Petr Stepanov

Material Scientist. Nuclear Chemist.

 [stepanovps@gmail.com](mailto:stepanovps@gmail.com)  419-496-86-02  [petrstepanov.com](https://petrstepanov.com/)  [scholar.petrstepanov.com](https://scholar.google.com/citations?hl=en&user=S5etjqoAAAAJ&view_op=list_works&sortby=pubdate)

# Objective

Highly motivated experimental scientist with expertise in gamma spectroscopy, positron annihilation spectroscopy, microscopy and nuclear physics. A strong background in computational techniques, web and desktop software development.

Currently I am actively looking for jobs in following areas: physics, chemistry and computer science. I have an authorization to work in US on Optional Practical Training (OPT). Alternatively, I will consider H1B Visa sponsorship offers.

# Education

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| Bowling Green State University | Aug 2014 → now |

Doctor of Philosophy in photochemical sciences.  
Dissertation topic: Development of positron annihilation spectroscopy: from experimental setups to advanced processing software.

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| National Research Nuclear University | Sep 2004 → Feb 2011 |

Bachelor and Master of Science in solid state physics.

Thesis topic: Radiation defect studies of nuclear power plant vessel steels by means of positron lifetime annihilation spectroscopy.

# Work experience

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| Research Assistant, Software Developer | Sept 2014 → now |

@Bowling Breen State University, Ohio (United States)

Material science research, interaction of ionizing radiation with matter, radiation defects in solids, radiation chemistry. Gamma-spectroscopy. Positron annihilation spectroscopy. Maintaining and tune-up of fast-timing ORTEC electronics. Manufacturing of the radioactive positron sources.

Developing desktop software solutions (C++, ROOT) for acquisition, storing and treatment of raw experimental data and development and verification of theoretical models. Developing websites for research groups and international meetings and conferences.

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| Computer Science Teacher | Apr 2011 → May 2013 |

@Phys-Tech College at Moscow Institute of Physics and Technology

Provided instruction and guidance to high school students on following computer courses: advanced C++ programming, markup on the web, Photoshop and 3D Studio Max.

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| Research Scientist | Sep 2008 → Apr 2011 |

@Institute for Theoretical and Experimental Physics

Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

# Featured Publications

* Stepanov, P.; Stepanov, S.; Byakov, V.; Selim, F. Developing New Routine for Processing Two-Dimensional Coincidence Doppler Energy Spectra and Evaluation of Electron Subsystem Properties in Metals. *Acta Physica Polonica A* **2017**, *132* (5), 1628–1633 DOI: [10.12693/aphyspola.132.1628.](http://przyrbwn.icm.edu.pl/APP/PDF/132/app132z5p43.pdf)
* Ji, J.; Colosimo, A. M.; Anwand, W.; Boatner, L. A.; Wagner, A.; Stepanov, P. S.; Trinh, T. T.; Liedke, M. O.; Krause-Rehberg, R.; Cowan, T. E.; et al. ZnO Luminescence and scintillation studied via photoexcitation, X-ray excitation and gamma-induced positron spectroscopy. *Scientific Reports* **2016**, *6* (1) DOI: [10.1038/srep31238](https://www.nature.com/articles/srep31238).

Full list of publications is posted on my [Google Scholar page](https://scholar.google.com/citations?hl=en&user=S5etjqoAAAAJ&view_op=list_works&sortby=pubdate).

# Skills

## Characterization facilities

Positron Lifetime and Doppler Broadening Annihilation Spectroscopy (PALS, DBAR). Atom Probe Tomography (ATP). Scanning Electron Microscopy (SEM). Transmission electron microscopy (TEM). Atomic Force Microscopy (AFM). UV-VIS Spectroscopy. Fourier Transform Infrared Spectroscopy (FTIR).

## Material processing

High-temperature annealing. Wet chemical etching. Electrical Contact Fabrication. Sample polishing.

## Software

Scientific packages: Wolfram Mathematica, Maple, MATLAB.

Markup: LaTeX, HTML & CSS, MS Office Suite, Zotero.

Data plotting: OriginLab, Gnuplot, Grapher, Adobe Products.

## Desktop development

Java and Swing, C/C++ and Qt, GNU Automake, CERN ROOT Framework, PHP, Fortran.

# Conferences

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| 18th International Conference on Positron Annihilation (ICPA-18) | Aug 2018 |

@Orlando, FL, USA

Oral talk “Positions and Ps in Al2O3 Nanopowders”.

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| International Workshop on Physics with Positrons (JPos17) | Sept 2017 |

@Jefferson Lab, Newport News, VA, USA

Poster “A routine of background subtraction from two-dimensional Doppler broadened spectra”.

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| 12th International Workshop on Positron and Positronium Chemistry (PPC12) | Sept 2017 |

@Maria Curie-Sklodowska University, Lublin, Poland

Poster “Developing new routine for processing two-dimensional coincidence Doppler energy spectra”.

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| Ohio Photochemical Society Meeting (Oops) | May 2017 |

@Maumee Bay Lodge & Conference Center, Maumee, OH, USA

Poster “Developing new routine for background subtraction in two-dimensional coincidence Doppler broadening spectroscopy”.

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| 58th Electronic Materials Conference (EMC) | Jun 2016 |

@University of Delaware, Newark, DE, USA

Oral talk “High-Sensitivity Measurements of Defects in ZnO by Means of Digital Coincidence Doppler Broadening of Positron Annihilation Spectroscopy”.

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| Annual Spring Meeting of the APS Ohio-Region | Apr 2016 |

@University of Delaware, Newark, DE, USA

Oral talk “Identification of chemical environment of defects in ZnO by means of digital coincidence Doppler broadening of positron annihilation radiation”.

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| Ohio Inorganic Weekend | Nov 2015 |

@Bowling Green State University, OH, USA

Poster “Approaching Structural Defect Characterization and their Chemical Identification by Means of Coincidence Doppler Broadening of Annihilation Radiation”

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| 41st Polish Seminar on Positron Annihilation (PSPA-13) | Sep 2013 |

@Maria Curie-Sklodowska University, Lublin, Poland

Oral talk “Application of positron spectroscopy for detection of nanostructures in alchohol―aqueous mixtures”.

# Professional Associations

American Physical Society since 2016 → now)

The Ohio Academy of Science (2016 → now)

# Interests

Snowboarding, rollerblading, hiking, fixing cars, working on bicycles, footbag.