Xiaodong Xu

List of Publications by Citations

150 papers	24,627 citations	61 h-index	156 g-index
159 ext. papers	31,430 ext. citations	15.9 avg, IF	7.22 L-index

#	Paper	IF	Citations
150	Coupled spin and valley physics in monolayers of MoS2 and other group-VI dichalcogenides. *Physical Review Letters*, **2012**, 108, 196802	7.4	2994
149	Layer-dependent ferromagnetism in a van der Waals crystal down to the monolayer limit. *Nature*, **2017**, 546, 270-273	50.4	2210
148	Spin and pseudospins in layered transition metal dichalcogenides. *Nature Physics*, **2014**, 10, 343-350	16.2	1733
147	Electrically tunable excitonic light-emitting diodes based on monolayer WSe2 p-n junctions. *Nature Nanotechnology*, **2014**, 9, 268-72	28.7	1202
146	Valleytronics in 2D materials. *Nature Reviews Materials*, **2016**, 1,	73.3	1045
145	Highly anisotropic and robust excitons in monolayer black phosphorus. *Nature Nanotechnology*, **2015**, 10, 517-21	28.7	999
144	Observation of long-lived interlayer excitons in monolayer MoSe2-WSe2 heterostructures. *Nature Communications*, **2015**, 6, 6242	17.4	896
143	Lateral heterojunctions within monolayer MoSe2-WSe2 semiconductors. *Nature Materials*, **2014**, 13, 1096-101	27	732
142	Electrical control of 2D magnetism in bilayer CrI. *Nature Nanotechnology*, **2018**, 13, 544-548	28.7	626
141	Single quantum emitters in monolayer semiconductors. *Nature Nanotechnology*, **2015**, 10, 497-502	28.7	556
140	Giant tunneling magnetoresistance in spin-filter van der Waals heterostructures. *Science*, **2018**, 360, 1214-1218	33.3	555
139	Monolayer semiconductor nanocavity lasers with ultralow thresholds. *Nature*, **2015**, 520, 69-72	50.4	545
138	Two-dimensional itinerant ferromagnetism in atomically thin FeGeTe. *Nature Materials*, **2018**, 17, 778-782	27	522
137	Signatures of moir□trapped valley excitons in MoSe/WSe heterobilayers. *Nature*, **2019**, 567, 66-70	50.4	486
136	Valley-polarized exciton dynamics in a 2D semiconductor heterostructure. *Science*, **2016**, 351, 688-91	33.3	451
135	Electrical tuning of valley magnetic moment through symmetry control in bilayer MoS2. *Nature Physics*, **2013**, 9, 149-153	16.2	451
134	Van der Waals engineering of ferromagnetic semiconductor heterostructures for spin and valleytronics. *Science Advances*, **2017**, 3, e1603113	14.3	419

133	Zeeman-type spin splitting controlled by an electric field. *Nature Physics*, **2013**, 9, 563-569	16.2	368
132	Room-temperature ferroelectricity in CuInP2S6 ultrathin flakes. *Nature Communications*, **2016**, 7, 12357	17.4	355
131	Edge conduction in monolayer WTe2. *Nature Physics*, **2017**, 13, 677-682	16.2	320
130	Intrinsic homogeneous linewidth and broadening mechanisms of excitons in monolayer transition metal dichalcogenides. *Nature Communications*, **2015**, 6, 8315	17.4	309
129	Electrical control of second-harmonic generation in a WSe2 monolayer transistor. *Nature Nanotechnology*, **2015**, 10, 407-11	28.7	300
128	Ferroelectric switching of a two-dimensional metal. *Nature*, **2018**, 560, 336-339	50.4	280
127	Stacking-Dependent Magnetism in Bilayer CrI. *Nano Letters*, **2018**, 18, 7658-7664	11.5	270
126	Moiré excitons: From programmable quantum emitter arrays to spin-orbit-coupled artificial lattices. *Science Advances*, **2017**, 3, e1701696	14.3	247
125	Spin–layer locking effects in optical orientation of exciton spin in bilayer WSe2. *Nature Physics*, **2014**, 10, 130-134	16.2	243
124	Interlayer valley excitons in heterobilayers of transition metal dichalcogenides. *Nature Nanotechnology*, **2018**, 13, 1004-1015	28.7	218
123	Determination of band offsets, hybridization, and exciton binding in 2D semiconductor heterostructures. *Science Advances*, **2017**, 3, e1601832	14.3	208
122	Direct observation of van der Waals stacking-dependent interlayer magnetism. *Science*, **2019**, 366, 983-987	33.3	198
121	Dirac cones and Dirac saddle points of bright excitons in monolayer transition metal dichalcogenides. *Nature Communications*, **2014**, 5, 3876	17.4	196
120	Switching 2D magnetic states via pressure tuning of layer stacking. *Nature Materials*, **2019**, 18, 1298-1302	27	194
119	Ligand-field helical luminescence in a 2D ferromagnetic insulator. *Nature Physics*, **2018**, 14, 277-281	16.2	192
118	Giant nonreciprocal second-harmonic generation from antiferromagnetic bilayer CrI. *Nature*, **2019**, 572, 497-501	50.4	172
117	Probing the Influence of Dielectric Environment on Excitons in Monolayer WSe: Insight from High Magnetic Fields. *Nano Letters*, **2016**, 16, 7054-7060	11.5	148
116	Gate-induced superconductivity in a monolayer topological insulator. *Science*, **2018**, 362, 922-925	33.3	143

115	Anomalous Light Cones and Valley Optical Selection Rules of Interlayer Excitons in Twisted Heterobilayers. *Physical Review Letters*, **2015**, 115, 187002	7.4	142
114	Magnetic behavior and spin-lattice coupling in cleavable van der Waals layered CrCl3 crystals. *Physical Review Materials*, **2017**, 1,	3.2	141
113	Excitonic luminescence upconversion in a two-dimensional semiconductor. *Nature Physics*, **2016**, 12, 323-327	16.2	135
112	Topological mosaics in moiré superlattices of van der Waals heterobilayers. *Nature Physics*, **2017**, 13, 356-362	16.2	131
111	Trion formation dynamics in monolayer transition metal dichalcogenides. *Physical Review B*, **2016**, 93,	3.3	127
110	Tuning Ising superconductivity with layer and spin-orbit coupling in two-dimensional transition-metal dichalcogenides. *Nature Communications*, **2018**, 9, 1427	17.4	124
109	Hybrid Tip-Enhanced Nanospectroscopy and Nanoimaging of Monolayer WSe2 with Local Strain Control. *Nano Letters*, **2016**, 16, 2621-7	11.5	123
108	Atomically Thin CrCl: An In-Plane Layered Antiferromagnetic Insulator. *Nano Letters*, **2019**, 19, 3993-3998	11.5	120
107	Ferromagnetism Near Room Temperature in the Cleavable van der Waals Crystal FeGeTe. *ACS Nano* , **2019**, 13, 4436-4442	16.7	119
106	Radiative control of dark excitons at room temperature by nano-optical antenna-tip Purcell effect. *Nature Nanotechnology*, **2018**, 13, 59-64	28.7	113
105	Exciton Dynamics in Monolayer Transition Metal Dichalcogenides. *Journal of the Optical Society of America B: Optical Physics*, **2016**, 33, C39-C49	1.7	101
104	Superconductivity in metallic twisted bilayer graphene stabilized by WSe. *Nature*, **2020**, 583, 379-384	50.4	101
103	Dirac line nodes and effect of spin-orbit coupling in the nonsymmorphic critical semimetals MSiS(M=Hf,Zr). *Physical Review B*, **2017**, 95,	3.3	93
102	Coherent Electronic Coupling in Atomically Thin MoSe2. *Physical Review Letters*, **2014**, 112,	7.4	88
101	Voltage Control of a van der Waals Spin-Filter Magnetic Tunnel Junction. *Nano Letters*, **2019**, 19, 915-920	11.5	80
100	Emergent phenomena and proximity effects in two-dimensional magnets and heterostructures. *Nature Materials*, **2020**, 19, 1276-1289	27	80
99	Directional interlayer spin-valley transfer in two-dimensional heterostructures. *Nature Communications*, **2016**, 7, 13747	17.4	80
98	Excitons in strain-induced one-dimensional moiré potentials at transition metal dichalcogenide heterojunctions. *Nature Materials*, **2020**, 19, 1068-1073	27	79

97	Visualizing electrostatic gating effects in two-dimensional heterostructures. *Nature*, **2019**, 572, 220-223	50.4	71
96	Symmetry breaking in twisted double bilayer graphene. *Nature Physics*, **2021**, 17, 26-30	16.2	69
95	Van der Waals epitaxial growth of air-stable CrSe nanosheets with thickness-tunable magnetic order. *Nature Materials*, **2021**, 20, 818-825	27	68
94	Layer-resolved magnetic proximity effect in van der Waals heterostructures. *Nature Nanotechnology*, **2020**, 15, 187-191	28.7	66
93	Imaging quantum spin Hall edges in monolayer WTe. *Science Advances*, **2019**, 5, eaat8799	14.3	64
92	Nonlinear valley and spin currents from Fermi pocket anisotropy in 2D crystals. *Physical Review Letters*, **2014**, 113, 156603	7.4	64
91	Electrically tunable correlated and topological states in twisted monolayer–bilayer graphene. *Nature Physics*, **2021**, 17, 374-380	16.2	64
90	Unusual Exciton-Phonon Interactions at van der Waals Engineered Interfaces. *Nano Letters*, **2017**, 17, 1194-1199	11.5	63
89	Valley-splitting and valley-dependent inter-Landau-level optical transitions in monolayer MoS2 quantum Hall systems. *Physical Review B*, **2014**, 90,	3.3	60
88	Evolution of the Valley Position in Bulk Transition-Metal Chalcogenides and Their Monolayer Limit. *Nano Letters*, **2016**, 16, 4738-45	11.5	56
87	Valley phonons and exciton complexes in a monolayer semiconductor. *Nature Communications*, **2020**, 11, 618	17.4	55
86	Spin-orbit-coupled quantum wires and Majorana fermions on zigzag edges of monolayer transition-metal dichalcogenides. *Physical Review B*, **2014**, 89,	3.3	54
85	Tuning inelastic light scattering via symmetry control in the two-dimensional magnet CrI. *Nature Nanotechnology*, **2020**, 15, 212-216	28.7	54
84	Direct observation of two-dimensional magnons in atomically thin CrI3. *Nature Physics*, **2021**, 17, 20-25	16.2	49
83	Vapor-transport growth of high optical quality WSe2 monolayers a. *APL Materials*, **2014**, 2, 101101	5.7	48
82	Optical generation of high carrier densities in 2D semiconductor heterobilayers. *Science Advances*, **2019**, 5, eaax0145	14.3	40
81	Phonon-assisted oscillatory exciton dynamics in monolayer MoSe2. *Npj 2D Materials and Applications*, **2017**, 1,	8.8	37
80	Systematic Doping Control of CVD Graphene Transistors with Functionalized Aromatic Self-Assembled Monolayers. *Advanced Functional Materials*, **2014**, 24, 3464-3470	15.6	36

79	Ultrathin van der Waals Metalenses. *Nano Letters*, **2018**, 18, 6961-6966	11.5	36
78	Experimental realization of all-angle negative refraction in acoustic gradient metasurface. *Applied Physics Letters*, **2017**, 111, 221602	3.4	35
77	Magnetic proximity and nonreciprocal current switching in a monolayer WTe helical edge. *Nature Materials*, **2020**, 19, 503-507	27	32
76	Layered Antiferromagnetism Induces Large Negative Magnetoresistance in the van der Waals Semiconductor CrSBr. *Advanced Materials*, **2020**, 32, e2003240	24	30
75	Dynamic Optical Tuning of Interlayer Interactions in the Transition Metal Dichalcogenides. *Nano Letters*, **2017**, 17, 7761-7766	11.5	29
74	Many-body effects in nonlinear optical responses of 2D layered semiconductors. *2D Materials*, **2017**, 4, 025024	5.9	28
73	Multiple hot-carrier collection in photo-excited graphene Moir superlattices. *Science Advances*, **2016**, 2, e1600002	14.3	28
72	Magnetic Order and Symmetry in the 2D Semiconductor CrSBr. *Nano Letters*, **2021**, 21, 3511-3517	11.5	27
71	Intertwined Topological and Magnetic Orders in Atomically Thin Chern Insulator MnBiTe. *Nano Letters*, **2021**, 21, 2544-2550	11.5	26
70	Excitons and emergent quantum phenomena in stacked 2D semiconductors. *Nature*, **2021**, 599, 383-392	50.4	24
69	Encapsulated Silicon Nitride Nanobeam Cavity for Hybrid Nanophotonics. *ACS Photonics*, **2018**, 5, 2176-2181	6.9	23
68	Direct visualization of magnetic domains and moir magnetism in twisted 2D magnets. *Science*, **2021**, 374, 1140-1144	33.3	21
67	Population pulsation resonances of excitons in monolayer MoSe2 with sub-1 eV linewidths. *Physical Review Letters*, **2015**, 114, 137402	7.4	20
66	Theory of low-power ultra-broadband terahertz sideband generation in bi-layer graphene. *Nature Communications*, **2014**, 5, 4854	17.4	20
65	Magnetic domains and domain wall pinning in atomically thin CrBr revealed by nanoscale imaging. *Nature Communications*, **2021**, 12, 1989	17.4	20
64	Second harmonic generation in Janus MoSSe a monolayer and stacked bulk with vertical asymmetry. *Physical Chemistry Chemical Physics*, **2019**, 21, 21022-21029	3.6	19
63	Anisotropic structural dynamics of monolayer crystals revealed by femtosecond surface X-ray scattering. *Nature Photonics*, **2019**, 13, 425-430	33.9	19
62	Highly anisotropic excitons and multiple phonon bound states in a van der Waals antiferromagnetic insulator. *Nature Nanotechnology*, **2021**, 16, 655-660	28.7	18

61	Virtual Trions in the Photoluminescence of Monolayer Transition-Metal Dichalcogenides. *Physical Review Letters*, **2019**, 122, 217401	7.4	16
60	Metasurface Integrated Monolayer Exciton Polariton. *Nano Letters*, **2020**, 20, 5292-5300	11.5	16
59	All-angle Negative Reflection with An Ultrathin Acoustic Gradient Metasurface: Floquet-Bloch Modes Perspective and Experimental Verification. *Scientific Reports*, **2017**, 7, 13852	4.9	15
58	Photo-Nernst current in graphene. *Nature Physics*, **2016**, 12, 236-239	16.2	15
57	Single-Crystalline Nanobelts Composed of Transition Metal Ditellurides. *Advanced Materials*, **2018**, 30, e1707260	24	15
56	Stacking Domain Wall Magnons in Twisted van der Waals Magnets. *Physical Review Letters*, **2020**, 125, 247201	7.4	13
55	Spiral Graphene Nanoribbons with Azulene Defects as Potential Nonlinear Optical Materials. *ACS Applied Nano Materials*, **2019**, 2, 1648-1654	5.6	13
54	Experimental observation of conductive edge states in weak topological insulator candidate HfTe5. *APL Materials*, **2018**, 6, 121111	5.7	13
53	Moir□trions in MoSe/WSe heterobilayers. *Nature Nanotechnology*, **2021**, 16, 1208-1213	28.7	13
52	Enhanced Shift Currents in Monolayer 2D GeS and SnS by Strain-Induced Band Gap Engineering. *ACS Omega*, **2020**, 5, 17207-17214	3.9	12
51	Interlayer electronic coupling on demand in a 2D magnetic semiconductor. *Nature Materials*, **2021**, 20, 1657-1662	27	12
50	Strong spin-orbit coupling and Dirac nodal lines in the three-dimensional electronic structure of metallic rutile IrO2. *Physical Review B*, **2019**, 99,	3.3	11
49	Two-Dimensional van der Waals Nanoplatelets with Robust Ferromagnetism. *Nano Letters*, **2020**, 20, 2100-2106	11.5	10
48	Spatial manipulating spin-polarization and tunneling patterns in graphene spirals via periphery structural modification. *Carbon*, **2017**, 113, 325-333	10.4	10
47	Intrinsic donor-bound excitons in ultraclean monolayer semiconductors. *Nature Communications*, **2021**, 12, 871	17.4	10
46	Phase engineering of Cr5Te8 with colossal anomalous Hall effect. *Nature Electronics*, **2022**, 5, 224-232	28.4	10
45	Strong Circularly Polarized Photoluminescence from Multilayer MoS2 Through Plasma Driven Direct-Gap Transition. *ACS Photonics*, **2016**, 3, 310-314	6.3	9
44	Reversible strain-induced magnetic phase transition in a van der Waals magnet.. *Nature Nanotechnology*, **2022**,	28.7	9

43	Implementation of Outstanding Electronic Transport in Polar Covalent Boron Nitride Atomic Chains: another Extraordinary Odd-Even Behaviour. *Scientific Reports*, **2016**, 6, 26389	4.9	9
42	Mechanism of mechanically induced optoelectronic and spintronic phase transitions in 1D graphene spirals: insight into the role of interlayer coupling. *Nanoscale*, **2017**, 9, 9693-9700	7.7	8
41	Double-helix PLi chains: novel potential nonlinear optical materials. *Physical Chemistry Chemical Physics*, **2018**, 20, 12618-12623	3.6	8
40	Theoretical study of electron tunneling through the spiral molecule junctions along spiral paths. *Physical Chemistry Chemical Physics*, **2016**, 18, 3765-71	3.6	8
39	Even-Odd Layer-Dependent Anomalous Hall Effect in Topological Magnet MnBiTe Thin Films. *Nano Letters*, **2021**, 21, 7691-7698	11.5	8
38	Terahertz response of monolayer and few-layer WTe at the nanoscale. *Nature Communications*, **2021**, 12, 5594	17.4	8
37	Observation of topological surface states and strong electron/hole imbalance in extreme magnetoresistance compound LaBi. *Physical Review Materials*, **2018**, 2,	3.2	7
36	Unraveling Strain Gradient Induced Electromechanical Coupling in Twisted Double Bilayer Graphene Moir□uperlattices. *Advanced Materials*, **2021**, 33, e2105879	24	7
35	Magnetism and Its Structural Coupling Effects in 2D Ising Ferromagnetic Insulator VI. *Nano Letters*, **2021**, 21, 9180-9186	11.5	7
34	Modulation of the electronic band structure of silicene by polar two-dimensional substrates. *Physical Chemistry Chemical Physics*, **2020**, 22, 21412-21420	3.6	6
33	Observation of Giant Optical Linear Dichroism in a Zigzag Antiferromagnet FePS. *Nano Letters*, **2021**, 21, 6938-6945	11.5	6
32	Chiral heteronanotubes: arrangement-dominated chiral interface states and conductivities. *Nanoscale*, **2019**, 11, 8699-8705	7.7	5
31	Competing correlated states and abundant orbital magnetism in twisted monolayer-bilayer graphene. *Nature Communications*, **2021**, 12, 4727	17.4	5
30	Light-induced ferromagnetism in moir□uperlattices.. *Nature*, **2022**, 604, 468-473	50.4	5
29	Evolution of electronic structure and electron-phonon coupling in ultrathin tetragonal CoSe films. *Physical Review Materials*, **2018**, 2,	3.2	4
28	PN/PAs-WSe van der Waals heterostructures for solar cell and photodetector. *Scientific Reports*, **2020**, 10, 17213	4.9	4
27	Giant Out-of-Plane Second Harmonic Generation Susceptibility in Janus Group III Chalcogenide Monolayers. *Journal of Physical Chemistry C*, **2021**, 125, 11285-11293	3.8	4
26	Phase-pure two-dimensional FexGeTe2 magnets with near-room-temperature TC. *Nano Research*,1	10	4

25	Nanocavity Clock Spectroscopy: Resolving Competing Exciton Dynamics in WSe/MoSe Heterobilayers. *Nano Letters*, **2021**, 21, 522-528	11.5	4
24	Defect-Induced Magnetic Skyrmion in a Two-Dimensional Chromium Triiodide Monolayer. *Jacs Au*, **2021**, 1, 1362-1367		4
23	Giant and anisotropic second harmonic generation of V□ binary phosphorene derivative with permanent dipole. *Journal of Materials Chemistry C*, **2021**, 9, 6544-6552	7.1	4
22	Electric control of a canted-antiferromagnetic Chern insulator.. *Nature Communications*, **2022**, 13, 1668	17.4	4
21	Evidence for equilibrium exciton condensation in monolayer WTe2. *Nature Physics*, **2022**, 18, 94-99	16.2	4
20	Separation of the valley exciton-polariton in two-dimensional semiconductors with an anisotropic photonic crystal. *Physical Review B*, **2020**, 101,	3.3	3
19	Introduction to the issue on graphene optoelectronics. *IEEE Journal of Selected Topics in Quantum Electronics*, **2014**, 20, 6-8	3.8	3
18	Nano-spectroscopy of excitons in atomically thin transition metal dichalcogenides.. *Nature Communications*, **2022**, 13, 542	17.4	3
17	Imaging Graphene Moir□ Superlattices via Scanning Kelvin Probe Microscopy. *Nano Letters*, **2021**, 21, 3280-3286	11.5	3
16	Quantum oscillations in the field-induced ferromagnetic state of MnBi2□SbxTe4. *Physical Review B* , **2021**, 103,	3.3	3
15	Effect of Hydrogen on Radiation-Induced Displacement Damage in AlGaN/GaN HEMTs. *IEEE Transactions on Nuclear Science*, **2021**, 68, 1258-1264	1.7	3
14	Long-range transport of 2D excitons with acoustic waves.. *Nature Communications*, **2022**, 13, 1334	17.4	3
13	Long Radiation Lifetime and Quasi-Isotropic Excitons in Antioxidant V□ Binary Phosphorene Allotropes with Intrinsic Dipole. *Journal of Physical Chemistry C*, **2020**, 124, 14787-14796	3.8	2
12	Monolayer Semiconductor Auger Detector. *Nano Letters*, **2020**, 20, 5538-5543	11.5	2
11	Chemical doping for threshold control and contact resistance reduction in graphene and MoS2 field effect transistors **2013**,		2
10	Determination of the Spin Axis in Quantum Spin Hall Insulator Candidate Monolayer WTe2. *Physical Review X*, **2021**, 11,	9.1	2
9	The study of displacement damage in AlGaN/GaN high electron mobility transistors based on experiment and simulation method. *IEEE Transactions on Nuclear Science*, **2022**, 1-1	1.7	1
8	First-Principles Calculations for the Impact of Hydrogenation on the Electron Behavior and Stability of Borophene Nanosheets: Implications for Boron 2D Electronics. *ACS Applied Nano Materials*, **2022**, 5, 1419-1425	5.6	1

7	Unveiling 2D Ferroelectricity and Ferromagnetism Interaction in van der Waals Heterobilayers. *Journal of Physical Chemistry C*, **2021**, 125, 27837-27843	3.8	1
6	Giant Shift Photovoltaic Current in Group V-V Binary Nanosheets. *Advanced Theory and Simulations*,2100472	3.52	0
5	Spin photovoltaic effect in magnetic van der Waals heterostructures. *Science Advances*, **2021**, 7, eabg8094	14.3	0
4	Observation of Single-Electron Transport and Charging on Individual Point Defects in Atomically Thin WSe2. *Journal of Physical Chemistry C*, **2021**, 125, 14056-14064	3.8	0
3	The Potential of Phosphorus Nitride Monolayer for Li-S Battery from the Anchoring and Diffusing Perspective: A First-Principles Study. *Advanced Theory and Simulations*, **2022**, 5, 2100305	3.5	0
2	Modulating the molecular third-order optical nonlinearity by curved surface of carbon skeleton. *Molecular Physics*, **2018**, 116, 242-250	1.7	
1	Graphene-based monoatomic chain spintronics: contact-derived half-metallicity, sp2 vs sp. *Physica E: Low-Dimensional Systems and Nanostructures*, **2021**, 126, 114486	3	