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## Publikationer

### **Self-ion-irradiation-induced grain formation in nickel**

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### **Threshold displacement energies in refractory high-entropy alloys**

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### **Threshold displacement energy map of Frenkel pair generation in $\beta$ -Ga<sub>2</sub>O<sub>3</sub> from machine-learning-driven molecular dynamics simulations**

He, H., Zhao, J., Byggmästar, J., He, R., Nordlund, K., He, C. & Djurabekova, F., 1 sep. 2024, I: Acta Materialia. 276, 11 s., 120087.

### **Revealing the critical role of vanadium in radiation damage of tungsten-based alloys**

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### **Solubility of Hydrogen in a WMoTaNbV High-Entropy Alloy**

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### **Probing the dark matter velocity distribution via daily modulation**

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### **Analysis of lattice locations of deuterium in tungsten and its application for predicting deuterium trapping conditions**

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### **Daily and annual modulation rate of low mass dark matter in silicon detectors**

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### **Latent ion tracks were finally observed in diamond**

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### **Suspended nanoporous graphene produced by swift heavy ion bombardment**

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**Repulsive interatomic potentials calculated using Hartree-Fock and density-functional theory methods**

Nordlund, K., Runeberg, N. & Sundholm, D., okt. 1997, I: Nuclear Instruments & Methods in Physics Research. Section B: Beam Interactions with Materials and Atoms. 132, 1, s. 45-54 10 s.

**Comparison of TOF-ERDA and nuclear resonance reaction techniques for range profile measurements of keV energy implants**

Jokinen, J., Keinonen, J., Tikkanen, P., Kuronen, A., Ahlgren, T. & Nordlund, K., 1996, I: Nuclear Instruments & Methods in Physics Research. Section B: Beam Interactions with Materials and Atoms. 119, 4, s. 533-542 10 s.

**Formation of ion irradiation induced small-scale defects on graphite surfaces**

Nordlund, K., Keinonen, J. & Mattila, T., 1996, I: Physical Review Letters. 77, s. 699-702 4 s.

**Stopping of 5-100 keV helium in tantalum, niobium, tungsten, and AISI 316L steel**

Haussalo, P., Nordlund, K. & Keinonen, J., 1996, I: Nuclear Instruments & Methods in Physics Research. Section B: Beam Interactions with Materials and Atoms. 111, s. 1-6 6 s.

**Range profiles in self-ion-implanted crystalline Si**

Nordlund, K., Keinonen, J., Rauhala, E. & Ahlgren, T., 1995, I: Physical Review. B, Condensed Matter. 52, s. 15170-15175 6 s.

## **1ST-PRINCIPLES SIMULATION OF COLLISION CASCADES IN SI TO TEST PAIR-POTENTIALS FOR SI-SI INTERACTION AT 10 EV-5 KEV**

KEINONEN, J., KURONEN, A., NORDLUND, K., NIEMINEN, R. M. & SEITSONEN, A. P., 1994, I: Nuclear Instruments & Methods in Physics Research. Section B: Beam Interactions with Materials and Atoms. 88, s. 382-386 5 s.

## **A LOW-LEVEL DETECTION SYSTEM FOR HYDROGEN ANALYSIS WITH THE REACTION $1\text{H}(15\text{N},\alpha\text{-GAMMA})12\text{C}$**

TORRI, P., KEINONEN, J. & NORDLUND, K., 1994, I: Nuclear Instruments & Methods in Physics Research. Section B: Beam Interactions with Materials and Atoms. 84, s. 105-110 6 s.

## **LIFETIMES IN N-15 FROM GAMMA-RAY LINE-SHAPES PRODUCED IN THE $\text{H-2}(\text{N-14},\text{P-GAMMA})$ AND $\text{N-14}(\text{THERMAL N,GAMMA})$ REACTIONS**

RAMAN, S., JURNEY, E. T., STARNER, J. W., KURONEN, A., KEINONEN, J., NORDLUND, K. & MILLENER, D. J., 1994, I: Physical Review C (Nuclear Physics). 50, s. 682-697 16 s.

## **!!Projects**

### **Materials- and Nanophysics Researcher Community (MATENA)**

Ahlgren, T. (Deltagare), Aitola, K. (Deltagare), Arstila, K. (Deltagare), Avchachov, K. (Deltagare), Björkas, C. (Deltagare), Chrobak, D. (Deltagare), Costelle, L. (Deltagare), Djurabekova, F. (Deltagare), Fernandez Martinez, M. (Deltagare), Galambosi, S. (Deltagare), Hakala, M. (Principal Investigator), Harjunmaa, A. N. (Deltagare), Heinola, K. (Deltagare), Hirvelä, J. H. (Deltagare), Holmström, E. K. (Deltagare), Huotari, S. (Principal Investigator), Hämäläinen, K. (Principal Investigator), Ikonen, T. (Deltagare), Jalkanen, P. (Deltagare), Jansson, V. (Deltagare), Juurinen, I. (Deltagare), Keinonen, J. (Principal Investigator), Keyriläinen, J. (Deltagare), Kisko, K. (Deltagare), Koskelo, O. (Deltagare), Krasheninnikov, A. (Deltagare), Kuronen, A. (Principal Investigator), Lasa Esquisabel, A. (Deltagare), Laukkanen, J. K. (Deltagare), Lehtinen, O. J. (Deltagare), Lehtola, S. (Deltagare), Svedström, K. J. (Deltagare), Mattila, A. (Deltagare), Meinander, N. K. (Deltagare), Mizohata, K. (Deltagare), Nordlund, K. (Principal Investigator), Nygård, K. (Deltagare), Pakarinen, O. H. (Deltagare), Palonen, V. (Deltagare), Parviainen, S. (Deltagare), Peura, M. (Deltagare), Pirkkalainen, K. (Deltagare), Pirojenko, A. (Deltagare), Pohjonen, A. (Deltagare), Polvi, J. (Deltagare), Porra, L. (Deltagare), Pusa, P. (Deltagare), Pylkkänen, T. (Deltagare), Rauhala, E. (Deltagare), Ruotsalainen, K. (Deltagare), Ruzibaev, A. (Deltagare), Räsänen, J. (Principal Investigator), Sajavaara, T. P. (Deltagare), Sakko, A. (Deltagare), Serimaa, R. (Principal Investigator), Soininen, A. (Deltagare), Suhonen, H. (Deltagare), Timko, H. (Deltagare), Tolvanen, A. (Deltagare), Torkkeli, M. (Deltagare), Tuboltsev, V. (Deltagare), Ullah, M. (Deltagare), Väyrynen, S. (Deltagare) & Vörtler, K. (Deltagare)  
22/02/2011 → 22/02/2011

### **Nanohiukkasten optiset ja pintaominaisuudet**

Kulmala, M. (Deltagare), Nordlund, K. (Deltagare), Keinonen, J. (Deltagare), Sundholm, D. (Deltagare) & Räsänen, M. (Deltagare)  
Suomen Akatemia  
01/01/2007 → 31/12/2010

### **MachQu: Probabilistic Machine Learning for Quantum Mechanics-Based Material Design**

Roos, T. (Principal Investigator), Djurabekova, F. (Principal Investigator) & Nordlund, K. (Deltagare)  
01/01/2018 → 31/12/2019

## **Aktiviteter**

### **TAITASMARTGIS**

Pellikka, P. (Talare: Ordförande), Böhling, T. (Talare: Inledningsanförande (keynote)), Hämeri, K. (Talare: Inledningsanförande (keynote)), Siljander, M. (Talare: Ordförande), Alakukku, L. (Närvarande), Tuure, J. (Talare: Presentation), Mäkelä, P. (Närvarande), Räsänen, M. (Talare: Presentation), Mwamodenyi, J. M. (Talare: Presentation), Wachiye, S. A. (Talare: Presentation), Adhikari, H. (Talare: Presentation), Amara, E. (Närvarande), Heiskanen, J. (Närvarande), Abera, T. (Talare: Presentation), Maeda, E. (Närvarande), Schallhart, S. (Närvarande), Kutsch, W. (Talare: Presentation), Autio, A. (Närvarande), Karhu, K. (Talare: Presentation), Mganga, K. (Närvarande), Vesala, R. (Närvarande), Arppe, L. (Närvarande), Rosti, H. (Talare: Presentation), Di Minin, E. (Närvarande) & Nordlund, K. (Talare: Presentation)  
1 okt. 2019

**Insights on sputtering and deposition mechanisms from molecular dynamics simulations**

Nordlund, K. (!!Speaker)

7 dec. 2018

**Possibility of materials modification by dark matter particle irradiation**

Nordlund, K. (!!Speaker)

27 nov. 2018

**Improving on analytical radiation damage calculations: arc-dpa and rpa**

Nordlund, K. (!!Speaker)

16 okt. 2018

**Fundamental mechanisms of accelerated and plasma ion interactions with materials: insights from atomistic simulations**

Nordlund, K. (!!Speaker)

21 juni 2018

**Channeling effects in nanostructures: analysis and comparisons with experiments**

Nordlund, K. (!!Speaker)

13 apr. 2018

**Nuclear stopping power of antiprotons**

Nordlund, K. (!!Speaker)

14 mars 2018

**Molecular dynamics simulations of collision cascades: method developments and results from 1993 on**

Nordlund, K. (!!Speaker)

7 dec. 2017

**High-dose damage evolution in Fe, FeCr, and high-entropy alloys**

Nordlund, K. (!!Speaker)

15 nov. 2017

**Improving atomic displacement calculations with physically realistic damage models: arc-dpa and rpa**

Nordlund, K. (!!Speaker)

25 okt. 2017

**Systematic analysis of ion channeling over all crystal directions: dependences on energy, crystal structure, atom size, temperature, and defect concentration**

Nordlund, K. (!!Speaker)

24 okt. 2017

**Insights to physics of sputtering and channeling effects learnt from molecular dynamic simulations**

Nordlund, K. (!!Speaker)

21 aug. 2017

**Current topics of modelling in materials science (in Helsinki)**

Nordlund, K. (!!Speaker) & Djurabekova, F. G. (!!Speaker)

3 aug. 2017

**20th INTERNATIONAL CONFERENCE ON SURFACE MODIFICATION OF MATERIALS BY ION BEAMS**

Nordlund, K. (Närvarande)

11 juli 2017

**Nanoscale pattern formation at surfaces and Formation of 3D nanostructures**

Djurabekova, F. (Ordförande), Nordlund, K. H. (Ordförande), Fridlund, C. J. P. (Medlem i organisationskommitté), Ilinov, A. (Sekreterare i organisationskommitté), Lopez Cazalilla, A. (Medlem i organisationskommitté) & Kuronen, A. A.



(Viceordförande för vetenskaplig kommitté)  
26 juni 2017 → 30 juni 2017

**Tutorial: atomistic simulations for irradiation effects.**

Nordlund, K. (!!Speaker)  
15 nov. 2016

**International conference on metallurgical coatings and thin films (ICMCTF)**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2016

**MRS fall meeting, symposium Ion Beam Enabled Nanoscale Fabrication and Materials Synthesis**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2016

**Summer school on plasma-surface interactions**

Nordlund, K. (Talare: Presentation)  
2016

**Workshop on nanocluster deposition**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2016

**Fysiikan päivät 2015**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
17 mars 2015

**CECAM workshop on Modeling metal-based nanoparticles: toward realistic environments**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2015

**International Symposium on Multi-scale Modeling and Simulation of Materials**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2015

**MRS Fall Meeting, symposium Defect and Radiation Effects in Advanced Materials**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2015

**MRS Spring Meeting, symposium Multiscale modeling of microstructural evolution in nuclear materials**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2015

**Radiation Effects in Insulators School, Invited tutorial talk**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2015

**Towards Reality in Nanoscale Materials**

Nordlund, K. (Ordförande)  
2015

**Director of MATRENA doctoral programme**

Nordlund, K. (Direktör)  
1 jan. 2014 → ...

**18th International Conference on Surface Modification of Materials by Ion Beams**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2014

**2014 Nuclear materials Conference**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2014

**22nd International Conference on Ion-Surface Interactions**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2014

**EMRS Spring meeting, Symposium Defect-induced effects in nanomaterials**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2014

**EUROFusion (Extern organisation)**

Nordlund, K. (Medlem)  
2014 → ...

**European Grid Infrastructure Community Forum**

Nordlund, K. (Ordförande)  
2014

**International Atomic Energy Agency (Extern organisation)**

Nordlund, K. (Expert)  
2014 → 2017

**Towards Reality in Nanoscale Materials**

Nordlund, K. (Ordförande)  
2014

**Radiation Effects in Insulators**

Nordlund, K. (Ordförande)  
30 juni 2013 → 5 juli 2013

**8th symposium of the International Society for Theoretical Chemical Physics**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2013

**EMRS Spring meeting, Symposium Ion Beam Applications: New and Innovative Approaches**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2013

**International Atomic Energy Agency (Extern organisation)**

Nordlund, K. (Expert)  
2013 → 2017

**IUMRS-ICAM Modeling & Simulation Session**

Nordlund, K. (Ordförande)  
2013

**Towards Reality in Nanoscale Materials**

Nordlund, K. (Ordförande)  
2013

**3rd EU-Russia Innovation Forum**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2012

**All-Russian Conference in Physical and physico-chemical bases of ion implantation**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2012

**Harriet Åhlgren, PhD thesis co-supervision**

Nordlund, K. (Bihandledare)  
2012 → 2015

**international committee for conference series Ion Beam Modification of Materials (IBMM) (Extern organisation)**

Nordlund, K. (Styrelsemedlem)  
2012 → ...

**International supercomputing conference**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2012

**Joint ICTP-IAEA workshop on Fusion Plasma Modelling**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2012

**Recent developments in the study of radiation effects in matter (REM) invitation-only meeting**

Nordlund, K. (Talare: Presentation)  
2012

**Towards Reality in Nanoscale Materials**

Nordlund, K. (Ordförande)  
2012

**20th International Conference on Ion-Surface Interactions**

Nordlund, K. (Närvarande)  
2011

**Aleksi A Leino, PhD thesis co-supervision**

Nordlund, K. (Bihandledare)  
2011 → 2015

**Andrea Sand, PhD thesis supervision**

Nordlund, K. (Handledare)  
2011 → 2015

**Andrey Ilinov, PhD thesis co-supervision**

Nordlund, K. (Bihandledare)  
2011 → 2015

**Breakdown Physics Workshop (MeVArc)**

Nordlund, K. (Ordförande)  
2011

**EMRS/IUMRS/ICAM Spring meeting 2011 symposium 'Ion and cluster ion beams for the synthesis and controlled modification of nanomaterials'**

Nordlund, K. (Ordförande)  
2011

**Fall MRS 2011 meeting, symposium Self-organization and nanoscale pattern formation**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2011

**International Committee for Radiation Effects in Insulators (REI) conference (Extern organisation)**

Nordlund, K. (Styrelsemedlem)  
2011 → 2015

**Konstantin Avchachiov, PhD thesis supervision**

Nordlund, K. (Bihandledare)  
2011 → 2015

**OECD Nuclear Energy Agency (Extern organisation)**

Nordlund, K. (Ordförande)  
2011 → 2015

**PRACE Summer School for advanced programming of Tier-0 supercomputers**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2011

**Spring MRS meeting, symposium Ion Beams – New Applications from the Mesoscale to Nanoscale**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2011

**Towards Reality in Nanoscale Materials**

Nordlund, K. (Ordförande)  
2011

**18th International Workshop on Inelastic Ion-Surface Collisions**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2010

**24th International Conference on Atomic Collisions in Solids**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2010

**CECAM workshop on radiation damage and non-adiabatic simulations**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2010

**CIMTEC 2010 - 12th International Ceramics Congress & 5th Forum on New Materials**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2010

**Mohammad Wali Ullah, PhD thesis supervision**

Nordlund, K. (Bihandledare)  
2010 → 2014

**OECD Nuclear Energy Agency (Extern organisation)**

Nordlund, K. (Ordförande)  
2010 → 2014

**SPIE Photonics West Meeting on Synthesis and Photonics of Nanoscale Materials VII (SPnsM-VII)**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2010

**Spring MRS meeting, symposium Materials for Nuclear Applications and Extreme Environments**

Nordlund, K. (Talare: Inledningsanförande (keynote))  
2010

**Towards Reality in Nanoscale Materials**

Nordlund, K. (Ordförande)  
2010

**Aarne Pohjonen, PhD thesis co-supervision**

Nordlund, K. (Bihandledare)  
2009 → 2013

**Ane Lasa, PhD thesis supervision**

Nordlund, K. (Handledare)  
2009 → 2013

**Eero Holmström, PhD thesis supervision**

Nordlund, K. (Handledare)  
2009 → 2012

**Helga Timko, PhD thesis supervision**

Nordlund, K. (Bihandledare)  
2009 → 2011

**Nanostructures in silica**

Nordlund, K. (Ordförande)  
2009

**Ville Jansson, PhD thesis co-supervision**

Nordlund, K. (Bihandledare)  
2009 → 2013

**Ville Jansson, PhD thesis supervision**

Nordlund, K. (Bihandledare)  
2009 → 2013

**Katharina Vörtler, PhD thesis supervision**

Nordlund, K. (Handledare)  
2008 → 2011

**Marie Backman, PhD thesis supervision**

Nordlund, K. (Bihandledare)  
2008 → 2012

**Antti Tolvanen, Co-Supervision of PhD thesis**

Nordlund, K. (Handledare)

2007 → 2010

**Jussi Polvi, PhD thesis supervision**

Nordlund, K. (Handledare)

2007 → 2013

**Ari Harjunmaa, Supervision of PhD thesis**

Nordlund, K. (Handledare)

2006 → 2011

**Carolina Björkas, Supervision of PhD thesis**

Nordlund, K. (Handledare)

2006 → 2009

**Niklas Juslin, Supervision of PhD thesis**

Nordlund, K. (Handledare)

2006 → 2009

**Tommi Järvi, Supervision of PhD thesis**

Nordlund, K. (Handledare)

2006 → 2009

**Invited talks at international conferences 2005 - 2010**

Nordlund, K. (Talare: Presentation)

1 jan. 2005 → 31 dec. 2010

**Co-supervision of PhD thesis**

Nordlund, K. (Handledare)

2005 → 2007

**Juha Samela, Supervision of PhD thesis**

Nordlund, K. (Handledare)

2005 → 2008

**Supervision of PhD thesis**

Nordlund, K. (Handledare)

2004 → 2009

**Supervision of PhD thesis**

Nordlund, K. (Handledare)

2002 → 2006

**Krister Henriksson, Supervision of PhD thesis**

Nordlund, K. (Handledare)

2001 → 2005

**International Committee for the Computer simulation of radiation effects in solids (COSIRES) conference (Extern organisation)**

Nordlund, K. (Styrelsemedlem)

2000 → ...

**Supervision of PhD thesis**

Nordlund, K. (Handledare)

2000 → 2003

**Supervision of PhD thesis**  
Nordlund, K. (Handledare)  
2000 → 2003

**Supervision of PhD thesis**  
Nordlund, K. (Handledare)  
2000 → 2004

**Supervision of PhD thesis**  
Nordlund, K. (Handledare)  
1999 → 2002

**Supervision of PhD student**  
Nordlund, K. (Handledare)  
1997 → 2000

**Supervision of PhD thesis**  
Nordlund, K. (Handledare)  
1997 → 2000

**Yunzheng Zhong, Co-supervision of PhD thesis**  
Nordlund, K. (Bihandledare)  
1997 → 1999