KIRILL SIDNOV ✉ Kirill.Sidnov@skoltech.ru

EDUCATION

PhD — 📅 **2020-present**

Skolkovo Institute of Science and Technology
Materials Science and Engineering PhD

Investigation of new methods for crystal structure prediction, e.g. generative adversarial networks

Program Supervisor: prof. Artem R. Oganov

PhD — 📅 **2015-2019**

Combustion and explosion physics, physics of extreme states of matter

Institute of Structural Macrokinetics and Materials Science RAS

Thesis:
Theoretical prediction, self-propagating high-temperature synthesis, and mechanical properties investigation of ternary intermetallic compounds in Ni-Al-M (M = Ti, Nb, Hf, Zr) systems

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Master degree — 📅 **2013-2015**

Powder metallurgy and functional coatings

NUST MISiS

Thesis:
Preparation of cermet materials and magnetron sputtering targets in the Ti-Si-C system, using SPS and SHS compaction

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Bachelor degree — 📅 **2009-2013**

Metallurgy

D. Serikbayev East Kazakhstan technical university

Thesis:
Processing metalworking waste into carbide steel products

EXTERNAL COURSES

Sberbank Corporate University 📅 **2020** "Data Science" / 176 ac. hrs.

EXPERIENCE IN THE SCIENTIFIC FIELD

Engineer — 📅 **2014 - 2021**

Materials Modeling and Development Laboratory

NUST MISiS

- performing ab initio calculations within the DFT (VASP) using a computing cluster
- calculation of elastic properties of materials
- frameworks for performing calculations development

Laboratory assistant — 📅 **2013 - 2014**

Center of Functional Nano-Ceramics

NUST MISiS

- self-propagating high-temperature synthesis (SHS) of various materials under special conditions
- sample preparation (XRD, SEM, EDS, microindentation)
- interpretation of the results of materials composition and properties investigations

EXTRA SKILLS

- ***Python for materials science:*** Pymatgen, Materials Project REST API, AFLOW-ML REST API

- ***Python for data processing:*** Pandas, mpi4py, NumPy, SciPy, matplotlib
- ***Python for machine learning:*** Scikit-learn, TensorFlow, Pytorch, Pytorch-geometric
- Creation and processing of images (CorelDraw, Adobe Illustrator)
- Drawing design ("KOMPAS")
- 3D modeling (SketchUp)

PUBLICATIONS

- Stepan Vorotilo, Kirill Sidnov, Alexey S Sedegov, Mohammad Abedi, Kseniia Vorotilo, Dmitry O Moskovskikh Phase stability and mechanical properties of carbide solid solutions with 2–5 principal metals. Computational Materials Science, 201 (2022), p. 110869

- A. V. Ponomareva, M. P. Belov, E. A. Smirnova, K. V. Karavaev, K. Sidnov, B. O. Mukhamedov, and I. A. Abrikosov Theoretical description of thermodynamic and mechanical properties of multicomponent bcc Fe-Cr-based alloys. Phys. Rev. Materials, 4, 9 (2020), p 094406

- S. Vorotilo, K. Sidnov, I. Yu. Mosyagin, A.V. Khvan, E.A. Levashov, E.I. Patsera, I.A. Abrikosov, Ab-initio modeling and experimental investigation of properties of ultra-high temperature solid solutions TaxZr1-xC, Journal of Alloys and Compounds, 778 (2019), pp 480-486

- K. Sidnov, D.S. Belov Heusler Phases Ni_2AlM (M = Ti, Zr, Hf, Nb) by SHS Method. INTERNATIONAL JOURNAL OF SELF-PROPAGATING HIGH-TEMPERATURE SYNTHESIS, 28, 4 (2019), p 279

- K.P. Sidnov, D.S. Belov, A.V. Ponomareva, I.A. Abrikosov, A.M. Zharmukhambetov, N.V. Skripnyak, S.A. Barannikova, A.S.Rogachev, b, S. Rouvimov, A.S. Mukasyan Effect of alloying on elastic properties of ternary Ni-Al-Ti system: Experimental validation, Journal of Alloys and Compounds, 688 (2016), pp 534-541

- *Patent* (19)RU(11)2 692 352(13)C1. Russian Federation, G01G 1/00 (2006.01) Apparatus for characterization of SHS of inorganic compounds in the autowave mode. / Sedegov Alexey (RU), Sidnov Kirill (RU); printed 24.06.2019, B. № 18

SELECTED CONFERENCES AND WORKSHOPS

Winter School for Educators
Sberbank Corporate University, Moscow

📆 **2020 - 2021**
- 40 ac. hrs

Inaugural Symposium for "Computational Materials Program of Excellence"
Skoltech, Moscow

📆 **2020**
- On the search for relationship of the Ab-Initio calculations results and technological parameters of materials

EUROMAT
Stockholm

📆 **2019**
- Ab initio modeling and experimental investigation of mechanical properties of Ni_2AlM Heusler phases (M=Ti, Nb, Hf)

Hands-on Workshop on Density-Functional Theory and Beyond: Accuracy, Efficiency and Reproducibility in Computational Materials Science
Humboldt University, Berlin

📆 **2017**
- 67 ac. hrs.

International Symposium on Self-Propagating High Temperature Synthesis
Antalya

📆 **2015**
- OBTAINING CERMET MATERIALS IN Ti-Si-C SYSTEM