

Jouko Nieminen (b. 1962), List of Publications:

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Articles in peer-reviewed journals:

Ten most important publications: 1, 2, 5, 6, 7, 8, 13, 17, 18, 20.

1. Daniel J. Trainer, BaoKai Wang, Fabrizio Bobba, Noah Samuelson, Xiaoxing Xi, John Zasadzinski, Jouko Nieminen, Arun Bansil, and Maria Iavarone, Proximity-Induced Superconductivity in Monolayer MoS₂, ACS Nano, <https://doi.org/10.1021/acsnano.9b07475>, (2020).
2. Andrew J. Mannix, Timo Saari, Brian Kiraly, Brandon L. Fisher, Chia-Hsiu Hsu, Zhi-Quan Huang, Feng-Chuan Chuang, Jouko Nieminen, Hsin Lin, Arun Bansil, Mark C. Hersam, and Nathan P. Guisinger, Edge and Surface States in the Honeycomb Reconstruction of Two- Dimensional Silicon Nanosheets, Appl. Phys. Lett. **115**, 023102 (2019); <https://doi.org/10.1063/1.5095414>.
3. Saari, T., Nieminen, J., Spin filtering in silicene by edges and chemically or electrically induced interfaces, Journal of Physics and Chemistry of Solids, <https://doi.org/10.1016/j.jpcs.2017.12.037>, (2018).
4. Trainer, D., Putilov, A., Wang, B., Lane, C., Saari, T. T., Chang, T-R., Jeng, H-T., Lin, Xi, X., Nieminen, J. A., Bansil, A. & Iavarone, M, Moiré superlattices and 2D electronic properties of graphite/MoS₂ heterostructures, Journal of Physics and Chemistry of Solids **128**, 325(2019), <https://doi.org/10.1016/j.jpcs.2017.10.034>.
5. Saari, T., Nieminen, J. & Bansil, A., Spectroscopic signatures of different symmetries of the superconducting order parameter in metal-decorated graphene, Journal of Physics: Condensed Matter. 29, 21, p. 215601 (2017).
6. Trainer, D., Putilov, A., Di Giorgio, C. I., Saari, T. T., Wang, B., Wolak, M., Chandrasena, R., Lane, C., Chang, T-R., Jeng, H-T., Lin, H., Kronast, F., Gray, A., Xi, X., Nieminen, J. A., Bansil, A. & Iavarone, M, Inter-Layer Coupling Induced Valence Band Edge Shift in Mono- to Few-Layer MoS₂, Scientific Reports. 7, 40559 (2017).
7. Paavilainen, S., Ropo, M., Nieminen, J., Akola, J. & Räsänen, E., Coexisting Honeycomb and Kagome Characteristics in the Electronic Band Structure of Molecular Graphene, Nano Letters. 16, 3519(2016). Graphene, Nano Letters. 16, 3519(2016).
8. Ilija Zeljkovic, Jouko Nieminen, Dennis Huang, Tay-Rong Chang, Yang He, Horng-Tay Jeng, Zhijun Xu, Jinsheng Wen, Genda Gu, Hsin Lin, Robert Markiewicz, Arun Bansil, Jennifer Hoffman, Nanoscale interplay of strain and doping in a high-temperature superconductor, Nano Letters 14, 6749(2014).
9. Timo Saari, Cheng-Yi Huang, Jouko Nieminen, Wei-Feng Tsai, Hsin Lin, and Arun Bansil, Electrically tunable localized tunneling channels in silicene nanoribbons , Appl. Phys. Lett. 104, 173104 (2014).
10. M. Ärrälä, J. Nieminen, J. Braun, H. Ebert, and M. Lindroos, Photon energy dependence of circular dichroism of the Au(111) surface state, Phys. Rev. B 88, 195413 (2013).
11. Jouko Nieminen, Theory for Picoscale Scanning Tunneling Microscopy, Chapter 14 of Fundamentals of Picoscience, Edited by Klaus D. Sattler, Taylor & Francis (2014).

12. Bansil, B. Barbiellini, Susmita Basak, Tanmoy Das, Hsin Lin, M. Lindroos, Jouko Nieminen, Ilpo Suominen, Yung Jui Wang, R.S. Markiewicz, Modeling Highly Resolved Spectroscopies of Complex Materials, *Journal of Superconductivity and Novel Magnetism* 25, 1557(2012).
13. Jouko Nieminen, Ilpo Suominen, Tanmoy Das, Robert Markiewicz, and Arun Bansil, Evidence of strong correlations at the Van Hove singularity in the scanning tunneling spectra of superconducting $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ single crystals, *Phys. Rev. B* 85, 214504 (2012).
14. Ilpo Suominen, Jouko Nieminen, R.S. Markiewicz, and A. Bansil, Effect of orbital symmetry of the tip on Scanning Tunneling Spectra of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$, *Physical Review B* 84, 014528 (2011).
15. Arun Bansil, Susmita Basak, Tanmoy Das, Hsin Lin, Matti Lindroos, Jouko Nieminen, Ilpo Suominen, and Robert S. Markiewicz, Interplay of matrix element, self-energy and geometric effects in various spectroscopies of the cuprates. *J. of Physics and Chemistry of Solids* 72, 341(2011).
16. Ilpo Suominen, Jouko Nieminen, R.S. Markiewicz, and A. Bansil, Induced superconductivity in noncuprate layers of the $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ high-temperature superconductor: Modeling of scanning tunneling spectra, *Phys. Rev. B* 83, 024501 (2011).
17. Antti Korventausta, Jörg Meyer and Jouko Nieminen, Carrier wave effect in non-resonant IETS of molecules with delocalized frontier orbitals, *Phys. Rev. B* 81, 245426 (2010).
18. Susmita Basak, Tanmoy Das, Hsin Lin, J. Nieminen, M. Lindroos, R.S. Markiewicz, and A. Bansil, Origin of the high-energy kink in the photoemission spectrum of the high-temperature superconductor $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$, *Phys. Rev. B* 80, 214520(2009).
19. Jouko Nieminen, Ilpo Suominen, R.S. Markiewicz, Hsin Lin, A. Bansil, Spectral decomposition and matrix element effects in scanning tunneling spectroscopy of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$, *Phys. Rev. B* 80, 134509(2009).
20. J. Nieminen, R.S. Markiewicz, H. Lin and A. Bansil, Origin of the electron-hole asymmetry in the scanning tunneling spectrum of the high-temperature $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ superconductor, *Phys. Rev. Lett.* 102, 037001 (2009).
21. Antti Korventausta, Sami Paavilainen, Eeva Niemi and J. Nieminen, STM Simulation of Molecules on Ultrathin Insulating Overlayers using Tight-Binding: Au-Pentacene on NaCl bilayer on Cu, *Surface Science* 603, 437-444(2009).
22. Bansil, R.S. Markiewicz, S. Sahrakorpi, Hsin Lin, M. Lindroos and J. Nieminen, Modeling electronic structure and highly resolved spectroscopies of cuprates: *Physica C* 460-462, 222-225(2007).
23. Eeva Niemi, Violeta Simic-Milosevic, Karina Morgenstern, Antti Korventausta, Sami Paavilainen and Jouko Nieminen, Submolecular imaging of chloronitrobenzene molecules on Cu(111), *J. Chem. Phys.* 125, 184708 (2006).
24. Eeva Niemi and Jouko Nieminen, Channel selective Scanning Tunneling Spectroscopy, *Surf. Sci.* 600, 2548(2006).
25. Markku Leino, Jouko Nieminen, Tapio Rantala, Finite temperature quantum distribution of hydrogen on nickel (001) surface, *Surf. Sci.* 600, 1860(2006).

26. Jouko Nieminen, Eeva Niemi, Violeta Simic-Milosevic, Karina Morgenstern, STM images and tunneling channels of substituted benzene molecules, *Phys. Rev. B* 72, 195421(2005).
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28. Eeva Niemi and Jouko Nieminen, Molecular reorientation in assembled CO structures and contrast inversion in STM, *Chem. Phys. Lett.* 397, 200-204(2004).
29. Karina Morgenstern and Jouko Nieminen, Imaging water on Ag(111): Field induced reorientation and contrast inversion, *J. Chem. Phys.* 120, 10786(2004).
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31. S. Paavilainen and J.A. Nieminen, Model calculations of STM imaging and manipulation of oxygen on Pt(111), *Surface Science* 521, 69(2002).
32. Jouko Nieminen, Sakari Lahti, Sami Paavilainen and Karina Morgenstern, Contrast changes in STM images and relations between different tunneling models, *Phys. Rev. B* 66, 165421(2002).
33. S. Paavilainen and J.A. Nieminen, Path and energy dependence of CH₄ dissociation on Pd(110) and Pd(320), *Phys. Rev. B* 66, 155409(2002).
34. Karina Morgenstern and Jouko Nieminen, Intermolecular Bond Length of Ice on Ag(111), *Phys. Rev. Letters* 88, 066102(2002).
35. S. Paavilainen and J.A. Nieminen, Effect of Translational and Vibrational Energies on Dissociation of Methane on Pd(110)- A Molecular Dynamics Study, *Surface Science Letters* 486, L489(2001).
36. M. Hirsimäki, S. Paavilainen, J.A. Nieminen and M. Valden, Role of translational and vibrational energy in the dissociative chemisorption of methane on Pd{110}, *Surface Science* 482-485, 171(2001).
37. Silvia Schintke, Stéphane Messerli, Karina Morgenstern, Jouko Nieminen, and Wolf-Dieter Schneider, Far-ranged transient motion of 'hot' oxygen atoms upon dissociation, *Journal of Chemical Physics* 114, 4206(2001).
38. Stéphane Messerli, Silvia Schintke, Karina Morgenstern, Jouko Nieminen, and Wolf-Dieter Schneider, Oxygen Molecules on Ag(001): superstructure, binding site and molecular orientation, *Chem. Phys. Lett.* 328, 330(2000).
39. J.A.Nieminen and S. Paavilainen, Bridging the gap over size scales: A Green's function method to combine tight-binding and semiempirical force calculations, *Phys. Rev. B* 60, 2921(1999).
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41. J.A. Nieminen, Adsorbate-induced Surface Reconstructions of Pd{110} - Do Phonons Contribute?, *Surface Science Letters* 373, L345(1997)
42. M. Haataja, J.A. Nieminen, and T. Ala-Nissila, Dynamics of the Spreading of Chainlike Molecules with Asymmetric Surface Interactions, *Phys. Rev. E* 53, 5111(1996).

43. A.R.H. Clarke, J.B. Pethica, J.A. Nieminen, F. Besenbacher, E. Lægsgaard and I. Stensgaard, Quantitative Scanning Tunneling Microscopy at atomic resolution: influence of forces and tip configuration, *Phys. Rev. Letters* 76, 1276(1996). 1
44. J.A. Nieminen, Atomic exchange mean field study of intermixing of Au on Ag(110), *Surf. Sci. Letters*, 344, L1213(1995).
45. M. Haataja, J.A. Nieminen and T. Ala-Nissila, Molecular ordering of precursor films during spreading of tiny liquid droplets, *Phys. Rev. E* 52, R2165(1995).
46. J.A. Nieminen, Temperature dependence of surface reconstructions of Au on Pd(110), *Phys. Rev. Letters* 74, 3856(1995).
47. J.A. Nieminen and T. Ala-Nissila, Spreading dynamics of polymer microdroplets: A molecular-dynamics study, *Phys. Rev. E* 49, 4228(1994).
48. J.A. Nieminen and T. Ala-Nissila, Dynamics of Spreading of Small Droplets of Chainlike Molecules on Surfaces, *Europhysics Letters* 25, 593(1994).
49. A.P. Sutton, J.B. Pethica, H. Rafii-Tabar and J.A. Nieminen, Mechanical properties of metals at the nanometre scale, Chapter 7 of *Electron Theory in Alloys Design*, eds. D.G. Pettifor and A.H. Cottrell, Inst. of Metals.: London, (1992).
50. J.A. Nieminen, A.P. Sutton and J.B. Pethica: Static junction growth during frictional sliding of metal, *Acta Metallurgica et Materialia* 40, 2503(1992).
51. J.A. Nieminen, A.P. Sutton, J.B. Pethica and K. Kaski: Mechanism of lubrication by a thin solid film on a metal surface, *Modelling and Simulation in Materials Science and Engineering* 1, 83(1992).
52. J.A. Nieminen, D.B. Abraham, M. Karttunen and K. Kaski: Molecular dynamics of a Microscopic Droplet on Solid Surface, *Phys. Rev. Letters* 69, 124(1992).
53. J.A. Nieminen: Computer simulation of quantum features of very weakly quantum-mechanical systems, *Chemical Physics Letters* 191, 483(1992).
54. J.A. Nieminen and K. Kaski: Continuous-space Monte Carlo study of a generalized lattice-gas model: Systems with and without lattice mismatch, *Physica Scripta T33*, 133(1990).
55. J.A. Nieminen and K. Kaski: Layering and wetting transitions in a multilayer system, *Physica Scripta T33*, 185(1990).
56. J.A. Nieminen and K. Kaski: Continuous-space Monte Carlo study of a generalized lattice-gas model, *Phys. Rev. B* 41, 2321(1990).
57. J.A. Nieminen and K. Kaski: Rate-equation study of nucleation and growth of thin films. II. Multilayer Growth, *Phys. Rev. A* 40, 2096(1989).
58. J.A. Nieminen and K. Kaski: Rate-equation study of nucleation and growth of thin films. I. Growth of one monolayer, *Phys. Rev. A* 40, 2088(1989).
59. J.A. Nieminen and K. Kaski: Criteria for Different Growth Modes of Thin Films, *Surf. Sci.* 185, L489(1987).
60. K. Kaski, J. Nieminen and J.D. Gunton: Domain Growth and Scaling in the Q-state Potts Model. *Phys. Rev. B* 31, 2998(1985).

Manuscripts to be published or in preparation:

1. Daniel J. Trainer, Baokai Wang, Fabrizio Bobba, Noah Samuelson, Xiaoxing Xi, John Zasadzinski, Jouko Nieminen, Arun Bansil, Maria Iavarone: Proximity Induced Superconductivity in Monolayer MoS₂, submitted to ACS Nano (2019).

- **Patents and invention filings:**

1. Arun Bansil, Timo Saari, Cheng-Yi Huang, Jouko Nieminen, Wei-Feng Tsai, and Hsin Lin, Electrically tunable localized tunneling channels in Silicene nanoribbons – TTY/501/431/2014 and a provisional patent disclosure US Provisional Patent Application No. 61/976,878.

- **Proceedings and series:**

1. Martti Kauranen, Ari Laitinen, Jouko Nieminen and Tapio T. Rantala (Ed.), Proceedings of the XL Annual Conference of the Finnish Physical Society, March 9-11 2006, Tampere, Finland.
2. Jouko Nieminen, Sampo Kulju, Esa Räsänen (Ed.), Proceedings of the 48th Annual Meeting of the Finnish Physical Society, March 11-13, 2014, Tampere, Finland.

Invited talks:

1. J.A. Nieminen: Chaos returns to its roots: points of view to classical mechanics (in Finnish, to be published in Arpakannus, the publication of the Artificial Intelligence Society of Finland), in symposium: Chaos and Computational Science, University of Technology, Espoo, Finland (1990).
2. J.A. Nieminen: Molecular Dynamics simulation of Droplet Spreading, The Annual meeting of Finnish Physical Society, Turku, Finland, 18.-20. 3. 1993.
3. J.A. Nieminen: Dynamics of Spreading of Small Polymer Droplets on Surfaces (in Finnish), the annual meeting of the Society for industrial Physics of Finland, Tampere, Finland, 7.9.-8.9. 1993.
4. J.A. Nieminen and S. Paavilainen: Tip-Sample Interactions and STM Imaging, CECAM-SIMU workshop on simulation and theory of solid friction: from atomic shear forces to macroscopic tribology, Lyon, France, 27.-30.8. 2001.
5. Jouko Nieminen, Spin and Charge Resolved Tunneling Channels in Two-Dimensional Silicene Sheets, ICMAT2015 (8th International Conference on Materials for Advanced Technologies of the Materials Research Society of Singapore). An invited lecture in Functional Spin-Orbit Coupling Materials -symposium, Singapore 28.6.-3.7.2015.
6. Jouko Nieminen, Spectroscopic signatures of different symmetries of the superconducting order parameter in metal-decorated graphene, E-MRS 2018 Fall meeting, Warsaw 17.9.-20.9.2018. An invited presentation in Emerging layered functional materials and their characterization -symposium, 2018.