Jani Kotakoski

List of Publications by Year
in descending order

145	11,842	43973 48	26548 107
papers	citations	h-index	g-index

153	153	153	13952
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Structural Defects in Graphene. ACS Nano, 2011, 5, 26-41.	7.3	2,818
2	Two-Dimensional Transition Metal Dichalcogenides under Electron Irradiation: Defect Production and Doping. Physical Review Letters, 2012, 109, 035503.	2.9	960
3	From Point Defects in Graphene to Two-Dimensional Amorphous Carbon. Physical Review Letters, 2011, 106, 105505.	2.9	675
4	Accurate Measurement of Electron Beam Induced Displacement Cross Sections for Single-Layer Graphene. Physical Review Letters, 2012, 108, 196102.	2.9	383
5	Effects of ion bombardment on a two-dimensional target: Atomistic simulations of graphene irradiation. Physical Review B, 2010, 81, .	1.1	341
6	Confined linear carbon chains as a route to bulkÂcarbyne. Nature Materials, 2016, 15, 634-639.	13.3	341
7	High-Performance Hybrid Electronic Devices from Layered PtSe₂ Films Grown at Low Temperature. ACS Nano, 2016, 10, 9550-9558.	7.3	310
8	Electron knock-on damage in hexagonal boron nitride monolayers. Physical Review B, 2010, 82, .	1.1	241
9	Direct Imaging of a Two-Dimensional Silica Glass on Graphene. Nano Letters, 2012, 12, 1081-1086.	4.5	236
10	Novel High Pressure Structures of Polymeric Nitrogen. Physical Review Letters, 2009, 102, 065501.	2.9	226
11	Stone-Wales-type transformations in carbon nanostructures driven by electron irradiation. Physical Review B, 2011, 83, .	1.1	226
12	Energetics, structure, and long-range interaction of vacancy-type defects in carbon nanotubes: Atomistic simulations. Physical Review B, 2006, 74, .	1.1	202
13	Mechanical properties of polycrystalline graphene based on a realistic atomistic model. Physical Review B, 2012, 85, .	1.1	181
14	Atom-by-Atom Observation of Grain Boundary Migration in Graphene. Nano Letters, 2012, 12, 3168-3173.	4.5	178
15	Raman characterization of platinum diselenide thin films. 2D Materials, 2016, 3, 021004.	2.0	172
16	Charge Transport in Polycrystalline Graphene: Challenges and Opportunities. Advanced Materials, 2014, 26, 5079-5094.	11.1	166
17	Manipulating low-dimensional materials down to the level of single atoms with electron irradiation. Ultramicroscopy, 2017, 180, 163-172.	0.8	135
18	Cutting and controlled modification of graphene with ion beams. Nanotechnology, 2011, 22, 175306.	1.3	130

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19	Atomistic simulations of the implantation of low-energy boron and nitrogen ions into graphene. Physical Review B, 2011, 83, .	1.1	127
20	Scaling Properties of Charge Transport in Polycrystalline Graphene. Nano Letters, 2013, 13, 1730-1735.	4.5	126
21	Siliconâ€“Carbon Bond Inversions Driven by 60-keV Electrons in Graphene. Physical Review Letters, 2014, 113, 115501.	2.9	123
22	Stability of Graphene Edges under Electron Beam: Equilibrium Energetics <i>versus</i> Dynamic Effects. ACS Nano, 2012, 6, 671-676.	7.3	120
23	Atomistic Description of Electron Beam Damage in Nitrogen-Doped Graphene and Single-Walled Carbon Nanotubes. ACS Nano, 2012, 6, 8837-8846.	7.3	119
24	Imaging atomic-level random walk of a point defect in graphene. Nature Communications, 2014, 5, 3991.	5.8	103
25	Electron-Beam Manipulation of Silicon Dopants in Graphene. Nano Letters, 2018, 18, 5319-5323.	4.5	98
26	Nanopore fabrication and characterization by helium ion microscopy. Applied Physics Letters, 2016, 108, .	1.5	96
27	B and N ion implantation into carbon nanotubes: Insight from atomistic simulations. Physical Review B, 2005, 71, .	1.1	88
28	Implanting Germanium into Graphene. ACS Nano, 2018, 12, 4641-4647.	7.3	86
29	Toward Two-Dimensional All-Carbon Heterostructures via Ion Beam Patterning of Single-Layer Graphene. Nano Letters, 2015, 15, 5944-5949.	4.5	85
30	Unraveling the 3D Atomic Structure of a Suspended Graphene/hBN van der Waals Heterostructure. Nano Letters, 2017, 17, 1409-1416.	4.5	84
31	Ion Impacts on Graphene/Ir(111): Interface Channeling, Vacancy Funnels, and a Nanomesh. Nano Letters, 2013, 13, 1948-1955.	4.5	81
32	Defects in bilayer silica and graphene: common trends in diverse hexagonal two-dimensional systems. Scientific Reports, 2013, 3, 3482.	1.6	80
33	Quantifying transmission electron microscopy irradiation effects using two-dimensional materials. Nature Reviews Physics, 2019, 1, 397-405.	11.9	79
34	Single-atom spectroscopy of phosphorus dopants implanted into graphene. 2D Materials, 2017, 4, 021013.	2.0	77
35	Towards atomically precise manipulation of 2D nanostructures in the electron microscope. 2D Materials, 2017, 4, 042004.	2.0	73
36	Computational insights and the observation of SiC nanograin assembly: towards 2D silicon carbide. Scientific Reports, 2017, 7, 4399.	1.6	73

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37	2D Material Science: Defect Engineering by Particle Irradiation. Materials, 2018, 11, 1885.	1.3	69
38	A journey from order to disorder â€” Atom by atom transformation from graphene to a 2D carbon glass. Scientific Reports, 2014, 4, 4060.	1.6	67
39	Isotope analysis in the transmission electron microscope. Nature Communications, 2016, 7, 13040.	5.8	64
40	Engineering and modifying two-dimensional materials by electron beams. MRS Bulletin, 2017, 42, 667-676.	1.7	62
41	Cleaning graphene: Comparing heat treatments in air and in vacuum. Physica Status Solidi - Rapid Research Letters, 2017, 11, 1700124.	1.2	61
42	Engineering single-atom dynamics with electron irradiation. Science Advances, 2019, 5, eaav2252.	4.7	61
43	Defect engineering of single- and few-layer MoS ₂ by swift heavy ion irradiation. 2D Materials, 2017, 4, 015034.	2.0	60
44	A quantitative and comparative study of sputtering yields in Au. Nuclear Instruments & Methods in Physics Research B, 2005, 239, 331-346.	0.6	58
45	Atomic Structure of Intrinsic and Electron-Irradiation-Induced Defects in MoTe₂. Chemistry of Materials, 2018, 30, 1230-1238.	3.2	56
46	Creating nanoporous graphene with swift heavy ions. Carbon, 2017, 114, 511-518.	5.4	52
47	Atomic-Scale <i>in Situ</i> Observations of Crystallization and Restructuring Processes in Two-Dimensional MoS₂ Films. ACS Nano, 2018, 12, 8758-8769.	7.3	51
48	Production of defects in hexagonal boron nitride monolayer under ion irradiation. Nuclear Instruments & Methods in Physics Research B, 2011, 269, 1327-1331.	0.6	50
49	Buckyball sandwiches. Science Advances, 2017, 3, e1700176.	4.7	50
50	Finite-size effects in the phonon density of states of nanostructured germanium: A comparative study of nanoparticles, nanocrystals, nanoglasses, and bulk phases. Physical Review B, 2011, 83, .	1.1	49
51	Relative abundance of single and double vacancies in irradiated single-walled carbon nanotubes. Applied Physics Letters, 2007, 91, 173109.	1.5	45
52	First-principles calculations on solid nitrogen: A comparative study of high-pressure phases. Physical Review B, 2008, 77, .	1.1	45
53	The diffusion of carbon atoms inside carbon nanotubes. New Journal of Physics, 2008, 10, 023022.	1.2	42
54	Ion irradiation tolerance of graphene as studied by atomistic simulations. Applied Physics Letters, 2012, 100, 233108.	1.5	42

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55	Perforating Freestanding Molybdenum Disulfide Monolayers with Highly Charged Ions. Journal of Physical Chemistry Letters, 2019, 10, 904-910.	2.1	42
56	An atomically thin matter-wave beamsplitter. Nature Nanotechnology, 2015, 10, 845-848.	15.6	41
57	Direct imaging of light-element impurities in graphene reveals triple-coordinated oxygen. Nature Communications, 2019, 10, 4570.	5.8	39
58	Chemical Oxidation of Graphite: Evolution of the Structure and Properties. Journal of Physical Chemistry C, 2018, 122, 929-935.	1.5	38
59	Visualising the strain distribution in suspended two-dimensional materials under local deformation. Scientific Reports, 2016, 6, 28485.	1.6	37
60	Introducing Overlapping Grain Boundaries in Chemical Vapor Deposited Hexagonal Boron Nitride Monolayer Films. ACS Nano, 2017, 11, 4521-4527.	7.3	35
61	Xe irradiation of graphene on Ir(111): From trapping to blistering. Physical Review B, 2015, 92, .	1.1	32
62	Inclusion of radiation damage dynamics in high-resolution transmission electron microscopy image simulations: The example of graphene. Physical Review B, 2013, 87, .	1.1	31
63	Probing from Both Sides: Reshaping the Graphene Landscape via Face-to-Face Dual-Probe Microscopy. Nano Letters, 2013, 13, 1934-1940.	4.5	31
64	Grain boundary-mediated nanopores in molybdenum disulfide grown by chemical vapor deposition. Nanoscale, 2017, 9, 1591-1598.	2.8	31
65	Atomic structure and energetics of large vacancies in graphene. Physical Review B, 2014, 89, .	1.1	30
66	Atomic structure from large-area, low-dose exposures of materials: A new route to circumvent radiation damage. Ultramicroscopy, 2014, 145, 13-21.	0.8	30
67	Irradiation-assisted substitution of carbon atoms with nitrogen and boron in single-walled carbon nanotubes. Nuclear Instruments & Methods in Physics Research B, 2005, 228, 31-36.	0.6	29
68	Interfacial Carbon Nanoplatelet Formation by Ion Irradiation of Graphene on Iridium(111). ACS Nano, 2014, 8, 12208-12218.	7.3	29
69	Efficient first principles simulation of electron scattering factors for transmission electron microscopy. Ultramicroscopy, 2019, 197, 16-22.	0.8	29
70	Toward Exotic Layered Materials: 2D Cuprous Iodide. Advanced Materials, 2022, 34, e2106922.	11.1	28
71	Progress in electronics and photonics with nanomaterials. Vacuum, 2017, 146, 304-307.	1.6	27
72	Silicon Substitution in Nanotubes and Graphene via Intermittent Vacancies. Journal of Physical Chemistry C, 2019, 123, 13136-13140.	1.5	27

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73	Structural manipulation of the graphene/metal interface with Ar<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msup><mml:mrow /><mml:mo>+</mml:mo></mml:msup></mml:math>irradiation. Physical Review B, 2013, 88, .	1.1	26
74	Scanning transmission electron microscopy under controlled low-pressure atmospheres. Ultramicroscopy, 2019, 203, 76-81.	0.8	24
75	Atomic-Level Structural Engineering of Graphene on a Mesoscopic Scale. Nano Letters, 2021, 21, 5179-5185.	4.5	24
76	Enhanced Tunneling in a Hybrid of Single-Walled Carbon Nanotubes and Graphene. ACS Nano, 2019, 13, 11522-11529.	7.3	23
77	Nitrogen controlled iron catalyst phase during carbon nanotube growth. Applied Physics Letters, 2014, 105, .	1.5	22
78	Atomic-Scale Carving of Nanopores into a van der Waals Heterostructure with Slow Highly Charged Ions. ACS Nano, 2020, 14, 10536-10543.	7.3	22
79	Scalable growth of single-walled carbon nanotubes with a highly uniform structure. Nanoscale, 2020, 12, 12263-12267.	2.8	22
80	Atomic-Scale Deformations at the Interface of a Mixed-Dimensional van der Waals Heterostructure. ACS Nano, 2018, 12, 8512-8519.	7.3	19
81	Single Indium Atoms and Few-Atom Indium Clusters Anchored onto Graphene via Silicon Heteroatoms. ACS Nano, 2021, 15, 14373-14383.	7.3	19
82	Kinetic Monte Carlo Simulations of the Response of Carbon Nanotubes to Electron Irradiation. Journal of Computational and Theoretical Nanoscience, 2007, 4, 1153-1159.	0.4	19
83	Atomistic simulations of irradiation effects in carbon nanotubes: an overview. Radiation Effects and Defects in Solids, 2007, 162, 157-169.	0.4	17
84	Highly efficient bilateral doping of single-walled carbon nanotubes. Journal of Materials Chemistry C, 2021, 9, 4514-4521.	2.7	17
85	In situ control of graphene ripples and strain in the electron microscope. Npj 2D Materials and Applications, 2018, 2, .	3.9	16
86	Substitutional Si impurities in monolayer hexagonal boron nitride. Applied Physics Letters, 2019, 115, .	1.5	16
87	Potassium intercalated multiwalled carbon nanotubes. Carbon, 2016, 105, 90-95.	5.4	15
88	Coherent diffraction of hydrogen through the 246 pm lattice of graphene. New Journal of Physics, 2019, 21, 033004.	1.2	15
89	Direct visualization of the 3D structure of silicon impurities in graphene. Applied Physics Letters, 2019, 114, .	1.5	15
90	Vanishing influence of the band gap on the charge exchange of slow highly charged ions in freestanding single-layer <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mi>MoS</mml:mi><mml:mn>2</mml:mn></mml:msub></mm Physical Review B, 2020, 102, .	1.1	15

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91	Intrinsic core level photoemission of suspended monolayer graphene. Physical Review Materials, 2018, 2, .	0.9	15
92	Carbon Nano-onions: Potassium Intercalation and Reductive Covalent Functionalization. Journal of the American Chemical Society, 2021, 143, 18997-19007.	6.6	15
93	A molecular dynamics study of the clustering of implanted potassium in multiwalled carbon nanotubes. Nuclear Instruments & Methods in Physics Research B, 2005, 240, 810-818.	0.6	14
94	Revealing the 3D structure of graphene defects. 2D Materials, 2018, 5, 045029.	2.0	14
95	Electronâ€Beam Manipulation of Silicon Impurities in Singleâ€Walled Carbon Nanotubes. Advanced Functional Materials, 2019, 29, 1901327.	7.8	14
96	Chemistry at graphene edges in the electron microscope. 2D Materials, 2021, 8, 035023.	2.0	14
97	Towards weighing individual atoms by high-angle scattering of electrons. Ultramicroscopy, 2015, 151, 23-30.	0.8	12
98	Influence of temperature on the displacement threshold energy in graphene. Scientific Reports, 2019, 9, 12981.	1.6	12
99	Hybrid Lowâ€Dimensional Carbon Allotropes Formed in Gas Phase. Advanced Functional Materials, 2020, 30, 2005016.	7.8	11
100	CuAu, a hexagonal two-dimensional metal. 2D Materials, 2020, 7, 045017.	2.0	11
101	Comment on â€œInterfacial Carbon Nanoplatelet Formation by Ion Irradiation of Graphene on Iridium(111)â€ ACS Nano, 2015, 9, 4664-4665.	7.3	10
102	Two-step implantation of gold into graphene. 2D Materials, 2022, 9, 025011.	2.0	10
103	Structure and electronic states of a graphene double vacancy with an embedded Si dopant. Journal of Chemical Physics, 2017, 147, 194702.	1.2	9
104	Process Pathway Controlled Evolution of Phase and Vanâ€derâ€Waals Epitaxy in In/In₂O₃ on Graphene Heterostructures. Advanced Functional Materials, 2020, 30, 2003300.	7.8	9
105	Stepâ€Byâ€Step Atomic Insights into Structural Reordering from 2D to 3D MoS 2. Advanced Functional Materials, 2021, 31, 2008395.	7.8	9
106	Atomic-scale effects behind structural instabilities in Si lamellae during ion beam thinning. AIP Advances, 2012, 2, .	0.6	8
107	A new detection scheme for van der Waals heterostructures, imaging individual fullerenes between graphene sheets, and controlling the vacuum in scanning transmission electron microscopy. Microscopy and Microanalysis, 2017, 23, 460-461.	0.2	8
108	Beam-driven dynamics of aluminium dopants in graphene. 2D Materials, 2022, 9, 035009.	2.0	8

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109	Impact of graphene polycrystallinity on the performance of graphene field-effect transistors. Applied Physics Letters, 2014, 104, 043509.	1.5	7
110	Indirect measurement of the carbon adatom migration barrier on graphene. Carbon, 2022, 196, 596-601.	5.4	7
111	Binding a carbon nanotube to the Si(100) surface using ion irradiationâ€"an atomistic simulation study. New Journal of Physics, 2006, 8, 115-115.	1.2	6
112	Cluster Superlattice Membranes. ACS Nano, 2020, 14, 13629-13637.	7.3	6
113	Structure and Energetics of Embedded Si Patterns in Graphene. Physica Status Solidi (B): Basic Research, 2017, 254, 1700188.	0.7	5
114	Three-dimensional <i>ab initio</i> description of vibration-assisted electron knock-on displacements in graphene. Physical Review B, 2022, 105, .	1.1	4
115	Transformation and Evaporation of Surface Adsorbents on a Graphene â€œHot Plateâ€. ACS Applied Materials & Interfaces, 2020, 12, 26313-26319.	4.0	3
116	Direct visualization of local deformations in suspended few-layer graphene membranes by coupled in situ atomic force and scanning electron microscopy. Applied Physics Letters, 2021, 118, 103104.	1.5	3
117	2D Noble Gas Crystals Encapsulated in Few-layer Graphene. Microscopy and Microanalysis, 2020, 26, 1086-1089.	0.2	3
118	Atom-by-Atom STEM Investigation of Defect Engineering in Graphene. Microscopy and Microanalysis, 2014, 20, 1736-1737.	0.2	2
119	Comment on â€œTemperature dependence of atomic vibrations in mono-layer grapheneâ€•[J. Appl. Phys. 118, 074302 (2015)]. Journal of Applied Physics, 2016, 119, 066101.	1.1	2
120	Patterned Ultra-Thin Gold Nanostructures on Graphene. Microscopy and Microanalysis, 2019, 25, 1530-1531.	0.2	2
121	Nanomachining Graphene with Ion Irradiation. Materials Research Society Symposia Proceedings, 2010, 1259, 1.	0.1	1
122	Structural Changes in 2D Materials Due to Scattering of Light Ions. Nanoscience and Technology, 2016, , 63-88.	1.5	1
123	Understanding and Exploiting the Interaction of Electron Beams With Low-dimensional Materials - From Controlled Atomic-level Manipulation to Circumventing Radiation Damage. Microscopy and Microanalysis, 2017, 23, 196-197.	0.2	1
124	Quantifying Elastic and Inelastic Electron Irradiation Damage in Transmission Electron Microscopy of 2D Materials. Microscopy and Microanalysis, 2019, 25, 454-455.	0.2	1
125	Atomic and electronic structure of graphene. , 2021, , 15-26.		1
126	The morphology of doubly-clamped graphene nanoribbons. 2D Materials, 2021, 8, 025035.	2.0	1

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127	Ion irradiation-induced welding of a carbon nanotube to a Si (100) surface. Materials Research Society Symposia Proceedings, 2005, 908, 1.	0.1	0
128	Quantitative Atomic-resolution Imaging and Spectroscopy of a 2D Silica Glass. Microscopy and Microanalysis, 2012, 18, 340-341.	0.2	0
129	Imaging the Atoms in a Two-Dimensional Silica Glass on Graphene. Microscopy and Microanalysis, 2012, 18, 1496-1497.	0.2	0
130	Quantitative Analysis of Electron Beam-Induced Destruction of Graphene Membranes under an Electron Microscope. Microscopy and Microanalysis, 2012, 18, 1500-1501.	0.2	0
131	Irradiation-induced Modifications and Beam-driven Dynamics in Low-dimensional Materials. Microscopy and Microanalysis, 2014, 20, 1726-1727.	0.2	0
132	Exploring Low-dimensional Carbon Materials by High-resolution Electron and Scanned Probe Microscopy. Microscopy and Microanalysis, 2015, 21, 1147-1148.	0.2	0
133	Atomic Structure of Amorphous 2D Carbon Structures as Revealed by Scanning Transmission Electron Microscopy. Microscopy and Microanalysis, 2015, 21, 997-998.	0.2	0
134	Graphene hybrids and extended defects: Revealing 3D structures and new insights to radiation damage. Microscopy and Microanalysis, 2018, 24, 1582-1583.	0.2	0
135	Silicon Substitution in Monolayer Hexagonal Boron Nitride. Microscopy and Microanalysis, 2019, 25, 2082-2083.	0.2	0
136	Electron-Beam Manipulation of Lattice Impurities in Graphene and Single-Walled Carbon Nanotubes. Microscopy and Microanalysis, 2019, 25, 938-939.	0.2	0
137	Atomic-scale Chemical Manipulation of Materials in the Scanning Transmission Electron Microscope under Controlled Atmospheres. Microscopy and Microanalysis, 2019, 25, 1398-1399.	0.2	0
138	Substitutional Si Doping of Graphene and Nanotubes through Ion Irradiation-Induced Vacancies. Microscopy and Microanalysis, 2019, 25, 1574-1575.	0.2	0
139	Quantitative Measurement and Utilization of Electron Irradiation Effects in 2D Materials. Microscopy and Microanalysis, 2020, 26, 166-166.	0.2	0
140	Energy deposition of highly charged ions transmitted through single layer MoS2. Journal of Physics: Conference Series, 2020, 1412, 162018.	0.3	0
141	Diffraction of 80 eV hydrogen through suspended graphene. Journal of Physics: Conference Series, 2020, 1412, 202036.	0.3	0
142	Atomistic Understanding of Damage and Beam-driven Dynamics in 2D Materials. Microscopy and Microanalysis, 2020, 26, 542-543.	0.2	0
143	Single indium atoms and few-atom indium clusters anchored onto graphene via silicon heteroatoms. Microscopy and Microanalysis, 2021, 27, 3346-3347.	0.2	0
144	Temperature-dependent displacement cross section of graphene and its impurities: measuring the carbon adatom migration barrier. Microscopy and Microanalysis, 2021, 27, 3340-3340.	0.2	0

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145	Kiruna-Type Ore as a Novel Precursor for Large-Scale Production of Small Uniform Iron Oxide Nanoparticles. Journal of Nanoscience and Nanotechnology, 2020, 20, 6525-6531.	0.9	0