Frank H L Koppens

List of Publications by Year
in descending order

157 papers	30,998 citations	13865 67 h-index	13379 130 g-index
164 all docs	164 docs citations	164 times ranked	26022 citing authors

#	Article	IF	Citations
1	Tunable and giant valley-selective Hall effect in gapped bilayer graphene. Science, 2022, 375, 1398-1402.	12.6	26
2	Unbiased Plasmonic-Assisted Integrated Graphene Photodetectors. ACS Photonics, 2022, 9, 1992-2007.	6.6	4
3	Highâ€Harmonic Generation Enhancement with Graphene Heterostructures. Advanced Optical Materials, 2022, 10, .	7.3	6
4	Grating-Graphene Metamaterial as a Platform for Terahertz Nonlinear Photonics. ACS Nano, 2021, 15, 1145-1154.	14.6	69
5	Giant enhancement of third-harmonic generation in grapheneâ€"metal heterostructures. Nature Nanotechnology, 2021, 16, 318-324.	31.5	47
6	Highly-confined Exciton-polaritons in Monolayer Semiconductors. , 2021, , .		0
7	Harnessing ultraconfined graphene plasmons to probe the electrodynamics of superconductors. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	10
8	2D-3D integration of hexagonal boron nitride and a high-Îº dielectric for ultrafast graphene-based electro-absorption modulators. Nature Communications, 2021, 12, 1070.	12.8	40
9	Nano-imaging photoresponse in a moirÃ© unit cell of minimally twisted bilayer graphene. Nature Communications, 2021, 12, 1640.	12.8	29
10	Electrical tunability of terahertz nonlinearity in graphene. Science Advances, 2021, 7, .	10.3	52
11	Hot plasmons make graphene shine. Nature Materials, 2021, 20, 721-722.	27.5	0
12	Topological Graphene Plasmons in a Plasmonic Realization of the Suâ€"Schriefferâ€"Heeger Model. ACS Photonics, 2021, 8, 1817-1823.	6.6	15
13	Single organic molecules for photonic quantum technologies. Nature Materials, 2021, 20, 1615-1628.	27.5	79
14	Combining density functional theory with macroscopic QED for quantum light-matter interactions in 2D materials. Nature Communications, 2021, 12, 2778.	12.8	14
15	Spatiotemporal imaging of 2D polariton wave packet dynamics using free electrons. Science, 2021, 372, 1181-1186.	12.6	56
16	Quantum surface-response of metals revealed by acoustic graphene plasmons. Nature Communications, 2021, 12, 3271.	12.8	27
17	Towards plasmonic-enhanced optical nonlinearities in graphene metal-heterostructures. , 2021, , .		0
18	Hot-Carrier Cooling in High-Quality Graphene Is Intrinsically Limited by Optical Phonons. ACS Nano, 2021, 15, 11285-11295.	14.6	43

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19	Quantum Surface-Response of Metals Probed by Graphene Plasmons. , 2021, , .		0
20	Observation of giant and tunable thermal diffusivity of a Dirac fluid at room temperature. Nature Nanotechnology, 2021, 16, 1195-1200.	31.5	16
21	Observation of interband collective excitations in twisted bilayer graphene. Nature Physics, 2021, 17, 1162-1168.	16.7	47
22	Imaging vibrations of electromechanical few layer graphene resonators with a moving vacuum enclosure. Precision Engineering, 2021, 72, 769-776.	3.4	2
23	Quantum Nanophotonics in Two-Dimensional Materials. ACS Photonics, 2021, 8, 85-101.	6.6	83
24	Coherent characterisation of a single molecule in a photonic black box. Nature Communications, 2021, 12, 706.	12.8	18
25	Chip-Scalable, Room-Temperature, Zero-Bias, Graphene-Based Terahertz Detectors with Nanosecond Response Time. ACS Nano, 2021, 15, 17966-17976.	14.6	21
26	High-momentum 2D Exciton-polaritons in Monolayer Semiconductors. , 2021, , .		0
27	Plasmonic antenna coupling to hyperbolic phonon-polaritons for sensitive and fast mid-infrared photodetection with graphene. Nature Communications, 2020, 11, 4872.	12.8	53
28	Growth of Ultraflat Graphene with Greatly Enhanced Mechanical Properties. Nano Letters, 2020, 20, 6798-6806.	9.1	19
29	Ultrafast, Zero-Bias, Graphene Photodetectors with Polymeric Gate Dielectric on Passive Photonic Waveguides. ACS Nano, 2020, 14, 11190-11204.	14.6	48
30	Grapheneâ€“Quantum Dot Hybrid Photodetectors with Low Dark-Current Readout. ACS Nano, 2020, 14, 11897-11905.	14.6	39
31	Understanding the Electromagnetic Response of Graphene/Metallic Nanostructures Hybrids of Different Dimensionality. ACS Photonics, 2020, 7, 2302-2308.	6.6	15
32	Fast electrical modulation of strong near-field interactions between erbium emitters and graphene. Nature Communications, 2020, 11, 4094.	12.8	18
33	Optical and plasmonic properties of twisted bilayer graphene: Impact of interlayer tunneling asymmetry and ground-state charge inhomogeneity. Physical Review B, 2020, 102, .	3.2	33
34	The Rise of Twist-Optics. Nano Letters, 2020, 20, 6935-6936.	9.1	17
35	Tunable free-electron X-ray radiation from van der Waals materials. Nature Photonics, 2020, 14, 686-692.	31.4	48
36	Highly confined in-plane propagating exciton-polaritons on monolayer semiconductors. 2D Materials, 2020, 7, 035031.	4.4	32

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37	Far-field excitation of single graphene plasmon cavities with ultracompressed mode volumes. Science, 2020, 368, 1219-1223.	12.6	114
38	Untying the insulating and superconducting orders in magic-angle graphene. Nature, 2020, 583, 375-378.	27.8	323
39	Near-Unity Light Absorption in a Monolayer WS₂ Van der Waals Heterostructure Cavity. Nano Letters, 2020, 20, 3545-3552.	9.1	48
40	Extreme Mid-IR Light Trapping with Graphene Plasmons. Optics and Photonics News, 2020, 31, 40.	0.5	0
41	Giant enhancement of high-harmonic generation in graphene-metal heterostructures. , 2020, , .		0
42	Ultrafast carrier dynamics in graphene and graphene nanostructures. Terahertz Science & Technology, 2020, 13, 135-148.	0.5	1
43	High-Mobility, Wet-Transferred Graphene Grown by Chemical Vapor Deposition. ACS Nano, 2019, 13, 8926-8935.	14.6	132
44	Flexible graphene photodetectors for wearable fitness monitoring. Science Advances, 2019, 5, eaaw7846.	10.3	186
45	Graphene and two-dimensional materials for silicon technology. Nature, 2019, 573, 507-518.	27.8	936
46	Electrical Control of Lifetime-Limited Quantum Emitters Using 2D Materials. Nano Letters, 2019, 19, 3789-3795.	9.1	30
47	Acoustic plasmons at the crossover between the collisionless and hydrodynamic regimes in two-dimensional electron liquids. Physical Review B, 2019, 99, .	3.2	14
48	Ultrathin Eu- and Er-Doped Y₂O₃ Films with Optimized Optical Properties for Quantum Technologies. Journal of Physical Chemistry C, 2019, 123, 13354-13364.	3.1	32
49	Fast and Sensitive Terahertz Detection Using an Antenna-Integrated Graphene pn Junction. Nano Letters, 2019, 19, 2765-2773.	9.1	144
50	Tuning of impurity-bound interlayer complexes in a van der Waals heterobilayer. 2D Materials, 2019, 6, 035032.	4.4	17
51	2D-3D integration of high-Îº dielectric with 2D heterostructures for opto-electronic applications. , 2019, , .		0
52	Narrow Line Width Quantum Emitters in an Electron-Beam-Shaped Polymer. ACS Photonics, 2019, 6, 3120-3125.	6.6	9
53	Kinetic Ionic Permeation and Interfacial Doping of Supported Graphene. Nano Letters, 2019, 19, 9029-9036.	9.1	16
54	The Ultimate Purcell Factor in Van der Waals Heterostructures. , 2019, , .		0

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55	Huge plasmon-enhanced Third Harmonic Generation with graphene nanoribbons. , 2019, , .		0
56	Probing the ultimate plasmon confinement limits with a van der Waals heterostructure. Science, 2018, 360, 291-295.	12.6	259
57	Dissociation of two-dimensional excitons in monolayer WSe2. Nature Communications, 2018, 9, 1633.	12.8	116
58	Out-of-plane heat transfer in van der Waals stacks through electronâ€“hyperbolic phonon coupling. Nature Nanotechnology, 2018, 13, 41-46.	31.5	128
59	Ultrafast nonlinear optical response of Dirac fermions in graphene. Nature Communications, 2018, 9, 1018.	12.8	110
60	Highly sensitive, ultrafast photo-thermoelectric graphene THz detector. , 2018, , .		3
61	Graphene-based integrated photonics for next-generation datacom and telecom. Nature Reviews Materials, 2018, 3, 392-414.	48.7	286
62	Compact mid-infrared graphene thermopile enabled by a nanopatterning technique of electrolyte gates. New Journal of Physics, 2018, 20, 083050.	2.9	5
63	Dispersive soft x-ray absorption fine-structure spectroscopy in graphite with an attosecond pulse. Optica, 2018, 5, 502.	9.3	47
64	The ultrafast dynamics and conductivity of photoexcited graphene at different Fermi energies. Science Advances, 2018, 4, eaar5313.	10.3	95
65	Nano-imaging of intersubband transitions in van der Waals quantum wells. Nature Nanotechnology, 2018, 13, 1035-1041.	31.5	75
66	Probing nonlocal effects in metals with graphene plasmons. Physical Review B, 2018, 97, .	3.2	44
67	Graphene-based mid-infrared room-temperature pyroelectric bolometers with ultrahigh temperature coefficient of resistance. Nature Communications, 2017, 8, 14311.	12.8	151
68	Extraordinary linear dynamic range in laser-defined functionalized graphene photodetectors. Science Advances, 2017, 3, e1602617.	10.3	67
69	Tuning quantum nonlocal effects in graphene plasmonics. Science, 2017, 357, 187-191.	12.6	251
70	Broadband image sensor array based on grapheneâ€“CMOS integration. Nature Photonics, 2017, 11, 366-371.	31.4	523
71	Super-Planckian Electron Cooling in a van der Waals Stack. Physical Review Letters, 2017, 118, 126804.	7.8	38
72	Midâ€Infrared Pyroresistive Graphene Detector on LiNbO₃. Advanced Optical Materials, 2017, 5, 1600723.	7.3	30

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73	Propagating Plasmons in a Charge-Neutral Quantum Tunneling Transistor. ACS Photonics, 2017, 4, 3012-3017.	6.6	14
74	Terahertz Nanofocusing with Cantilevered Terahertz-Resonant Antenna Tips. Nano Letters, 2017, 17, 6526-6533.	9.1	84
75	Intrinsic Plasmonâ€"Phonon Interactions in Highly Doped Graphene: AÂNear-Field Imaging Study. Nano Letters, 2017, 17, 5908-5913.	9.1	42
76	Graphene Plasmonics. , 2017, , 104-140.		1
77	Electrical detection of hyperbolic phonon-polaritons in heterostructures of graphene and boron nitride. Npj 2D Materials and Applications, 2017, 1, .	7.9	25
78	Electrical 2Ï€ phase control of infrared light in a 350-nm footprint using graphene plasmons. Nature Photonics, 2017, 11, 421-424.	31.4	63
79	Acoustic terahertz graphene plasmons revealed by photocurrent nanoscopy. Nature Nanotechnology, 2017, 12, 31-35.	31.5	257
80	Polaritons in layered two-dimensional materials. Nature Materials, 2017, 16, 182-194.	27.5	963
81	Thermoelectric detection and imaging of propagating grapheneÂplasmons. Nature Materials, 2017, 16, 204-207.	27.5	141
82	Self-Aligned Local Electrolyte Gating of 2D Materials for Mid-Infrared Photodetection. , 2017, , .		0
83	Dual-gated graphene with ion gel gates as mid-infrared photodetectors. , 2016, , .		1
84	Near-field photocurrent nanoscopy on bare and encapsulated graphene. Nature Communications, 2016, 7, 10783.	12.8	80
85	High Quality Factor Mechanical Resonators Based on WSe₂ Monolayers. Nano Letters, 2016, 16, 5102-5108.	9.1	117
86	Photo-thermionic effect in vertical graphene heterostructures. Nature Communications, 2016, 7, 12174.	12.8	179
87	Integrating an electrically active colloidal quantum dot photodiode with a graphene phototransistor. Nature Communications, 2016, 7, 11954.	12.8	217
88	Interface Engineering in Hybrid Quantum Dotâ€"2D Phototransistors. ACS Photonics, 2016, 3, 1324-1330.	6.6	122
89	Tuning ultrafast electron thermalization pathways in a van der Waals heterostructure. Nature Physics, 2016, 12, 455-459.	16.7	127
90	Real-space mapping of tailored sheet and edge plasmons in graphene nanoresonators. Nature Photonics, 2016, 10, 239-243.	31.4	167

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91	Electromechanical control of nitrogen-vacancy defect emission using graphene NEMS. Nature Communications, 2016, 7, 10218.	12.8	56
92	Picosecond photoresponse in van der Waals heterostructures. Nature Nanotechnology, 2016, 11, 42-46.	31.5	493
93	Hot-carrier photocurrent effects at grapheneâ€“metal interfaces. Journal of Physics Condensed Matter, 2015, 27, 164207.	1.8	71
94	Graphene opto-electronics and plasmonics for infrared frequencies. , 2015, , .		0
95	Electrical control of optical emitter relaxation pathways enabled by graphene. Nature Physics, 2015, 11, 281-287.	16.7	99
96	Generation of photovoltage in graphene on a femtosecond timescale through efficient carrier heating. Nature Nanotechnology, 2015, 10, 437-443.	31.5	210
97	High-Responsivity Grapheneâ€“Boron Nitride Photodetector and Autocorrelator in a Silicon Photonic Integrated Circuit. Nano Letters, 2015, 15, 7288-7293.	9.1	185
98	Direct observation of ultraslow hyperbolic polariton propagation with negative phase velocity. Nature Photonics, 2015, 9, 674-678.	31.4	268
99	Plasmons in moirÃ© superlattices. Nature Materials, 2015, 14, 1187-1188.	27.5	15
100	Highly confined low-loss plasmons in grapheneâ€“boron nitride heterostructures. Nature Materials, 2015, 14, 421-425.	27.5	847
101	Hybrid 2Dâ€“0D MoS₂â€“PbS Quantum Dot Photodetectors. Advanced Materials, 2015, 27, 176-180.	21.0	638
102	Ultrafast electronic readout of diamond nitrogenâ€“vacancy centres coupled to graphene. Nature Nanotechnology, 2015, 10, 135-139.	31.5	70
103	Science and technology roadmap for graphene, related two-dimensional crystals, and hybrid systems. Nanoscale, 2015, 7, 4598-4810.	5.6	2,452
104	Control of Energy Relaxation Pathways in Graphene: Carrier-Carrier Scattering vs Phonon Emission. , 2015, , .		0
105	Single-molecule study for a graphene-based nano-position sensor. New Journal of Physics, 2014, 16, 113007.	2.9	23
106	Terahertz Carrier Dynamics in Graphene and Graphene Nanostructures. , 2014, , .		0
107	Inherent Resistivity of Graphene to Strong THz Fields. , 2014, , .		0
108	Nonlinear THz conductivity in graphene. , 2014, , .		0

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109	Introduction to the issue on graphene optoelectronics. IEEE Journal of Selected Topics in Quantum Electronics, 2014, 20, 6-8.	2.9	7
110	Controlling graphene plasmons with resonant metal antennas and spatial conductivity patterns. Science, 2014, 344, 1369-1373.	12.6	292
111	Phonon-Mediated Mid-Infrared Photoresponse of Graphene. Nano Letters, 2014, 14, 6374-6381.	9.1	64
112	Competing Ultrafast Energy Relaxation Pathways in Photoexcited Graphene. Nano Letters, 2014, 14, 5839-5845.	9.1	97
113	Plasmon losses due to electron-phonon scattering: The case of graphene encapsulated in hexagonal boron nitride. Physical Review B, 2014, 90, .	3.2	83
114	Photodetectors based on graphene, other two-dimensional materials and hybrid systems. Nature Nanotechnology, 2014, 9, 780-793.	31.5	3,017
115	Harnessing Vacuum Forces for Quantum Sensing of Graphene Motion. Physical Review Letters, 2014, 112, 223601.	7.8	41
116	Single-Photon Nonlinear Optics with Graphene Plasmons. Physical Review Letters, 2013, 111, 247401.	7.8	172
117	Strong Plasmon Reflection at Nanometer-Size Gaps in Monolayer Graphene on SiC. Nano Letters, 2013, 13, 6210-6215.	9.1	121
118	Three-dimensional optical manipulation of a single electron spin. Nature Nanotechnology, 2013, 8, 175-179.	31.5	127
119	Photoexcitation cascade and multiple hot-carrier generation in graphene. Nature Physics, 2013, 9, 248-252.	16.7	512
120	Universal Distance-Scaling of Nonradiative Energy Transfer to Graphene. Nano Letters, 2013, 13, 2030-2035.	9.1	197
121	Photoexcited carrier dynamics and impact-excitation cascade in graphene. Physical Review B, 2013, 87, .	3.2	79
122	Photoexcitation cascade and multiple hot carrier generation in graphene. , 2013, , .		0
123	Hot carrier multiplication in graphene. , 2013, , .		0
124	Pulse measurement from near to mid-IR using third harmonic generation dispersion scan in multilayer graphene. , 2013, , .		2
125	3D Optical Manipulation of a Single Electron Spin. , 2013, , .		1
126	Graphene light-matter interactions. , 2013, , .		0

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127	Near to mid-IR ultra-broadband third harmonic generation in multilayer graphene: few-cycle pulse measurement using THG dispersion-scan. , 2013, , .		0
128	Plasmon-Induced Doping of Graphene. ACS Nano, 2012, 6, 10222-10228.	14.6	356
129	Three-spin juggling. Nature Physics, 2012, 8, 5-6.	16.7	4
130	Graphene Plasmon Waveguiding and Hybridization in Individual and Paired Nanoribbons. ACS Nano, 2012, 6, 431-440.	14.6	646
131	Hybrid grapheneâ€“quantum dot phototransistors with ultrahigh gain. Nature Nanotechnology, 2012, 7, 363-368.	31.5	1,936
132	Complete Optical Absorption in Periodically Patterned Graphene. Physical Review Letters, 2012, 108, 047401.	7.8	1,087
133	Optical nano-imaging of gate-tunable graphene plasmons. Nature, 2012, 487, 77-81.	27.8	1,820
134	Gate-Activated Photoresponse in a Graphene pâ€“n Junction. Nano Letters, 2011, 11, 4134-4137.	9.1	379
135	Graphene Plasmonics. , 2011, , .		2
136	Graphene Plasmonics: A Platform for Strong Lightâ€“Matter Interactions. Nano Letters, 2011, 11, 3370-3377.	9.1	2,393
137	Nuclear spin dynamics in double quantum dots: Fixed points, transients, and intermittency. Physical Review B, 2011, 84, .	3.2	30
138	A quantum spin transducer based on nanoelectromechanical resonator arrays. Nature Physics, 2010, 6, 602-608.	16.7	346
139	Quantum optics with nanoscale surface plasmons. , 2009, , .		0
140	Multiple Nuclear Polarization States in a Double Quantum Dot. Physical Review Letters, 2009, 103, 046601.	7.8	39
141	Near-field electrical detection of optical plasmons and single-plasmon sources. Nature Physics, 2009, 5, 475-479.	16.7	290
142	Locking electron spins into magnetic resonance by electronâ€“nuclear feedback. Nature Physics, 2009, 5, 764-768.	16.7	125
143	<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>I</mml:mi><mml:mi>n</mml:mi><mml:mi>S</mml:mi><mml:mi>i</mml:mi><mml:mi>t</mml:mi><mml:m of Charge Noise in<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>GaAs</mml:mi><mml:mo>/</mml:mo><mml:msub><mml:mi>Al</mml:mi><mml:mi>x</mml:mi></mml:ms Physical Review Letters, 2008, 101, 226603.	7.8	73
144	Spin Echo of a Single Electron Spin in a Quantum Dot. Physical Review Letters, 2008, 100, 236802.	7.8	179

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145	Universal Phase Shift and Nonexponential Decay of Driven Single-Spin Oscillations. Physical Review Letters, 2007, 99, 106803.	7.8	84
146	Detection of single electron spin resonance in a double quantum dot. Journal of Applied Physics, 2007, 101, 081706.	2.5	39
147	Coherent Control of a Single Electron Spin with Electric Fields. Science, 2007, 318, 1430-1433.	12.6	860
148	Experimental Signature of Phonon-Mediated Spin Relaxation in a Two-Electron Quantum Dot. Physical Review Letters, 2007, 98, 126601.	7.8	112
149	Single-Shot Readout of Electron Spins in a Semiconductor Quantum Dot. AIP Conference Proceedings, 2006, , .	0.4	0
150	High fidelity measurement of singletâ€“triplet state in a quantum dot. Physica Status Solidi (B): Basic Research, 2006, 243, 3855-3858.	1.5	9
151	Driven coherent oscillations of a single electron spin in a quantum dot. Nature, 2006, 442, 766-771.	27.8	1,207
152	Single-shot readout of electron spins in a semiconductor quantum dot. Physica E: Low-Dimensional Systems and Nanostructures, 2006, 34, 1-5.	2.7	7
153	Nondestructive measurement of electron spins in a quantum dot. Physical Review B, 2006, 74, .	3.2	41
154	Spin filling of a quantum dot derived from excited-state spectroscopy. New Journal of Physics, 2005, 7, 182-182.	2.9	27
155	Single-Shot Readout of Electron Spin States in a Quantum Dot Using Spin-Dependent Tunnel Rates. Physical Review Letters, 2005, 94, 196802.	7.8	281
156	Control and Detection of Singlet-Triplet Mixing in a Random Nuclear Field. Science, 2005, 309, 1346-1350.	12.6	490
157	Electromechanical control of nitrogen-vacancy defect emission using graphene NEMS. , 0, .		1