.D. in Nuclear Chemistry
- 2008** **Czech Technical University in Prague,**
Faculty of Biomedical Engineering
- MSc. in Biomedical and Clinical Technology

Academic Background

- 2008 - present** **Institute of Physics of the Czech Academy of Sciences,** Prague,
Czech Republic
- Postdoctoral fellow at the Department of Radiation and Chemical Physics
- Research activities focused on damage to materials induced by intense extreme ultraviolet, soft X-ray and X-ray radiation.
 - Studies comparing an action of energetic photons and charged particles on molecular and elemental systems.
 - Spatial characterization of emission from various pulsed nanosecond and femtosecond sources of ionizing radiation.
 - Investigation of radiation-induced damage to various materials using mass spectrometry technique.
- 2021** **Colorado State University,** Fort Collins, CO, USA
- Affiliate of the college of Electrical Engineering at the Engineering Research Center for Extreme Ultraviolet (EUV) Science and Technology – Laboratory for Advanced lasers and Extreme Photonics: six-month intense operation of the laser ablation mass spectrometer under supervision of prof. J. J. Rocca and C. S. Menoni.

2010 - present **Nuclear Physics Institute of the Czech Academy of Sciences,**
Prague, Czech Republic

Fellow researcher providing chemical dosimetry in experiments using accelerated electrons, protons and heavy ions.

Competences & Experience

Focused laser beam characterization

Research focused on techniques which enable accurate characterization of intense soft x-ray and extreme ultraviolet radiation generated by nanosecond and femtosecond pulsed laser sources. Innovations in 2016 beam characterization methods that allow more accurate determination of the focal position to achieve maximum energy density, an important factor in many laser-matter interaction experiments. Characterizations of focused beams have been performed in many experiments carried out in several foreign high-power laser facilities such as FLASH, FLASH2, XFEL in Germany, LCLS in the USA or Fermi in Italy and synchrotron radiation sources (Elettra - Italy).

Incoherent radiation sources

Beam properties measurement of plasma-based sources including incoherent sources in the soft X-ray and extreme ultraviolet spectral range: secondary sources driven by Prague Asterix Laser System (PALS) - Czech Republic, desktop source with emission in and out of the water window spectral range at WAT - Warsaw.

Radiation chemistry

Irradiation of cellular and biomolecular (e.g., DNA and phospholipids) systems with soft X-ray and XUV radiation, analytical and separation techniques (chemical dosimetry, absorption and emission spectrophotometry, incl. Raman spectroscopy, agarose gel electrophoresis, HPLC (LC-MS), enzymatic treatment, comet assay, clonogenic assays, etc.).

Sample analysis

Irradiated samples characterization by various optical methods: microscopy (DIC), Raman spectrometry, UV-Vis spectrophotometry and Optical emission spectroscopy (OES) or by other analytical methods: photoelectron spectroscopy (ESCA), atomic force microscopy or scanning transmission electron microscopy.

Publication Activity

Author and co-author of **52 impacted journal papers (7 of them as first and/or corresponding author)**, **h-index: 17** according to the Web of Science, number of citations without self-citations: **1248**.

Education of Students

Master's degree completed: K. Tomanová: 2016, M. Černík: 2022.

In progress: L. VEDIASHKINA: bachelor's degree to be completed in 2023.

Mentoring: J. Bulička, V. Scheinpflug, degrees to be completed in 2023.