

Curriculum Vitae

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<https://krasheninnikov.de>

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EDUCATION AND ACADEMIC DEGREES

- Docent Degree from University of Helsinki, Finland, 2005 (Habilitation).
- Ph.D. Degree in Physics (Solid State Physics), Moscow State Engineering Physics Institute, 1995.
- Master Degree (with Special Honor) in Physics (Solid State Physics), Moscow State Engineering Physics Institute, 1992.

CURRENT POSITIONS

- Group Leader, Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Germany
- Guest Professor, Osaka University, Japan

PREVIOUS POSITIONS

- 2015–2023 Visiting Professor, Department of Applied Physics, Aalto University
- 2016–2018 Otto Mønsted Guest Professor, DTU Nanotech, Denmark
- 2013–2015 Senior Scientist, Department of Applied Physics, Aalto University
- 2006–2012 Researcher, Department of Applied Physics, Aalto University
- 2005–2006 Academy Fellow, Accelerator Laboratory, University of Helsinki
- 2001–2004 Researcher, Accelerator Laboratory, University of Helsinki.
- 1995–2001 Researcher, Department of Superconductivity and Nanostructures, Moscow State Engineering Physics Institute, Russia.
- 1992–1995 Post-graduate student, Moscow State Engineering Physics Institute.

RESEARCH EXPERIENCE AND SCIENTIFIC INTERESTS

- Electronic structure calculations
- Non-equilibrium phenomena in solids;
- Graphene, carbon nanotubes, and other carbon nanosystems;
- Inorganic two-dimensional materials;
- Strongly correlated systems;
- Quantum cascade lasers;
- Defects in solids;
- Semiconductors;
- High-pressure materials.
- Effects of irradiation on solids

AWARDS AND RECOGNITIONS

- HZDR Research Award (Forschungspreis), 2017
- Highly Cited Researcher (Physics) from Clarivate Analytics (ex. Web of Science), 2017-2022
- American Physical Society “Outstanding Referee” 2018

RESEARCH FUNDING RECEIVED

1993-1995 Individual grant and Certificate of Qualification from the Humantech Scholarship, **Samsung Electronics Corporation (South Korea)**.

1994-1995 Individual post-graduate grant No A44-F from the **International George Soros Science Foundation (ISSEP)**.

- 1997-2000 Individual grant from the **Russian Academy of Sciences** "Young Scientists of Russia".
- 2001-2003 Travel grants from the **Magnus Ehrnrooths Foundation (Finland)**.
- 2003 Travel grant from the **Väisälä Foundation (Finland)**.
- 2005 Travel grant from the **Väisälä Foundation (Finland)**.
- 2005 Academy Fellow (temporary) position, **Academy of Finland**, ca 64 kEuro.
- 2006 Research/travel grant from Academy of Finland and DAAD (Deutscher Akademischer Austauschdienst), project leaders Docent A. Krashenninikov (Finland) and Professor F. Banhart (Germany).
- 2007 Grant from the **Magnus Ehrnrooths Foundation (Finland)** for the organization of workshop "Towards reality in nanoscale materials" Levi, Finland, 10kEuro.
- 2008 Grant from the **European Science Foundation** for the organization of International workshop "Irradiation effects and defects in nanoscale materials" Levi, Finland, 02-04 December 2008.
- 2008-2009 Research/ collaboration grant from the **Magnus Ehrnrooths Foundation (Finland)** for collaboration with Prof. Florian Banhart, University of Strasbourg, France. 12 kEuro
CECAM network grant for organization of a workshop "Computational Studies of Defects in Nanoscale Carbon Materials", Lausanne, Switzerland, 2009. 15 kEuro.
Psi-K grant for organization of a workshop "Computational Studies of Defects in Nanoscale Carbon Materials" Lausanne, Switzerland, May 2009, 6000 Euros.
- 2009-2012 Research/ collaboration grant from the **Academy of Finland** "Defect-Mediated Engineering of Carbon Nano-Materials", ca. 210 kEuro
- 2010 Grant from the **Väisälä Foundation (Finland)** the organization of International workshop "Towards reality in nanoscale materials" Levi, Finland, 2010, 4kEuro.
Grant from the **Finnish Cultural foundation** for the organization of International workshop "Towards reality in nanoscale materials" Levi, Finland, 2010, 4kEuro.
- 2011-2013 Research grant from the **Academy of Finland** "Irradiation effects in low-dimensional materials" ca. 240 kEuro.
- 2011-2012 Research/travel grant from the **Academy of Finland** Understanding the nature of grain boundaries in graphene from experiments and simulations, 11 kEuro.
- 2012-2016 Research grant from the **Academy of Finland** "Two-dimensional programmable materials for optical and electronic applications" ca. 450 kEuro.
- 2012 Grant from the **Väisälä Foundation (Finland)** the organization of International workshop "Towards reality in nanoscale materials" Levi, Finland, 2012.
- 2013-2014 Research/travel grant from the **Academy of Finland**, "Characterization of defects in two-dimensional inorganic materials by first-principles simulations and transmission electron microscopy experiments," 19 kEuro.
- 2014 CIMO grant for inviting Chinese Researchers to Finland, 7.2 kEuros.
- 2015-2017 US Army RDECOM grant "Computational design of two-dimensional inorganic materials for optical and energy applications", 48k\$/year
- 2015-2019 Research grant from the **Academy of Finland** "Thermal transport in inorganic two-dimensional materials from multiscale atomistic simulations" 370 kEuro.
- 2015-2017 Otto Mønsted Guest Professorship, DTU Nanotech, Denmark
- 2017-2021 Research grant from DFG "Imaging and atomic structure engineering of quasi-two-dimensional materials encapsulated between graphene sheets" ca 200 kEuro.
- 2018-2022 Research grant from DFG "Functionalization of Ultrathin MoS2 by Defect Engineering" ca 200 kEuro.
- 2020-2024 Research grant from DFG "Defects and Impurities in 2D Chalcogenides" ca 250 kEuro (within Collaborative research Center "Chemistry of synthetic 2D Materials).
- 2021-2024 Research grant from Leibniz Foundation "Defect-engineering in graphene via focused ion beam for tailored van der Waals epitaxy of h-BN", ca. 200 kEuro.
- 2021-2024 Research grant from DFG "Design of Nanostructured Noble - Metal Chalcogenide Electrocatalysts for Hydrogen Evolution Reaction" ca 250 kEuro.

- 2022-2025 Research grant from DFG “New avenues to nanofabrication: assembly of vertical heterostructures from nanopatterned two-dimensional materials” ca 250 kEuro.
- 2022-2025 Research grant from DFG “Effects of atomic defects at lateral and vertical metal-semiconductor interfaces on the properties of the two-dimensional transition metal dichalcogenide heterostructures” ca 200 kEuro.
- 2024-2027 Research grant from DFG “Influence of Point and Line Defects on Opto-Electronic and Magnetic Properties of 2D Materials: Insights from First-Principles Calculations” ca 250 kEuro (within Collaborative research Center “Chemistry of synthetic 2D Materials).
- 2025-2028 Research grant from DFG “Single-metal-atom chains as one-dimensional half-metals and magnets” ca 250 kEuro.

TEACHING EXPERIENCE

- “Materials Science Using Ions” (one of the lecturers) HZDR, Germany, 2020-2024.
- “Physics and Chemistry of 2D materials” (one of the lecturers), DTU Nanotech 2016-2018.
- "Introduction to electronic structure simulations", Aalto University, 2010, lectures (in English).
- Nanoscience II (one of the lecturers) 2010, 2011, 2012 (in English).
- Condensed Matter Theory (one of the lecturers) 2010 (in English).
- Computational Nanoscience (one of the lecturers) 2010, 2011, 2012 (in English).
- "Introduction to electronic structure simulations", Helsinki University of Technology, 2008, lectures (in English).
- "Introduction to electronic structure simulations", Helsinki University of Technology, 2006 (<http://www.fyslab.hut.fi/~asf/physics/lectures/>), lectures and exercises (in English).
- "Materials Physics II", Helsinki University of Technology, 2005, lectures (in English).
- "Introduction to electronic structure calculations", University of Helsinki, 2002 (<http://www.acclab.helsinki.fi/~akrashen/esctmp.html>), lectures and exercises (in English).
- Nanoscience (one of the lecturers), University of Helsinki, 2005-2011 (in English).
- "Theoretical superconductivity", Moscow State Engineering Physics Institute, 1999-2000, lectures and exercises (in Russian).
- "Computational Physics"; Moscow State Engineering Physics Institute, 1998-2000, lectures and exercises (in Russian).
- "Physics of phase transitions", Moscow State Engineering Physics Institute, 1999, lectures and exercises (in Russian).

OTHER ACADEMIC MERITS

- **Members of 8 PhD dissertation committees:** EPFL Lausanne, Switzerland, 2014, 2020; U. Linköping, Sweden, 2015; Ecole Polytechnique, Université Paris-Saclay, France 2015; DTU Nanotech, Denmark 2017; U. of Twente, Netherlands, 2021; U. of Vienna, Austria (2021,2025), U. Siegen, Germany (2024).
- **Supervised/co-supervised the work of 12 postdocs, 14 Ph.D. students and 7 M. Sc. Students, among them:**
 - Jani Kotakoski, currently Full Professor at University of Vienna, Austria
 - Hannu-Pekka Komsa, currently Assistant Professor, University of Oulu, Finland
 - Torbjörn Bjorkman, currently Senior Lecturer at University of Turku, Finland
 - Rico Friedrich, currently Young Investigator/Group Leader at TU Dresden, Germany
 - Mahdi Ghorbani-Asl, currently staff member (permanent position) at HZDR, Germany
 - Jeyakumar Karthikeyan, currently Assistant Professor at National Institute of Technology, India
- **Referee for scientific journals (60+ journals):**
Nature, Nature Materials, Nature Nanotech., Nature Materials Reviews, Nature Communications, Science, Science Advances, PNAS, Phys. Rev. Lett., Phys. Rev. B, Phys.

Rev. X, Phys. Rev. Mater., Phys. Rev. Appl., Nano Letters, JACS, ACS Nano, ACS Applied Materials and Interfaces, ACS Applied Nano Mater., ACS Omega., Adv. Mater., Adv. El. Mater., Adv. Func. Mater., 2D materials, Appl. Phys. Lett., J. Appl. Phys., Carbon, Physica E, Mat. Sci. and Eng. B, Physics of Low-Dim. Struct., Scripta Materialia, Nano, European J. of Physics, Physica Status Solidi, Applied Physics A, Diamond and Related Materials, Nanotechnology, J. Phys. Chem. B, J. Phys. Chem. C, J. of Phys. and Chem. of Solids, Crystal Growth and Design, J. Materials Research, Rad. Effects and Defects in Solids, Nanoscale, Nanoscale Advances, Nanoscale Research Letters, AIP Advances, J. Nanomaterials. J. Magnetism and Magnetic Materials, Chem. Phys. Lett., Nucl. Inst. and Meth. Phys. B, New J. Phys., J. Phys. Cond. Mat., Acta Materialia, J. Vac. Sci. Tech. B., J. Chem. Phys., Comput. Mater. Sci., Micron, Mod. Sim. Mater. Sci., Physica Scripta. Sol. State. Comm., Thin Solid Films, Radiation Phys. Chem, Microelectronic Engineering, Appl. Surf. Sci., Materials Chemistry and Physics, J. of Alloys and Compounds, J. of Colloid and Interface Science, Physics Letters A, Physical Chemistry/Chemical Physics, RSC Advances, J. Materials Chem. A, J. Materials Chem. C, Ultramicroscopy, Beilstein J. of Nanotechnology, J. Chemical Theory and Computation, Comp. Mol. Science, 2D Materials and Applications, Scientific Reports, J. Industrial and Engineering Chemistry, Nanomaterials, Materials Today Physics, Materials Today Nano.

- **Evaluator of proposals:**

European Science Foundation, DoE (USA), Eurasia Foundation, Le Fonds de la Recherche Scientifique – FNRS (Belgium), Deutsche Forschungsgemeinschaft [DFG] (Germany), Ireland Science Foundation, Fonds National de la Recherche Luxembourg, Petroleum Research Fund (USA), Vienna Science and Technology Fund (Austria), Netherlands Organisation for Scientific Research, Swiss Center for Supercomputing, German-Israeli Foundation for Scientific Research and Development, Swiss Natural Science Foundation, 'Unity through Knowledge Fund' (Croatia), Slovenian Research Agency, National Fund for Scientific and Technological Research (Chile), Springer.

- **Other administrative duties:**

Member of the Management Committee of COST action CA15107 “Multi-Functional Nano-Carbon Composite Materials Network (MultiComp)” and action MP0901 “Designing novel materials for nanodevices: From Theory to Practice (NanoTP)”

IMPACT OF RESEARCH:

Publications:

290+ publications in refereed journals, among them

- Science (1)
- Nature (1)
- Nature Materials (3, incl. News & Views article),
- Nature Nanotechnology (1)
- Nature Physics (1)
- Nature Communications (6)
- Phys. Rev. Lett. (16)
- Phys. Rev. X (2)
- Nano Letters (14)
- ACS Nano (19)
- Advanced Materials (5)

8 book chapters and 20+ non-refereed publications.

Citations and H-index

- Total number of citations: 28,000+ / 35,600+ (ISI Web of Science /Google Scholar)
- H-Index 80 (ISI Web of Knowledge); 87 (Google Scholar)
- Google Scholar profile: <http://scholar.google.fi/citations?user=bPC6HXwAAAAJ>

Invited and keynote talks at international scientific conferences/workshops (~100 talks)

1. "Ion irradiation of carbon nanotubes and related phenomena", EMRS Spring Meeting, Strasbourg, France (2003);
2. "Irradiation effects in carbon nanotubes", NanoteC03, Brighton, UK (2003);
3. "Ion irradiation of carbon nanotubes", International Workshop on Interactions between Nanostructures and Particle Beams, Shanghai, China, March 2004.
4. "Ion irradiation as a tool to tailor properties of carbon nanotubes", International workshop on carbon nanotubes, Helsinki, Finland, September 2004.
5. "Ion irradiation of carbon nanotubes", International workshop "Nanotubes and nanostructures", Frascati, Italy, October 2004.
6. "Irradiation effects in carbon systems", International Conference "Advances in Functional Materials", Maroochydore, Australia, 30 Nov-02 Dec 2005.
7. "Irradiation of Carbon Nanotubes: Theoretical Predictions and Experimental Results", 8th Inter. Conf. on Comp. Simulation of Radiat. Effects in Solids, Richland, USA, June 2006.
8. "Simulations of irradiation effects in carbon nanostructures", Computational Challenges and Tools for Nanotubes (CCTN07), Rio de Janeiro, Brazil, June 2007.
9. "Irradiation effects in nano-structured carbon: from defects to self-organization" Foundation and applications of Density Functional Theory. Tokyo, Japan, August 2007.
10. "Irradiation-induced magnetism in carbon", Workshop on graphene and magnetism in carbon, Madrid, Spain, September 2007.
11. "Irradiation-induced phenomena in carbon nanostructures", The March Meeting of the American Physical Society 2008, New Orleans, USA.
12. "Irradiation-induced effects in carbon nanostructures: from defects to self-organization", The 20th International Conference on Application of Accelerators in Research and Industry, August 10-15, 2008, Fort Worth, Texas USA.
13. "Transition metal impurities in graphene", International Workshop "Modeling of Carbon and Inorganic Nanotubes and Nanostructures", Lausanne, Switzerland, May 13-15, 2009,
14. "Irradiation of carbon nanomaterials with electrons and ions: from defects to self-organization", Spring 2009 MRS, San Francisco, April 2009, USA.
15. "Irradiation effects in carbon and boron-nitride nanomaterials", First Joint Workshop of Chinese and Finnish Graduate Schools, Beijing, China, May 20-22, 2009.
16. "Simulations of irradiation effects in graphene and related materials", Computational Challenges and Tools for Nanotubes (CCTN09), Beijing, China, June 2009.
17. "Defects in carbon nanomaterials", International Conference "NanoteC09", Brussels, Belgium, August 2009.
18. "Defects in carbon nanomaterials", International Workshop "Computational physics and chemistry of graphene", Lausanne, Switzerland, October 2009.
19. "Defects in graphene" Workshop on graphene, Copenhagen, Denmark, March 2010.
20. "Electron-beam engineering of nanomaterials and their interfaces" NanoTP kick-off meeting, Berlin, Germany March 2010.
21. "Irradiation effects in carbon nanomaterials", International Conference "Ion beam Science and Technology – Looking Ahead", Huntsville, USA, August 4-7, 2010.
22. "Irradiation effects in carbon nanomaterials" Workshop on "Dynamical processes in irradiated materials", July 26-28, San Sebastian, Spain.
23. "Transition metal impurities in graphene", Gordon Research Conference, New London, USA, August 8-13, 2010.
24. "Ion and electron irradiation of graphene" 18th International Workshop on Inelastic Ion-Surface Collisions, Sep.26 – Oct.1, 2010, Gatlinburg, Tennessee, USA.
25. "Irradiation effects in carbon and BN nanomaterials", International workshop "Atomic defects in low-dimensional materials", Kyoto, Japan, 27-29.10.2010.
26. "Irradiation-induced transformations in nanomaterials", Spring 2011 Materials Research Society Meeting, April 2011, San Francisco, USA.

27. "Electronic structure and transport in graphene and boron-nitride systems modified by electron irradiation", CECAM workshop "Charge and Spin Transport in Chemically Modified Graphene based Materials", Barcelona, Spain, April 2011.
28. "Irradiation-mediated engineering of nanomaterials" NanoTP meeting Keynote speaker, L'Acquila, Italy, May 2011.
29. "Irradiation-induced transformations in nanomaterials", Spring 2011 European Materials Research Society Meeting, May 2011, Nice, France.
30. "Radiation modification of nanomaterials for creation of novel nanodevices" NATO Advanced Research Workshop, June 2011 Riga, Latvia.
31. "Engineering carbon nanostructures with electron and ion beams", International workshop "Carbonhagen", August 2011, Copenhagen, Denmark.
32. "Ion and electron irradiation of graphene" 14th International Workshop "Nano-Design, Technology, Computer Simulations" (NDTCS-2011) August 22-26, 2011, Espoo, Finland.
33. "Irradiation-induced transformations in nanomaterials", Specialist Meeting on Carbon, September 2011, Puerto Vallarta, Mexico.
34. "Bonding and irradiation effects in inorganic 2D materials", Annual scientific meeting of NanoTP COST action, November 9-11, 2011, Trieste, Italy
35. "Irradiation effects in nanostructures", Fall 2011 Materials Research Society Meeting, November 2011, Boston, USA.
36. "Tailoring the properties of graphene, dichalcogenides and other 2D materials through electron irradiation: insight from DFT simulations and TEM experiments", Graphene, Brussels, April 2012.
37. "Irradiation-induced defects in graphene and inorganic 2D materials for selective functionalization of their surfaces", CECAM workshop "Chemical and topological functionalization of graphitic surfaces: open challenges for computational modeling", Lausanne, Switzerland, 23-25 April 2012.
38. "Novel two-dimensional phases of carbon and silica from experiments and simulations", International Conference on Modern Problems in the Physics of Surfaces and Nanostructures, Yaroslavl, Russia, 23-25 May 2012.
39. COST NanoTP Meeting "Quantum-chemical modelling of large nanostructures", Aveiro, June 6-9th 2012 <http://modnano.web.ua.pt/workshop/>
40. "Irradiation of graphene" European workshop on epitaxial graphene, Aussois, France, January 27-30, 2013.
41. "Interaction of energetic electrons and ions with atomically thin 2D targets" International Symposium on Nanoscale Patterning at Surfaces, Copenhagen, May 2013.
42. "Electron and ion irradiated graphene: engineering electronic and magnetic properties: North America-Greece-Cyprus Workshop on Paramagnetic Materials, Cyprus, May 2013.
43. 2D transition-metal dichalcogenides: bonding and defects: CECAM Workshop on Layered Materials, June 2013, Bremen, Germany
44. "Ion irradiation of 2D materials", Ion-Surface Interaction 2013, August 2013, Yaroslavl, Russia.
45. "Interactions of ions with nanomaterials" in the "Basics of Helium Ion Microscopy" session of the 60th American Vacuum Society Meeting, October 2013, Long Beach, USA.
46. "Defects in transition metal dichalcogenides", International conference "2D Materials: Beyond Graphene" Singapore, December 2013.
47. "Defects in 2D materials", Symposium "Defect-induced effects in nanomaterials", EMRS 2014 Spring Meeting, France.
48. "Defects in inorganic 2D materials", 6th Forum on New Materials, June 2014, Montecatini Terme, Italy.
49. "Defects in 2D materials", The 2014 International Conference on Nanoscience + Technology (ICN+T), July 2014, Vail, Colorado, USA.
50. "Atomic structure of transition metal dichalcogenides from experiments and first-principles simulations" Microscopy & Microanalysis 2014, August 2014, Hartford, USA.
51. "Defects in two-dimensional transition-metal dichalcogenides and silica bilayers", Carbonhagen, August 2014, Copenhagen, Denmark.

52. "Defects in 2D materials: atomic structure, energetics and diffusion" Int. workshop "Nanostructures on two dimensional solids", Sept 22- 26, 2014, Eisenerz, Austria.
53. "Defects in Two-dimensional Materials" (**keynote lecture**), 3M-Nano, Oct. 2014, Taipei, Taiwan.
54. "Defects in low-dimensional materials: energetics and production mechanisms", International workshop "Theory for Accelerated Materials Design: New Tool for Materials Science", Moscow, Russia, Dec 1-2, 2014.
55. "Inorganic two-dimensional materials under electron irradiation: stability, evolution of the atomic structure, and beam-mediated doping", Salve Symposium, Feb 2015, Ulm, Germany.
56. "Defects in 2D materials", International workshop dedicated to the inauguration of the Nion microscope, Feb 2015, Daresbury, UK.
57. "First-principles simulations of defects in 2D materials", International Workshop "Nothing is perfect – the quantum mechanics of defects", Monte Verita (Switzerland), April 2015.
58. "Defects in 2D inorganic materials", 28th International Conference on Defects in Semiconductors, Jul 2015, Helsinki, Finland.
59. "Calculations of defects in low-dimensional materials", Psi-K 2015, September 2015, San Sebastian, Spain.
60. "Defects in graphene and transition metal dichalcogenides, "Graphita 2015", September 2015, Bologna, Italy.
61. "Native and irradiation-induced defects in two-dimensional materials", HeteroNanoCarb, Dec. 2015, Benasque, Spain.
62. "From point to line defects in two-dimensional transition metal dichalcogenides: insights from transmission electron microscopy and first-principles calculations", Graphene and related Materials, Paestum, Italy, May 2016.
63. "Defects in 2D materials", IUMRS-ICEM 2016, Symposium A "2D Materials and Devices Beyond Graphene", Singapore, July 2016.
64. "Native and irradiation-induced defects in two-dimensional materials", Carbonhagen, Copenhagen, August 2016.
65. "Defects in 2D inorganic materials", 18th International Conference on Solid Films and Surfaces (ICSFS-18), Chemnitz, Germany, September 2016.
66. "Irradiation effects in 2D materials", CAARI 2016, Fort Worth, USA, October 2016.
67. "Engineering the Atomic Structure of 2D Transition Metal Dichalcogenides using Electron Beam: Experiments and Simulations", AVS Meeting, Nashville, USA, November 2016.
68. "Defects and spectroscopy of 2D inorganic materials" Fourth Annual Conference on Optical Nanospectroscopy, Lisbon, May 2017.
69. "Irradiation-induced defects in graphene on metal substrates and inorganic 2D materials", 13th International Conference "Advanced Carbon Nanostructures", Saint-Petersburg, Russia, July 2017.
70. "Electron-irradiation-induced defects and phase transformations in 2D materials" 3rd SALVE symposium, Ulm, Germany, December 2017.
71. "Defects in 2D Materials" 51st Heyrovský Discussion, Trest, Czech Republic, May 2018.
72. Tutorial lecture "Defects in bulk and low-dimensional materials", International Conference "Physics of defects in solids: quantum mechanics meets topology", ICTP, Trieste, Italy, July 2018.
73. "Electron Irradiation-Induced Defects and Phase Transformations in Two-Dimensional Transition Metal Dichalcogenides", Microscopy & Microanalysis 2018, Baltimore, USA
74. "Optimizing the parameters of ion beams to pattern free-standing and supported two-dimensional materials: insights from atomistic simulations" Sino-German Symposium on Material-Oriented Micro/Nano Manufacturing: Modeling, Experiment and Application, Bochum, Germany, August 2018.
75. "Design of two-dimensional materials through introduction of defects: simulations and experiments", International Workshop on Computational Design and Discovery of Novel Materials, Lausanne, Switzerland, September 2018.

76. "Electron Irradiation-Induced Defects and Phase Transformations in Two-Dimensional Transition Metal Dichalcogenides", Materials Science and Engineering 2018, Darmstadt, Germany, September 2018.
77. "Defects and Phase Transformations in Two-Dimensional Transition Metal Dichalcogenides", International Conference "Tunneling through Nanoscience", Ravello, Italy, October 2018.
78. "Defects and new phases in graphene and related systems: insights from multi-scale atomistic simulations", Workshop "Atomistic simulations of carbon materials", Helsinki, Finland, April 2019.
79. "Defects in 2D materials" Tutorial at MRS Spring Meeting, Phoenix, USA, April 2019.
80. "Effects of ion irradiation on two-dimensional targets: what is different from bulk materials? Int. Conference "Ion-Surface Interaction", Moscow, Russia, Aug 2019.
81. "Tailoring the properties of inorganic two-dimensional materials by post-synthesis introduction of impurities and defects" Chem2Dmat, Dresden, Germany, September 2019.
82. "Tailoring the properties of 2D transition metal dichalcogenides by post-synthesis introduction of impurities and defects", Int. Conference on Nanospace materials, Brisbane, Australia, Oct. 2019.
83. "Effects of ion irradiation on two-dimensional targets: what is different from bulk materials? AVS Meeting, Columbus, USA, Oct. 2019
84. "Irradiation effects in 2D materials", MRS Fall Meeting, Boston, Dec. 2019.
85. "Vertical heterostructures and intercalation into them: insights from atomistic simulations", International Conference on Low-dimensional Materials, Dubna, Russia, Jul. 2021.
86. "Production of defects in 2D materials under ion irradiation", The XXV International Conference on Ion-Surface Interactions", Yaroslavl, Russia Aug.2021.
87. "Engineering the properties of two-dimensional materials through introduction of defects and intercalation", Salve Symposium, Ulm, Germany, Apr 2022.
88. "Simulations of defects in 2D materials", Conference "First-Principles Modelling of Defects in Solids", Zürich, Switzerland, June 2022,
89. "Engineering the properties of two-dimensional materials through introduction of defects and intercalation", 2D SPM conference, San-Sebastian, Spain, June 2022.
90. "Atomistic simulations of defects production in 2D materials", Fit4Nano workshop, Krakow, Poland, July 2022.
91. "Single and multi-layers of alkali metal atoms inside graphene and MoS2 bilayers as well as their heterostructures: a systematic first-principles study", 6th Energy Materials workshop: Modelling Energy Interfaces, London, UK, December 2022.
92. "Engineering the properties of 2D materials by defects and intercalation", HeteroNanoCarb, Jan. 2023, Benasque, Spain.
93. "Line and Point Defects in 2D Inorganic Materials: Insights from First-Principles Calculations" APS March Meeting 2023, Las Vegas, USA.
94. "Engineering the properties of 2D materials by defects and intercalation", HeteroNanoCarb, Jan. 2023, IEEE 13th International Conference Nanomaterials: Applications & Properties, Bratislava, Slovakia, Sep., 2023.
95. "Engineering the properties of 2D materials by defects and intercalation", SALVE 2023 Workshop, Ulm, Germany, Sep. 2023.
96. "Atomic structure of the interfaces in lateral and vertical heterostructures of 2D materials, EWEG 2024, Trieste, Italy, May 2024
97. "Engineering the properties of 2D materials by defects and intercalation", CIMTEC 2024, Montecatini-Terme, Italy, June 2024.
98. "Evolution of the Atomic Structure of 2D Materials under Electron Beam in a TEM: Insights from First-Principles Calculations", FEMMS 2024, Catania, Italy, Sept. 2024.

60+ invited seminars worldwide.

CONFERENCE ORGANIZATION:

- Co-chairman: Beilstein Nanotechnology symposium “Defect-mediated Engineering of Nanomaterials for Energy and Quantum Applications”, Rüdesheim, Germany May 13–15, 2025
- Co-chairman; International workshop “Towards Reality in Nanoscale Materials X” Levi, Finland, 10-13 February 2025.
- Co-chairman: International workshop “Atomic structure of nanosystems from first-principles simulations and microscopy experiment”, Helsinki, May 28-30, 2024.
- Co-chairmen: “Defects in two-dimensional materials”, Bad Honnef, Germany, May 2023.
- Co-chairman: Symposium A10 “Structural changes in Hard, Soft, and Biological Samples During Imaging: From Transmission Electron to Helium Ion Microscopy” at Microscopy & Microanalysis 2020 Meeting, August 2020 (virtual meeting).
- Co-chairman: International workshop “Atomic structure of nanosystems from first-principles simulations and microscopy experiment”, Helsinki, May 28-30, 2019.
- Co-chairman; International workshop “Towards Reality in Nanoscale Materials X” Levi, Finland, 11-14 February 2019.
- Co-chairman; International Conference “Physics of defects in solids: quantum mechanics meets topology”, ICTP, Trieste, Italy, July 2018.
- Co-chairman: MRS Spring Meeting, Symposium NM8 —2D Materials—Macroscopic Perfection vs. Emerging Nanoscale Functionality, Phoenix, USA, April 2017.
- Co-chairman; International workshop “Towards Reality in Nanoscale Materials 17” Levi, Finland, 13-16 February 2017.
- Co-chairman: International workshop “Atomic structure of nanosystems from first-principles simulations and microscopy experiment”, Helsinki, 31.05-02.06.2016.
- Co-chairman: EMRS Spring Meeting, Symposium Y, "Graphene and related materials: from fundamental science to applications, Lille, France, May 2-4, 2016.
- Co-chairman: Tutorial and International workshop “Atomic structure of nanosystems from first-principles simulations and microscopy experiment”, Helsinki, 08.06-11.06.2015.
- Co-chairman; International workshop “Towards Reality in Nanoscale Materials 15” Levi, Finland, 08-12 February 2015.
- Co-chairman: International workshop “Atomic structure of nanosystems from first-principles simulations and microscopy experiment”, Helsinki, 03.06-05.06.2014.
- Co-chairman; International workshop “Towards Reality in Nanoscale Materials 14” Levi, Finland, 09-13 February 2014.
- Co-chairman: Eighth International Symposium on Computational Challenges and Tools for Nanotubes Tallinn, Estonia, June 29 - 30, 2013.
- International workshop “Atomic structure of nanosystems from first-principles simulations and microscopy experiment”, Helsinki, 04.06-06.06.2013.
- Co-chairman: International workshop “Atomic structure of nanosystems from first-principles simulations and microscopy experiment”, Helsinki, 04.06-06.06.2013.
- Co-chairman; International workshop “Towards Reality in Nanoscale Materials 13” Levi, Finland, 10-14 February 2013.
- Co-chairman: EMRS Fall Meeting, Symposium G, "Graphene, nanotubes and related materials", Warsaw, Poland, September 17-21, 2012.
- Co-chairman: International workshop “Atomic structure of nanosystems from first-principles simulations and microscopy experiment”, Helsinki, 15.05-17.05.2012.
- Co-chairman; International workshop “Towards Reality in Nanoscale Materials 12” Levi, Finland, 22-24 February 2012
- Co-chairman: International workshop “Atomic structure of nanosystems from TEM experiments and first-principles simulations", Helsinki, 31.05-02.05.2011.
- Co-chairman; International workshop “Towards Reality in Nanoscale Materials 10” Levi, Finland, 06-09 December 2010.
- Chairman; First Finnish-Japanese workshop on carbon and boron-nitride nanomaterials, Helsinki, Finland, 18-20 May 2010.

- Co-chairman; International workshop “Towards Reality in Nanoscale Materials 09” Levi, Finland, 06-09 December 2009.
- Co-organizer; “Computational Nanoscience for Renewable Energy solutions,” Espoo, Finland, September 2009.
- Co-chairman; International workshop “Defects in nanoscale carbon materials” Lausanne, Switzerland, May 11-15, 2009.
- Co-chairman; International workshop “Irradiation effects and defects in nanoscale materials” Levi, Finland, 02-05 December 2008.
- Co-chairman; International workshop “Towards reality in nanoscale materials” Levi, Finland, 10-12 December 2007,
- Co-chairman; International workshop on physics and chemistry of carbon nanotubes, Helsinki, 2004.

Complete list of refereed publications

Summary

- Total number of publications in **refereed** journals – 292
- Among them:
 - Science (1),
 - Nature (1),
 - Nature Materials (3, incl. News & Views article),
 - Nature Nanotechnology (1),
 - Nature Physics (1)
 - Nature Communications (6)
 - Phys. Rev. Lett. (16)
 - Nano Letters (14)
 - ACS Nano (19)
 - Advanced Materials (5)
- 8 book chapters
- PDF reprints available from: <http://users.aalto.fi/~ark/publist.html>

All publications in peer refereed journals in the reverse chronological order:

292. B. Mohanty, L. Pradhan, B. Satpati, P. Rajput, M. Ghorbani-Asl, Y. Wei, P. W. Menezes, **A.V. Krasheninnikov**, and B. K. Jena, “Structural and compositional optimization of bimetallic NiCo alloy nanoparticles for promotion of alkaline hydrogen evolution reaction”, *J. Power Sources* 625 (2025) 235641. DOI: 10.1016/j.jpowsour.2024.235641.
291. S. Kretschmer and **A.V. Krasheninnikov** “Atomistic simulations of low energy ion irradiation of 2D materials: From ab-initio molecular dynamics to simple binary collision model”, *Phys. Rev. Mater.* 8 (2024) 114003. DOI: 10.1103/PhysRevMaterials.8.114003.
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289. Y. Li, F. Börrnert, M. Ghorbani-Asl, J. Biskupek, X. Zhang, Y. Zhang, D. Bresser, **A.V. Krasheninnikov**, and U. Kaiser “In Situ TEM Investigation of the Lithiation and Delithiation Process Between Graphene Sheets in the Presence of Atomic Defects”, *Adv. Func. Mater* XX (2024) 202406034. DOI: 10.1002/adfm.202406034.
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