

CURRICULUM VITAE (January 12, 2019)

Nikita Rybin

*MSc student at Materials Science Department, Skolkovo Institute of Science and Technology,
3 Nobel St., Moscow 143026, Russia*

PERSONAL DATA:

Date of birth: 14. 12. 95

Citizenship: The Republic of Kazakhstan

Phone number: +7-916-421-29-86

E-mail: Nikita.Rybin@skoltech.ru

WORK EXPERIENCE:

09.2017 - now

Skolkovo Institute of Science and Technology. Materials Designing Laboratory.

Theme of the research: computationally guided discovery of new thermoelectric materials and low-thermal-conductivity compounds. The project is connected with using *ab initio* methods in pair with evolutionary algorithm implemented in USPEX package in order to find new materials with high thermoelectric efficiency. Supervisor – Dr. Artem R. Oganov.

09.2018 – now

Los-Alamos National Laboratory. Theoretical Chemistry Division. Visiting Students Internship. Theme of the research: computationally guided investigations of transport properties in mixed halide perovskites. Supervisors – Dr. Sergei Tretiak, Dr. Amanda Neukirch.

06.2016 – 06.2017

Novosibirsk Akademgorodok Technopark, Uniscan Research Company.

Experimental Physicist. Theme of the research: development of a contactless method for the steel cable defects control. Computer automation of physical experiments. Supervisor – Talgat S. Bakirov, PhD.

10.2014 – 07.2017

Rzhanov Institute of Semiconductor Physics. Laboratory of Nanodiagnostics and Nanolithography.

Theme of the research: surface science research using Reflection Electron and Atomic Forced Microscopies. The project was connected with investigation of the atomic processes on silicon during homoepitaxial growth. Director – Alexander V. Latyshev, Russian Academy of Science Academician, Professor. Co-Supervisors – Dr. Dmitry I. Rogilo, Dr. Ekaterina E. Rodyakina.

EDUCATION

09.2017 – now

Skolkovo Institute of Science and Technology, Department of Materials Science, MSc in Materials Science. Student researcher at Computational Materials Discovery Laboratory.

09.2013 – 06.2017

Novosibirsk State University, Department of Physics, BD in Semiconductor Physics.

Diploma title “*The Distribution of Adatom Concentration on the Atomically-Clean Si(111) Terraces*”.

09.2010 – 09.2013

Nazarbayev Intellectual School in Taldykorgan, Kazakhstan.

(Grade absolute maximum on the Undergraduate School National Subject Exams).

RESEARCH INTERESTS:

The area of my interest is the computationally guided discovery of new materials with superior physical properties, e.g. efficient thermoelectric materials. This is the project of my research work in Skoltech where we use first-principles methods and evolutionary structure prediction approach developed in USPEX package. I am interested in the electron-phonon interaction and generally speaking in theory of carrier transport in materials and lattice dynamics.

RECENT RESEARCH WORK

Now I have three projects going in parallel. The first and second is connected with the calculation of transport properties and lattice dynamics in materials for thermoelectric and thermal barrier coating applications. During my internship in Los-Alamos National Lab I have got the third one, which is connected with the investigations of the ionic diffusion, electron-phonon interaction and defects formation in organic perovskites substituted with Cl. First two projects are in progress and currently we have initial results. The third one is at the stage where we started writing paper.

AWARDS & ACHIEVEMENTS

2016 – Winner of the Schlumberger Students Scholarship.

2015 – Diploma for winning the 3rd place in the International Scientific Students Conference “Student and Scientific-Technical Progress”, Quantum Physics, Solid-state Physics section.

2013 – Diploma for passing school graduation exams with maximum score.

2013 – Diploma for winning the 2nd place in the Region Physics Olympiad.

PUBLICATIONS

1. D.I. Rogilo, N.E. Rubin, A.V. Latyshev. Nucleation of Two-Dimensional Si Islands Near a Monatomic Step on an Atomically Clean Si(111)-(7×7) Surface. Optoelectronics, Instrumental and Data Processing. 2016. Vol. 52. N3. PP 86-92.
2. D.I. Rogilo, N.E. Rubin, L.I. Fedina, and A.V. Latyshev. Adatom Concentration Distribution on an Extrawide Si(111) Terrace during Sublimation. Optoelectronics, Instrumental and Data Processing. 2016. Vol. 52. N5. PP 201-507.
3. First principles study of transport properties in MAPbBr₃ substituted with Cl. (in preparation).

CONFERENCES

1. The 55th International Students Scientific Conference “Students and the Progress in Science and Technology”. Quantum Physics Section. Novosibirsk. 2017. Diploma for the second place.
2. The 53rd International Students Scientific Conference “Students and the Progress in Science and Technology”. Quantum Physics Section. Novosibirsk. 2015. Diploma for the third place.
3. The 15th Russian Scientific Students Conference on Solid State Body Physics. Tomsk. 2016.
4. The 10th Conference and the School of Young Scientists and Experts in Topical Problems of Silicon Physics, Material Science, Technology and Diagnostics, Silicon-Based Nanometer Structures and Devices. Russia. Novosibirsk. 2016.
5. The 18th Russian Youth Conference on Physics of Semiconductors and Nanostructures, Opto- and Nanoelectronics. Russia. St. Petersburg. 2016.

SCHOOLS & SEMINARS

2018 – 15th USPEX workshop in China, Nankai University; 16th USPEX workshop in Russia, Skoltech.

2017 – Invited Student in Physics Winter School of the Higher School of Economics, Russia, Moscow.

2013 – A Member of the Kazakhstan team for Christmas Lectures, UK, London, Royal Institution of the UK.

SOFTWARE PACKAGES FOR QUANTUM-MECHANICAL CALCULATIONS

Evolutionary structure prediction algorithm USPEX. Ab initio quantum chemistry calculations: VASP, Quantum ESPRESSO. Post-processing tools: Phonopy, Phono3py, BoltzTraP, ShengBTE, EPW, VTST.

COMPUTER SKILLS

Linux (Ubuntu), Origin Lab, Adobe Photoshop, Corel Draw. Programming in C, C++, Python (including libraries for data analysis and machine learning, e.g. Scikit-learn, TensorFlow, and PyTorch).

SPEAKING LANGUAGES

Russian – mother tongue, English – fluent, Chinese – absolute beginner.

HOBBIES

Natural sciences, History, Judo, Swimming, Guitar Music.