Jani Kotakoski

List of Publications by Citations

144 papers	9,662 citations	43 h-index	97 g-index
153 ext. papers	10,873 ext. citations	6.8 avg, IF	6.42 L-index

#	Paper	IF	Citations
144	Structural defects in graphene. *ACS Nano*, **2011**, 5, 26-41	16.7	2388
143	Two-dimensional transition metal dichalcogenides under electron irradiation: defect production and doping. *Physical Review Letters*, **2012**, 109, 035503	7.4	768
142	From point defects in graphene to two-dimensional amorphous carbon. *Physical Review Letters*, **2011**, 106, 105505	7.4	582
141	Accurate measurement of electron beam induced displacement cross sections for single-layer graphene. *Physical Review Letters*, **2012**, 108, 196102	7.4	326
140	Effects of ion bombardment on a two-dimensional target: Atomistic simulations of graphene irradiation. *Physical Review B*, **2010**, 81,	3.3	303
139	Confined linear carbon chains as a route to bulk carbyne. *Nature Materials*, **2016**, 15, 634-9	27	250
138	High-Performance Hybrid Electronic Devices from Layered PtSe Films Grown at Low Temperature. *ACS Nano*, **2016**, 10, 9550-9558	16.7	245
137	Electron knock-on damage in hexagonal boron nitride monolayers. *Physical Review B*, **2010**, 82,	3.3	212
136	Direct imaging of a two-dimensional silica glass on graphene. *Nano Letters*, **2012**, 12, 1081-6	11.5	206
135	Stone-Wales-type transformations in carbon nanostructures driven by electron irradiation. *Physical Review B*, **2011**, 83,	3.3	199
134	Novel high pressure structures of polymeric nitrogen. *Physical Review Letters*, **2009**, 102, 065501	7.4	181
133	Energetics, structure, and long-range interaction of vacancy-type defects in carbon nanotubes: Atomistic simulations. *Physical Review B*, **2006**, 74,	3.3	178
132	Atom-by-atom observation of grain boundary migration in graphene. *Nano Letters*, **2012**, 12, 3168-73	11.5	154
131	Mechanical properties of polycrystalline graphene based on a realistic atomistic model. *Physical Review B*, **2012**, 85,	3.3	148
130	Raman characterization of platinum diselenide thin films. *2D Materials*, **2016**, 3, 021004	5.9	138
129	Charge transport in polycrystalline graphene: challenges and opportunities. *Advanced Materials*, **2014**, 26, 5079-94	24	137
128	Cutting and controlled modification of graphene with ion beams. *Nanotechnology*, **2011**, 22, 175306	3.4	119

127	Atomistic simulations of the implantation of low-energy boron and nitrogen ions into graphene. *Physical Review B*, **2011**, 83,	3.3	114
126	Scaling properties of charge transport in polycrystalline graphene. *Nano Letters*, **2013**, 13, 1730-5	11.5	108
125	Stability of graphene edges under electron beam: equilibrium energetics versus dynamic effects. *ACS Nano*, **2012**, 6, 671-6	16.7	104
124	Manipulating low-dimensional materials down to the level of single atoms with electron irradiation. *Ultramicroscopy*, **2017**, 180, 163-172	3.1	101
123	Atomistic description of electron beam damage in nitrogen-doped graphene and single-walled carbon nanotubes. *ACS Nano*, **2012**, 6, 8837-46	16.7	101
122	Silicon-carbon bond inversions driven by 60-keV electrons in graphene. *Physical Review Letters*, **2014**, 113, 115501	7.4	99
121	Imaging atomic-level random walk of a point defect in graphene. *Nature Communications*, **2014**, 5, 3991	17.4	93
120	B and N ion implantation into carbon nanotubes: Insight from atomistic simulations. *Physical Review B*, **2005**, 71,	3.3	84
119	Toward Two-Dimensional All-Carbon Heterostructures via Ion Beam Patterning of Single-Layer Graphene. *Nano Letters*, **2015**, 15, 5944-9	11.5	73
118	Ion impacts on graphene/Ir(111): interface channeling, vacancy funnels, and a nanomesh. *Nano Letters*, **2013**, 13, 1948-55	11.5	73
117	Nanopore fabrication and characterization by helium ion microscopy. *Applied Physics Letters*, **2016**, 108, 163103	3.4	72
116	Unraveling the 3D Atomic Structure of a Suspended Graphene/hBN van der Waals Heterostructure. *Nano Letters*, **2017**, 17, 1409-1416	11.5	71
115	Defects in bilayer silica and graphene: common trends in diverse hexagonal two-dimensional systems. *Scientific Reports*, **2013**, 3, 3482	4.9	71
114	Electron-Beam Manipulation of Silicon Dopants in Graphene. *Nano Letters*, **2018**, 18, 5319-5323	11.5	64
113	Implanting Germanium into Graphene. *ACS Nano*, **2018**, 12, 4641-4647	16.7	56
112	Single-atom spectroscopy of phosphorus dopants implanted into graphene. *2D Materials*, **2017**, 4, 021013	7.9	54
111	A journey from order to disorder - atom by atom transformation from graphene to a 2D carbon glass. *Scientific Reports*, **2014**, 4, 4060	4.9	53
110	Towards atomically precise manipulation of 2D nanostructures in the electron microscope. *2D Materials*, **2017**, 4, 042004	5.9	52

109	A quantitative and comparative study of sputtering yields in Au. *Nuclear Instruments & Methods in Physics Research B*, **2005**, 239, 331-346	1.2	51
108	Engineering and modifying two-dimensional materials by electron beams. *MRS Bulletin*, **2017**, 42, 667-676	3.2	48
107	Computational insights and the observation of SiC nanograin assembly: towards 2D silicon carbide. *Scientific Reports*, **2017**, 7, 4399	4.9	48
106	Isotope analysis in the transmission electron microscope. *Nature Communications*, **2016**, 7, 13040	17.4	47
105	Quantifying transmission electron microscopy irradiation effects using two-dimensional materials. *Nature Reviews Physics*, **2019**, 1, 397-405	23.6	45
104	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,	3.3	44
103	Creating nanoporous graphene with swift heavy ions. *Carbon*, **2017**, 114, 511-518	10.4	43
102	Production of defects in hexagonal boron nitride monolayer under ion irradiation. *Nuclear Instruments & Methods in Physics Research B*, **2011**, 269, 1327-1331	1.2	43
101	2D Material Science: Defect Engineering by Particle Irradiation. *Materials*, **2018**, 11,	3.5	42
100	Defect engineering of single- and few-layer MoS 2 by swift heavy ion irradiation. *2D Materials*, **2017** , 4, 015034	5.9	41
99	Relative abundance of single and double vacancies in irradiated single-walled carbon nanotubes. *Applied Physics Letters*, **2007**, 91, 173109	3.4	41
98	Engineering single-atom dynamics with electron irradiation. *Science Advances*, **2019**, 5, eaav2252	14.3	39
97	Atomic-Scale in Situ Observations of Crystallization and Restructuring Processes in Two-Dimensional MoS Films. *ACS Nano*, **2018**, 12, 8758-8769	16.7	39
96	Cleaning graphene: Comparing heat treatments in air and in vacuum. *Physica Status Solidi - Rapid Research Letters*, **2017**, 11, 1700124	2.5	39
95	Ion irradiation tolerance of graphene as studied by atomistic simulations. *Applied Physics Letters*, **2012**, 100, 233108	3.4	39
94	Buckyball sandwiches. *Science Advances*, **2017**, 3, e1700176	14.3	38
93	The diffusion of carbon atoms inside carbon nanotubes. *New Journal of Physics*, **2008**, 10, 023022	2.9	38
92	An atomically thin matter-wave beamsplitter. *Nature Nanotechnology*, **2015**, 10, 845-8	28.7	36

91	Atomic Structure of Intrinsic and Electron-Irradiation-Induced Defects in MoTe. *Chemistry of Materials*, **2018**, 30, 1230-1238	9.6	35
90	First-principles calculations on solid nitrogen: A comparative study of high-pressure phases. *Physical Review B*, **2008**, 77,	3.3	31
89	Chemical Oxidation of Graphite: Evolution of the Structure and Properties. *Journal of Physical Chemistry C*, **2018**, 122, 929-935	3.8	30
88	Visualising the strain distribution in suspended two-dimensional materials under local deformation. *Scientific Reports*, **2016**, 6, 28485	4.9	29
87	Grain boundary-mediated nanopores in molybdenum disulfide grown by chemical vapor deposition. *Nanoscale*, **2017**, 9, 1591-1598	7.7	28
86	Atomic structure from large-area, low-dose exposures of materials: a new route to circumvent radiation damage. *Ultramicroscopy*, **2014**, 145, 13-21	3.1	28
85	Perforating Freestanding Molybdenum Disulfide Monolayers with Highly Charged Ions. *Journal of Physical Chemistry Letters*, **2019**, 10, 904-910	6.4	28
84	Introducing Overlapping Grain Boundaries in Chemical Vapor Deposited Hexagonal Boron Nitride Monolayer Films. *ACS Nano*, **2017**, 11, 4521-4527	16.7	27
83	Atomic structure and energetics of large vacancies in graphene. *Physical Review B*, **2014**, 89,	3.3	27
82	Probing from both sides: reshaping the graphene landscape via face-to-face dual-probe microscopy. *Nano Letters*, **2013**, 13, 1934-40	11.5	27
81	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	1.2	27
80	Inclusion of radiation damage dynamics in high-resolution transmission electron microscopy image simulations: The example of graphene. *Physical Review B*, **2013**, 87,	3.3	26
79	Xe irradiation of graphene on Ir(111): From trapping to blistering. *Physical Review B*, **2015**, 92,	3.3	24
78	Structural manipulation of the graphene/metal interface with Ar+ irradiation. *Physical Review B*, **2013**, 88,	3.3	23
77	Interfacial carbon nanoplatelet formation by ion irradiation of graphene on iridium(111). *ACS Nano*, **2014**, 8, 12208-18	16.7	23
76	Efficient first principles simulation of electron scattering factors for transmission electron microscopy. *Ultramicroscopy*, **2019**, 197, 16-22	3.1	22
75	Progress in electronics and photonics with nanomaterials. *Vacuum*, **2017**, 146, 304-307	3.7	21
74	Direct imaging of light-element impurities in graphene reveals triple-coordinated oxygen. *Nature Communications*, **2019**, 10, 4570	17.4	21

73	Nitrogen controlled iron catalyst phase during carbon nanotube growth. *Applied Physics Letters*, **2014**, 105, 143111	3.4	20
72	Scanning transmission electron microscopy under controlled low-pressure atmospheres. *Ultramicroscopy*, **2019**, 203, 76-81	3.1	18
71	Kinetic Monte Carlo Simulations of the Response of Carbon Nanotubes to Electron Irradiation. *Journal of Computational and Theoretical Nanoscience*, **2007**, 4, 1153-1159	0.3	17
70	Silicon Substitution in Nanotubes and Graphene via Intermittent Vacancies. *Journal of Physical Chemistry C*, **2019**, 123, 13136-13140	3.8	15
69	Atomistic simulations of irradiation effects in carbon nanotubes: an overview. *Radiation Effects and Defects in Solids*, **2007**, 162, 157-169	0.9	14
68	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	1.2	14
67	Potassium intercalated multiwalled carbon nanotubes. *Carbon*, **2016**, 105, 90-95	10.4	14
66	Enhanced Tunneling in a Hybrid of Single-Walled Carbon Nanotubes and Graphene. *ACS Nano*, **2019**, 13, 11522-11529	16.7	13
65	Atomic-Scale Deformations at the Interface of a Mixed-Dimensional van der Waals Heterostructure. *ACS Nano*, **2018**, 12, 8512-8519	16.7	13
64	In situ control of graphene ripples and strain in the electron microscope. *Npj 2D Materials and Applications*, **2018**, 2,	8.8	13
63	Substitutional Si impurities in monolayer hexagonal boron nitride. *Applied Physics Letters*, **2019**, 115, 071604	3.4	12
62	Direct visualization of the 3D structure of silicon impurities in graphene. *Applied Physics Letters*, **2019**, 114, 053102	3.4	12
61	Revealing the 3D structure of graphene defects. *2D Materials*, **2018**, 5, 045029	5.9	12
60	Towards weighing individual atoms by high-angle scattering of electrons. *Ultramicroscopy*, **2015**, 151, 23-30	3.1	11
59	Atomic-Scale Carving of Nanopores into a van der Waals Heterostructure with Slow Highly Charged Ions. *ACS Nano*, **2020**, 14, 10536-10543	16.7	10
58	Intrinsic core level photoemission of suspended monolayer graphene. *Physical Review Materials*, **2018**, 2,	3.2	9
57	Scalable growth of single-walled carbon nanotubes with a highly uniform structure. *Nanoscale*, **2020**, 12, 12263-12267	7.7	8
56	Vanishing influence of the band gap on the charge exchange of slow highly charged ions in freestanding single-layer MoS2. *Physical Review B*, **2020**, 102,	3.3	8

55	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	0.5	8
54	Atomic-Level Structural Engineering of Graphene on a Mesoscopic Scale. *Nano Letters*, **2021**, 21, 5179-5185	10.5	8
53	Comment on "Interfacial carbon nanoplatelet formation by ion irradiation of graphene on iridium(111)". *ACS Nano*, **2015**, 9, 4664-5	16.7	7
52	Atomic-scale effects behind structural instabilities in Si lamellae during ion beam thinning. *AIP Advances*, **2012**, 2, 012186	1.5	7
51	Structure and electronic states of a graphene double vacancy with an embedded Si dopant. *Journal of Chemical Physics*, **2017**, 147, 194702	3.9	6
50	Impact of graphene polycrystallinity on the performance of graphene field-effect transistors. *Applied Physics Letters*, **2014**, 104, 043509	3.4	6
49	Single Indium Atoms and Few-Atom Indium Clusters Anchored onto Graphene via Silicon Heteroatoms. *ACS Nano*, **2021**, 15, 14373-14383	16.7	6
48	CuAu, a hexagonal two-dimensional metal. *2D Materials*, **2020**, 7, 045017	5.9	5
47	Coherent diffraction of hydrogen through the 246 pm lattice of graphene. *New Journal of Physics*, **2019**, 21, 033004	2.9	5
46	Electron-Beam Manipulation of Silicon Impurities in Single-Walled Carbon Nanotubes. *Advanced Functional Materials*, **2019**, 29, 1901327	15.6	5
45	Binding a carbon nanotube to the Si(100) surface using ion irradiation: an atomistic simulation study. *New Journal of Physics*, **2006**, 8, 115-115	2.9	5
44	Hybrid Low-Dimensional Carbon Allotropes Formed in Gas Phase. *Advanced Functional Materials*, **2020**, 30, 2005016	15.6	5
43	Influence of temperature on the displacement threshold energy in graphene. *Scientific Reports*, **2019**, 9, 12981	4.9	4
42	Process Pathway Controlled Evolution of Phase and Van-der-Waals Epitaxy in In/In2O3 on Graphene Heterostructures. *Advanced Functional Materials*, **2020**, 30, 2003300	15.6	4
41	Chemistry at graphene edges in the electron microscope. *2D Materials*, **2021**, 8, 035023	5.9	4
40	Step-By-Step Atomic Insights into Structural Reordering from 2D to 3D MoS2. *Advanced Functional Materials*, **2021**, 31, 2008395	15.6	4
39	Highly efficient bilateral doping of single-walled carbon nanotubes. *Journal of Materials Chemistry C* , **2021**, 9, 4514-4521	7.1	4
38	Structure and Energetics of Embedded Si Patterns in Graphene. *Physica Status Solidi (B): Basic Research*, **2017**, 254, 1700188	1.3	3

37	Towards Exotic Layered Materials: 2D Cuprous Iodide. *Advanced Materials*, **2021**, e2106922	24	3
36	Transformation and Evaporation of Surface Adsorbents on a Graphene "Hot Plate". *ACS Applied Materials & Interfaces*, **2020**, 12, 26313-26319	9.5	2
35	Atom-by-Atom STEM Investigation of Defect Engineering in Graphene. *Microscopy and Microanalysis*, **2014**, 20, 1736-1737	0.5	2
34	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	3.4	2
33	Comment on Temperature dependence of atomic vibrations in mono-layer graphene[J. Appl. Phys. 118, 074302 (2015)]. *Journal of Applied Physics*, **2016**, 119, 066101	2.5	2
32	Charge transfer sensitivity and dose efficiency with pixilated detectors and ptychographic phase contrast imaging in STEM **2016**, 721-722		1
31	Patterned Ultra-Thin Gold Nanostructures on Graphene. *Microscopy and Microanalysis*, **2019**, 25, 1530-1531	0.5	1
30	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	0.5	1
29	Nanomachining Graphene with Ion Irradiation. *Materials Research Society Symposia Proceedings*, **2010**, 1259, 1		1
28	Two-step implantation of gold into graphene. *2D Materials*, **2022**, 9, 025011	5.9	1
27	2D Noble Gas Crystals Encapsulated in Few-layer Graphene. *Microscopy and Microanalysis*, **2020**, 26, 1086-1089	0.5	1
26	Cluster Superlattice Membranes. *ACS Nano*, **2020**, 14, 13629-13637	16.7	1
25	The morphology of doubly-clamped graphene nanoribbons. *2D Materials*, **2021**, 8, 025035	5.9	1
24	Indirect measurement of the carbon adatom migration barrier on graphene. *Carbon*, **2022**, 196, 596-601	10.4	1
23	Quantifying Elastic and Inelastic Electron Irradiation Damage in Transmission Electron Microscopy of 2D Materials. *Microscopy and Microanalysis*, **2019**, 25, 454-455	0.5	0
22	Carbon Nano-onions: Potassium Intercalation and Reductive Covalent Functionalization. *Journal of the American Chemical Society*, **2021**, 143, 18997-19007	16.4	0
21	Atomic-scale Chemical Manipulation of Materials in the Scanning Transmission Electron Microscope under Controlled Atmospheres. *Microscopy and Microanalysis*, **2019**, 25, 1398-1399	0.5	
20	Substitutional Si Doping of Graphene and Nanotubes through Ion Irradiation-Induced Vacancies. *Microscopy and Microanalysis*, **2019**, 25, 1574-1575	0.5	

19	Diffraction of 80 eV hydrogen through suspended graphene. *Journal of Physics: Conference Series*, **2020**, 1412, 202036	0.3
18	Atomistic Understanding of Damage and Beam-driven Dynamics in 2D Materials. *Microscopy and Microanalysis*, **2020**, 26, 542-543	0.5
17	Structural Changes in 2D Materials Due to Scattering of Light Ions. *Nanoscience and Technology*, **2016**, 63-88	0.6
16	Silicon Substitution in Monolayer Hexagonal Boron Nitride. *Microscopy and Microanalysis*, **2019**, 25, 2082-2083	0.5
15	Electron-Beam Manipulation of Lattice Impurities in Graphene and Single-Walled Carbon Nanotubes. *Microscopy and Microanalysis*, **2019**, 25, 938-939	0.5
14	Exploring Low-dimensional Carbon Materials by High-resolution Electron and Scanned Probe Microscopy. *Microscopy and Microanalysis*, **2015**, 21, 1147-1148	0.5
13	Atomic Structure of Amorphous 2D Carbon Structures as Revealed by Scanning Transmission Electron Microscopy. *Microscopy and Microanalysis*, **2015**, 21, 997-998	0.5
12	Irradiation-induced Modifications and Beam-driven Dynamics in Low-dimensional Materials. *Microscopy and Microanalysis*, **2014**, 20, 1726-1727	0.5
11	Quantitative Atomic-resolution Imaging and Spectroscopy of a 2D Silica Glass. *Microscopy and Microanalysis*, **2012**, 18, 340-341	0.5
10	Imaging the Atoms in a Two-Dimensional Silica Glass on Graphene. *Microscopy and Microanalysis*, **2012**, 18, 1496-1497	0.5
9	Quantitative Analysis of Electron Beam-Induced Destruction of Graphene Membranes under an Electron Microscope. *Microscopy and Microanalysis*, **2012**, 18, 1500-1501	0.5
8	Ion irradiation-induced welding of a carbon nanotube to a Si (100) surface. *Materials Research Society Symposia Proceedings*, **2005**, 908, 1	
7	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	1.3
6	Quantitative Measurement and Utilization of Electron Irradiation Effects in 2D Materials. *Microscopy and Microanalysis*, **2020**, 26, 166-166	0.5
5	Energy deposition of highly charged ions transmitted through single layer MoS2. *Journal of Physics: Conference Series*, **2020**, 1412, 162018	0.3
4	Single indium atoms and few-atom indium clusters anchored onto graphene via silicon heteroatoms. *Microscopy and Microanalysis*, **2021**, 27, 3346-3347	0.5
3	Temperature-dependent displacement cross section of graphene and its impurities: measuring the carbon adatom migration barrier. *Microscopy and Microanalysis*, **2021**, 27, 3340-3340	0.5
2	Atomic and electronic structure of graphene **2021**, 15-26	

1	Graphene hybrids and extended defects: Revealing 3D structures and new insights to radiation damage. *Microscopy and Microanalysis*, **2018**, 24, 1582-1583	0.5