Thomas Mueller

List of Publications by Year
in descending order

119 papers	18,601 citations	70961 41 h-index	49773 87 g-index
119 all docs	119 docs citations	119 times ranked	18278 citing authors

#	Article	IF	Citations
1	Photodetectors based on graphene, other two-dimensional materials and hybrid systems. Nature Nanotechnology, 2014, 9, 780-793.	15.6	3,017
2	Ultrafast graphene photodetector. Nature Nanotechnology, 2009, 4, 839-843.	15.6	2,748
3	Graphene photodetectors for high-speed optical communications. Nature Photonics, 2010, 4, 297-301.	15.6	2,122
4	Solar-energy conversion and light emission in an atomic monolayer pâ€"n diode. Nature Nanotechnology, 2014, 9, 257-261.	15.6	1,175
5	Photovoltaic Effect in an Electrically Tunable van der Waals Heterojunction. Nano Letters, 2014, 14, 4785-4791.	4.5	943
6	Microcavity-Integrated Graphene Photodetector. Nano Letters, 2012, 12, 2773-2777.	4.5	753
7	CMOS-compatible graphene photodetector covering all optical communication bands. Nature Photonics, 2013, 7, 892-896.	15.6	679
8	Black Phosphorus Mid-Infrared Photodetectors with High Gain. Nano Letters, 2016, 16, 4648-4655.	4.5	616
9	Mechanisms of Photoconductivity in Atomically Thin MoS₂. Nano Letters, 2014, 14, 6165-6170.	4.5	563
10	Ultrafast machine vision with 2D material neural network image sensors. Nature, 2020, 579, 62-66.	13.7	546
11	Photocurrent Imaging and Efficient Photon Detection in a Graphene Transistor. Nano Letters, 2009, 9, 1039-1044.	4.5	543
12	Exciton physics and device application of two-dimensional transition metal dichalcogenide semiconductors. Npj 2D Materials and Applications, 2018, 2, .	3.9	526
13	Role of contacts in graphene transistors: A scanning photocurrent study. Physical Review B, 2009, 79, .	1.1	347
14	A microprocessor based on a two-dimensional semiconductor. Nature Communications, 2017, 8, 14948.	5.8	299
15	Intrinsic Response Time of Graphene Photodetectors. Nano Letters, 2011, 11, 2804-2808.	4.5	244
16	Insulators for 2D nanoelectronics: the gap to bridge. Nature Communications, 2020, 11, 3385.	5.8	241
17	Atomically thin pâ€"n junctions based on two-dimensional materials. Chemical Society Reviews, 2018, 47, 3339-3358.	18.7	231
18	Efficient narrow-band light emission from a single carbon nanotube pâ€"n diode. Nature Nanotechnology, 2010, 5, 27-31.	15.6	181

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19	The role of charge trapping in MoS ₂ /SiO ₂ and MoS ₂ /hBN field-effect transistors. 2D Materials, 2016, 3, 035004.	2.0	174
20	Controlled Generation of a pâ€“n Junction in a Waveguide Integrated Graphene Photodetector. Nano Letters, 2016, 16, 7107-7112.	4.5	166
21	The performance limits of hexagonal boron nitride as an insulator for scaled CMOS devices based on two-dimensional materials. Nature Electronics, 2021, 4, 98-108.	13.1	161
22	Ultrathin calcium fluoride insulators for two-dimensional field-effect transistors. Nature Electronics, 2019, 2, 230-235.	13.1	156
23	Optical imaging of strain in two-dimensional crystals. Nature Communications, 2018, 9, 516.	5.8	144
24	Low-voltage 2D materials-based printed field-effect transistors for integrated digital and analog electronics on paper. Nature Communications, 2020, 11, 3566.	5.8	120
25	Device physics of van der Waals heterojunction solar cells. Npj 2D Materials and Applications, 2018, 2, .	3.9	100
26	Electroluminescence from multi-particle exciton complexes in transition metal dichalcogenide semiconductors. Nature Communications, 2019, 10, 1709.	5.8	100
27	Ultrafast intraband spectroscopy of electron capture and relaxation in InAs/GaAs quantum dots. Applied Physics Letters, 2003, 83, 3572-3574.	1.5	99
28	Optoelectronic Devices Based on Atomically Thin Transition Metal Dichalcogenides. Applied Sciences (Switzerland), 2016, 6, 78.	1.3	96
29	Second harmonic generation in strained transition metal dichalcogenide monolayers: MoS2, MoSe2, WS2, and WSe2. APL Photonics, 2019, 4, .	3.0	92
30	Longest terrestrial migrations and movements around the world. Scientific Reports, 2019, 9, 15333.	1.6	91
31	Localized Intervalley Defect Excitons as Single-Photon Emitters in <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow><mml:mi>WSe</mml:mi></mml:mrow><mml:mrow><mml:mn>2</mml:mn> Physical Review Letters, 2019, 123, 146401.	2.9	82
32	Analogue two-dimensional semiconductor electronics. Nature Electronics, 2020, 3, 486-491.	13.1	74
33	Graphene Photodetector Integrated on a Photonic Crystal Defect Waveguide. ACS Photonics, 2018, 5, 4758-4763.	3.2	73
34	High quality passivation for heterojunction solar cells by hydrogenated amorphous silicon suboxide films. Applied Physics Letters, 2008, 92, .	1.5	68
35	Photovoltaics in Van der Waals Heterostructures. IEEE Journal of Selected Topics in Quantum Electronics, 2017, 23, 106-116.	1.9	58
36	High-responsivity graphene photodetectors integrated on silicon microring resonators. Nature Communications, 2021, 12, 3733.	5.8	57

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37	Energetic mapping of oxide traps in MoS ₂ field-effect transistors. 2D Materials, 2017, 4, 025108.	2.0	49
38	Silver nanoisland enhanced Raman interaction in graphene. Applied Physics Letters, 2012, 101, 153113.	1.5	45
39	Thermal Light Emission from Monolayer MoS₂. Advanced Materials, 2017, 29, 1701304.	11.1	45
40	Growth, structure and stability of sputter-deposited MoS₂ thin films. Beilstein Journal of Nanotechnology, 2017, 8, 1115-1126.	1.5	44
41	A Physical Model for the Hysteresis in MoS₂ Transistors. IEEE Journal of the Electron Devices Society, 2018, 6, 972-978.	1.2	43
42	Heterojunction Silicon Wafer Solar Cells using Amorphous Silicon Suboxides for Interface Passivation. Energy Procedia, 2012, 15, 97-106.	1.8	40
43	Bias-temperature instability in single-layer graphene field-effect transistors. Applied Physics Letters, 2014, 105, .	1.5	37
44	Analysis of intrinsic hydrogenated amorphous silicon passivation layer growth for use in heterojunction silicon wafer solar cells by optical emission spectroscopy. Journal of Applied Physics, 2013, 113, .	1.1	34
45	Pulse-induced quantum interference of intersubband transitions in coupled quantum wells. Applied Physics Letters, 2004, 84, 64-66.	1.5	33
46	Intersubband absorption dynamics in coupled quantum wells. Applied Physics Letters, 2001, 79, 2755-2757.	1.5	32
47	Band Nesting in Two-Dimensional Crystals: An Exceptionally Sensitive Probe of Strain. Nano Letters, 2020, 20, 4242-4248.	4.5	30
48	Reliability of scalable MoS₂ FETs with 2â€‰nm crystalline CaF₂ insulators. 2D Materials, 2019, 6, 045004.	2.0	29
49	Ultrafast phase-resolved pump-probe measurements on a quantum cascade laser. Applied Physics Letters, 2008, 93, 151106.	1.5	26
50	Impact of the phosphorus emitter doping profile on metal contact recombination of silicon wafer solar cells. Solar Energy Materials and Solar Cells, 2016, 147, 171-176.	3.0	26
51	Quantitative nanoscale characterization. Materials Today, 2009, 12, 40-43.	8.3	25
52	Hot-Carrier Degradation and Bias-Temperature Instability in Single-Layer Graphene Field-Effect Transistors: Similarities and Differences. IEEE Transactions on Electron Devices, 2015, 62, 3876-3881.	1.6	23
53	Coherent terahertz emission from optically pumped intersubband plasmons in parabolic quantum wells. Applied Physics Letters, 2000, 76, 3501-3503.	1.5	22
54	Surface-modified GaAs terahertz plasmon emitter. Applied Physics Letters, 2002, 81, 871-873.	1.5	18

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55	Deposition temperature independent excellent passivation of highly boron doped silicon emitters by thermal atomic layer deposited Al2O3. Journal of Applied Physics, 2013, 114, 094505.	1.1	18
56	Femtosecond laser ablation of dielectric layers for high-efficiency silicon wafer solar cells. Solar Energy, 2018, 164, 287-291.	2.9	18
57	Analysis of nanosecond and femtosecond laser ablation of rear dielectrics of silicon wafer solar cells. Solar Energy Materials and Solar Cells, 2019, 192, 117-122.	3.0	18
58	Plasmonâ€"Plasmon Interactions and Radiative Damping of Graphene Plasmons. ACS Photonics, 2018, 5, 3459-3465.	3.2	17
59	Electric field modulation of thermovoltage in single-layer MoS2. Applied Physics Letters, 2014, 105, .	1.5	16
60	Nonvolatile Programmable WSe₂ Photodetector. Advanced Optical Materials, 2020, 8, 2000417.	3.6	16
61	Inkjet-printed low-dimensional materials-based complementary electronic circuits on paper. Npj 2D Materials and Applications, 2021, 5, .	3.9	16
62	Influence of discharge power and annealing temperature on the properties of indium tin oxide thin films prepared by pulsed-DC magnetron sputtering. Vacuum, 2015, 121, 187-193.	1.6	15
63	Nanoscale Thermal Transport in 2D Nanostructures from Cryogenic to Room Temperature. Advanced Electronic Materials, 2019, 5, 1900331.	2.6	15
64	21% efficient screen-printed n-type silicon wafer solar cells with implanted phosphorus front surface field. Solar Energy Materials and Solar Cells, 2018, 186, 124-130.	3.0	12
65	Ultrafast spectral hole burning spectroscopy of exciton spin flip processes in InAsâˆ•GaAs quantum dots. Applied Physics Letters, 2006, 88, 192105.	1.5	11
66	Graphene-based fast electronics and optoelectronics. , 2010, , .		10
67	Nano- and microstructuring of graphene using UV-NIL. Nanotechnology, 2012, 23, 335301.	1.3	9
68	Investigation of Low-Temperature Hydrogen Plasma-Etching Processes for Silicon Wafer Solar Cell Surface Passivation in an Industrial Inductively Coupled Plasma Deposition Tool. IEEE Journal of Photovoltaics, 2016, 6, 10-16.	1.5	9
69	A SPICE Compact Model for Ambipolar 2-D-Material FETs Aiming at Circuit Design. IEEE Transactions on Electron Devices, 2021, 68, 3096-3103.	1.6	9
70	Intersubband gain-induced dispersion. Optics Letters, 2009, 34, 208.	1.7	8
71	Differential electroluminescence imaging and the current transport efficiency of silicon wafer solar cells. , 2014, , .		8
72	Introduction to the issue on graphene optoelectronics. IEEE Journal of Selected Topics in Quantum Electronics, 2014, 20, 6-8.	1.9	7

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73	Excellent passivation of thin silicon wafers by HF-free hydrogen plasma etching using an industrial ICPECVD tool. Physica Status Solidi - Rapid Research Letters, 2015, 9, 47-52.	1.2	6
74	Highâ€Speed Electroluminescence Modulation in Monolayer WS₂. Advanced Materials Technologies, 2022, 7, 2100915.	3.0	6
75	Exotic transport regime in GaAs: absence of intervalley scattering leading to quasi-ballistic, real-space THz oscillations. Semiconductor Science and Technology, 2004, 19, S195-S198.	1.0	5
76	Metal-graphene-metal photodetectors. Proceedings of SPIE, 2013, , .	0.8	5
77	(Invited) Impact of Gate Dielectrics on the Threshold Voltage in MoS₂Transistors. ECS Transactions, 2017, 80, 203-217.	0.3	5
78	Intraband relaxation of photoexcited electrons in GaAs/AlGaAs quantum wells and InAs/GaAs self-assembled quantum dots. Semiconductor Science and Technology, 2004, 19, S287-S289.	1.0	4
79	THz collective oscillations of ballistic electrons in wide potential wells: Bridging classical transport with quantum dynamics. Europhysics Letters, 2005, 70, 534-540.	0.7	4
80	1/<i>f</i> Noise Characterization of Bilayer MoS₂ Fieldâ€Effect Transistors on Paper with Inkjetâ€Printed Contacts and hBN Dielectrics. Advanced Electronic Materials, 2021, 7, 2100283.	2.6	4
81	Resonant photocurrent from a single quantum emitter in tungsten diselenide. 2D Materials, 2020, 7, 045021.	2.0	4
82	Low thermal conductivity in franckeite heterostructures. Nanoscale, 2022, 14, 2593-2598.	2.8	4
83	Signatures of bright-to-dark exciton conversion in corrugated MoS2 monolayers. Applied Surface Science, 2022, 600, 154078.	3.1	4
84	Bias-temperature instability in single-layer graphene field-effect transistors: A reliability challenge. , 2014, , .		3
85	Crystalline Calcium Fluoride: A Record-Thin Insulator for Nanoscale 2D Electronics. , 2020, , .		3
86	Sparse pixel image sensor. Scientific Reports, 2022, 12, 5650.	1.6	3
87	Few-cycle THZ spectroscopy of semiconductor quantum structures. Physica E: Low-Dimensional Systems and Nanostructures, 2001, 9, 76-83.	1.3	2
88	Terahertz emission from magnetoplasma oscillations in semiconductors. , 2002, 4643, 12.		2
89	Intersublevel dynamics of semiconductor nanostructures. Physica E: Low-Dimensional Systems and Nanostructures, 2004, 25, 271-279.	1.3	2
90	Terahertz Quantum Cascade Devices: From Intersubband Transition to Microcavity Laser. IEEE Journal of Selected Topics in Quantum Electronics, 2008, 14, 307-314.	1.9	2

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91	Graphene-based fast electronics and optoelectronics. , 2010, , .		2
92	Reliability of single-layer MoS<inf>2</inf> field-effect transistors with SiO<inf>2</inf> and hBN gate insulators. , 2016, , .		2
93	Reliability of next-generation field-effect transistors with transition metal dichalcogenides. , 2018, , .		2
94	Tunable graphene plasmons in nanoribbon arrays: the role of interactions. Optical Materials Express, 2021, 11, 1390.	1.6	2
95	Acoustic phonon-assisted damping of Rabi oscillations in InAs quantum dots. Physica E: Low-Dimensional Systems and Nanostructures, 2008, 40, 2013-2015.	1.3	1
96	Photocurrent imaging of the potential profiles in a graphene transistor. , 2008, , .		1
97	Graphene nanophotonics. , 2010, , .		1
98	Nanophotonics with two-dimensional atomic crystals. , 2014, , .		1
99	Hot-carrier degradation in single-layer double-gated graphene field-effect transistors. , 2015, , .		1
100	2D materials and heterostructures for applications in optoelectronics. , 2015, , .		1
101	Cavity Enhanced Light-Matter Interaction in a Graphene Photodetector. , 2019, , .		1
102	Direct measurement of intersubband dynamics. Physica B: Condensed Matter, 2002, 314, 259-262.	1.3	0
103	Acoustic phonon damping of Rabi oscillations in In(Ga)As quantum dots. , 2007, , .		0
104	Graphene and carbon nanotube photonics. , 2009, , .		0
105	Detecting light with graphene. Nature Photonics, 2010, 4, 338-338.	15.6	0
106	Zero-dark current operation of a metal-graphene-metal photodetector at 10 Gbit/s data rate. , 2010, , .		0
107	New concepts and geometries for graphene-based photodetectors. , 2012, , .		0
108	Intrinsic Speed Limit of Graphene-based Photodetectors. , 2012, , .		0

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109	Integration of Graphene Photodetectors with Silicon-on-Insulator Waveguides. , 2013, , .		0
110	Solar Cells based on Atomically Thin Crystals. , 2014, , .		0
111	Photodetectors based on Atomically Thin Transition Metal Dichalcogenides. , 2014, , .		0
112	Atomically-thin van der Waals Heterostructure Solar Cells. , 2015, , .		0
113	Graphene: Optoelectronic Devices. , 0, , 180-196.		0
114	TMDs â€“ Optoelectronic Devices. , 0, , 329-343.		0
115	Impact of Strain on the Second-Harmonic Generation in Transition Metal Dichalcogenide Monolayers. , 2019, , .		0
116	Electrically driven light emission from an atomic monolayer crystal. , 2014, , .		0
117	Optoelectronics with two-dimensional atomic crystals. , 2016, , .		0
118	Second harmonic generation and light emission in 2D semiconductors (Conference Presentation). , 2018, , .		0
119	Second Harmonic Generation and Electroluminescence in 2D Semiconductors. , 2019, , .		0