Qiangfei Xia

List of Publications by Citations

100 papers	9,563 citations	44 h-index	97 g-index
106 ext. papers	12,048 ext. citations	12.8 avg, IF	6.6 L-index

#	Paper	IF	Citations
100	Memristors with diffusive dynamics as synaptic emulators for neuromorphic computing. *Nature Materials*, **2017**, 16, 101-108	27	1201
99	Memristive crossbar arrays for brain-inspired computing. *Nature Materials*, **2019**, 18, 309-323	27	582
98	Analogue signal and image processing with large memristor crossbars. *Nature Electronics*, **2018**, 1, 52-59	28.4	550
97	Fully memristive neural networks for pattern classification with unsupervised learning. *Nature Electronics*, **2018**, 1, 137-145	28.4	511
96	Memristor-CMOS hybrid integrated circuits for reconfigurable logic. *Nano Letters*, **2009**, 9, 3640-5	11.5	507
95	Black Phosphorus Mid-Infrared Photodetectors with High Gain. *Nano Letters*, **2016**, 16, 4648-55	11.5	476
94	Efficient and self-adaptive in-situ learning in multilayer memristor neural networks. *Nature Communications*, **2018**, 9, 2385	17.4	371
93	Memristor-Based Analog Computation and Neural Network Classification with a Dot Product Engine. *Advanced Materials*, **2018**, 30, 1705914	24	339
92	Resistive switching materials for information processing. *Nature Reviews Materials*, **2020**, 5, 173-195	73.3	318
91	Anatomy of Ag/Hafnia-Based Selectors with 10 Nonlinearity. *Advanced Materials*, **2017**, 29, 1604457	24	245
90	Memristor crossbar arrays with 6-nm half-pitch and 2-nm critical dimension. *Nature Nanotechnology* , **2019**, 14, 35-39	28.7	231
89	Efficient electrical control of thin-film black phosphorus bandgap. *Nature Communications*, **2017**, 8, 14474	17.4	183
88	An artificial nociceptor based on a diffusive memristor. *Nature Communications*, **2018**, 9, 417	17.4	183
87	Review of memristor devices in neuromorphic computing: materials sciences and device challenges. *Journal Physics D: Applied Physics*, **2018**, 51, 503002	3	183
86	Emerging Memory Devices for Neuromorphic Computing. *Advanced Materials Technologies*, **2019**, 4, 1800589	6.8	181
85	A novel true random number generator based on a stochastic diffusive memristor. *Nature Communications*, **2017**, 8, 882	17.4	180
84	Long short-term memory networks in memristor crossbar arrays. *Nature Machine Intelligence*, **2019**, 1, 49-57	22.5	176

83	Threshold Switching of Ag or Cu in Dielectrics: Materials, Mechanism, and Applications. *Advanced Functional Materials*, **2018**, 28, 1704862	15.6	168
82	Reinforcement learning with analogue memristor arrays. *Nature Electronics*, **2019**, 2, 115-124	28.4	166
81	Understanding memristive switching via in situ characterization and device modeling. *Nature Communications*, **2019**, 10, 3453	17.4	138
80	Capacitive neural network with neuro-transistors. *Nature Communications*, **2018**, 9, 3208	17.4	132
79	Sub-10 nm Ta Channel Responsible for Superior Performance of a HfO2 Memristor. *Scientific Reports*, **2016**, 6, 28525	4.9	128
78	Three-dimensional crossbar arrays of self-rectifying Si/SiO/Si memristors. *Nature Communications*, **2017**, 8, 15666	17.4	115
77	Three-dimensional memristor circuits as complex neural networks. *Nature Electronics*, **2020**, 3, 225-232	28.4	112
76	An artificial spiking afferent nerve based on Mott memristors for neurorobotics. *Nature Communications*, **2020**, 11, 51	17.4	105
75	Silicon Oxide (SiO): A Promising Material for Resistance Switching?. *Advanced Materials*, **2018**, 30, e1801187	24	105
74	Diffusion of adhesion layer metals controls nanoscale memristive switching. *Advanced Materials*, **2010**, 22, 4034-8	24	95
73	In situ training of feed-forward and recurrent convolutional memristor networks. *Nature Machine Intelligence*, **2019**, 1, 434-442	22.5	93
72	Synthetic Biological Protein Nanowires with High Conductivity. *Small*, **2016**, 12, 4481-5	11	87
71	Self-aligned memristor cross-point arrays fabricated with one nanoimprint lithography step. *Nano Letters*, **2010**, 10, 2909-14	11.5	85
70	Power-efficient combinatorial optimization using intrinsic noise in memristor Hopfield neural networks. *Nature Electronics*, **2020**, 3, 409-418	28.4	79
69	Sub-10 nm self-enclosed self-limited nanofluidic channel arrays. *Nano Letters*, **2008**, 8, 3830-3	11.5	79
68	Nanoscale memristive radiofrequency switches. *Nature Communications*, **2015**, 6, 7519	17.4	76
67	A Dynamically Reconfigurable Ambipolar Black Phosphorus Memory Device. *ACS Nano*, **2016**, 10, 10428-10435	14.7	72
66	Reservoir Computing Using Diffusive Memristors. *Advanced Intelligent Systems*, **2019**, 1, 1900084	6	65

65	Two- and Three-Terminal Resistive Switches: Nanometer-Scale Memristors and Memistors. *Advanced Functional Materials*, **2011**, 21, 2660-2665	15.6	64
64	Improved nanofabrication through guided transient liquefaction. *Nature Nanotechnology*, **2008**, 3, 295-300	28.7	63
63	Ultrafast patterning of nanostructures in polymers using laser assisted nanoimprint lithography. *Applied Physics Letters*, **2003**, 83, 4417-4419	3.4	57
62	Truly Electroforming-Free and Low-Energy Memristors with Preconditioned Conductive Tunneling Paths. *Advanced Functional Materials*, **2017**, 27, 1702010	15.6	56
61	Cross point arrays of 8 nm □8 nm memristive devices fabricated with nanoimprint lithography. *Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics*, **2013**, 31, 06FA02	1.3	56
60	A memristor-based nonvolatile latch circuit. *Nanotechnology*, **2010**, 21, 235203	3.4	56
59	Artificial Neural Network (ANN) to Spiking Neural Network (SNN) Converters Based on Diffusive Memristors. *Advanced Electronic Materials*, **2019**, 5, 1900060	6.4	55
58	Nucleation limited switching (NLS) model for HfO2-based metal-ferroelectric-metal (MFM) capacitors: Switching kinetics and retention characteristics. *Applied Physics Letters*, **2018**, 112, 262903	3.4	46
57	Roadmap on emerging hardware and technology for machine learning. *Nanotechnology*, **2021**, 32, 012002	3.4	45
56	Hybrid CMOS/memristor circuits **2010**,		39
55	Nanoscale diffusive memristor crossbars as physical unclonable functions. *Nanoscale*, **2018**, 10, 2721-2726	7.7	36
54	Standards for the Characterization of Endurance in Resistive Switching Devices. *ACS Nano*, **2021**,	16.7	36
53	Ferroelectric transistors with monolayer molybdenum disulfide and ultra-thin aluminum-doped hafnium oxide. *Applied Physics Letters*, **2017**, 111, 013103	3.4	33
52	Electrochemical metallization switching with a platinum group metal in different oxides. *Nanoscale*, **2016**, 8, 14023-30	7.7	33
51	A Low-Current and Analog Memristor with Ru as Mobile Species. *Advanced Materials*, **2020**, 32, e1904599	24	32
50	A provable key destruction scheme based on memristive crossbar arrays. *Nature Electronics*, **2018**, 1, 548-554	28.4	32
49	Low voltage resistive switching devices based on chemically produced silicon oxide. *Applied Physics Letters*, **2013**, 103, 062104	3.4	28
48	The fabrication of periodic metal nanodot arrays through pulsed laser melting induced fragmentation of metal nanogratings. *Nanotechnology*, **2009**, 20, 285310	3.4	25

47	Organic electronics: Battery-like artificial synapses. *Nature Materials*, **2017**, 16, 396-397	27	24
46	Artificial Neural Network Based on Doped HfO2 Ferroelectric Capacitors With Multilevel Characteristics. *IEEE Electron Device Letters*, **2019**, 40, 1309-1312	4.4	24
45	An efficient analog Hamming distance comparator realized with a unipolar memristor array: a showcase of physical computing. *Scientific Reports*, **2017**, 7, 40135	4.9	22
44	3D integration of planar crossbar memristive devices with CMOS substrate. *Nanotechnology*, **2014**, 25, 405202	3.4	22
43	Impact of geometry on the performance of memristive nanodevices. *Nanotechnology*, **2011**, 22, 254026	3.4	22
42	A Memristor with Low Switching Current and Voltage for 1S1R Integration and Array Operation. *Advanced Electronic Materials*, **2020**, 6, 1901411	6.4	21
41	Committee machines-a universal method to deal with non-idealities in memristor-based neural networks. *Nature Communications*, **2020**, 11, 4273	17.4	20
40	Applications of excimer laser in nanofabrication. *Applied Physics A: Materials Science and Processing*, **2010**, 98, 9-59	2.6	18
39	Nanoscale resistive switches: devices, fabrication and integration. *Applied Physics A: Materials Science and Processing*, **2011**, 102, 955-965	2.6	17
38	Effect of voltage polarity and amplitude on electroforming of TiO2 based memristive devices. *Nanoscale*, **2013**, 5, 3257-61	7.7	16
37	Ultrafast and selective reduction of sidewall roughness in silicon waveguides using self-perfection by liquefaction. *Nanotechnology*, **2009**, 20, 345302	3.4	16
36	Fabrication of a 60-nm-diameter perfectly round metal-dot array over a large area on a plastic substrate using nanoimprint lithography and self-perfection by liquefaction. *Small*, **2010**, 6, 1242-7	11	14
35	Fabrication of sub-25□hm diameter pillar nanoimprint molds with smooth sidewalls using self-perfection by liquefaction and reactive ion etching. *Nanotechnology*, **2008**, 19, 455301	3.4	14
34	Single- and bi-layer memristive devices with tunable properties using TiOx switching layers deposited by reactive sputtering. *Applied Physics Letters*, **2014**, 104, 153505	3.4	12
33	Improvement of resistive switching uniformity for TiO2-based memristive devices by introducing a thin HfO2 layer. *Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics*, **2013**, 31, 06FA04	1.3	12
32	In-Memory Computing with Memristor Arrays **2018**,		12
31	Pulse-Width Modulation based Dot-Product Engine for Neuromorphic Computing System using Memristor Crossbar Array **2018**,		10
30	A fully hardware-based memristive multilayer neural network. *Science Advances*, **2021**, 7, eabj4801	14.3	10

29	Fabrication of sub-10 nm metal nanowire arrays with sub-1 nm critical dimension control. *Nanotechnology*, **2016**, 27, 464004	3.4	10
28	Experimental Demonstration of Conversion-Based SNNs with 1T1R Mott Neurons for Neuromorphic Inference **2019**,		10
27	Artificial neural networks based on memristive devices. *Science China Information Sciences*, **2018**, 61, 1	3.4	9
26	Nanoimprint lithography 20 years on. *Nanotechnology*, **2015**, 26, 182501	3.4	8
25	Cyclical sensing integrate-and-fire circuit for memristor array based neuromorphic computing **2016**,		8
24	On the integration of memristors with CMOS using nanoimprint lithography **2009**,		8
23	Timing Selector: Using Transient Switching Dynamics to Solve the Sneak Path Issue of Crossbar Arrays. *Small Science*,2100072		8
22	Nanoimprint lithography enables memristor crossbars and hybrid circuits. *Applied Physics A: Materials Science and Processing*, **2015**, 121, 467-479	2.6	7
21	Threshold Switching: Threshold Switching of Ag or Cu in Dielectrics: Materials, Mechanism, and Applications (Adv. Funct. Mater. 6/2018). *Advanced Functional Materials*, **2018**, 28, 1870036	15.6	7
20	Mold cleaning with polydimethylsiloxane for nanoimprint lithography. *Nanotechnology*, **2013**, 24, 325301	3.4	7
19	Three-Dimensional Crossbar Arrays of Self-rectifying Si/SiO2/Si Memristors **2019**, 791-813		7
18	Large Memristor Crossbars for Analog Computing **2018**,		6
17	A Dynamical Compact Model of Diffusive and Drift Memristors for Neuromorphic Computing. *Advanced Electronic Materials*,2100696	6.4	6
16	Memristors as radiofrequency switches **2016**,		6
15	Tutorial: Fabrication and three-dimensional integration of nanoscale memristive devices and arrays. *Journal of Applied Physics*, **2018**, 124, 152001	2.5	5
14	Learning with Resistive Switching Neural Networks **2019**,		4
13	Memristor Device Engineering and CMOS Integration for Reconfigurable Logic Applications **2014**, 327-351		3
12	Scalable 3D Ta:SiOx Memristive Devices. *Advanced Electronic Materials*, **2019**, 5, 1800958	6.4	2

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11	Memristive nanodevices: CMOS compatibility and novel applications **2016**,		2
10	Unconventional computing with diffusive memristors **2018**,		2
9	Device engineering and CMOS integration of nanoscale memristors **2014**,		2
8	Engineering Tunneling Selector to Achieve High Non-linearity for 1S1R Integration. *Frontiers in Nanotechnology*, **2021**, 3,	5.5	2
7	Memristor-CMOS Analog Coprocessor for Acceleration of High-Performance Computing Applications. *ACM Journal on Emerging Technologies in Computing Systems*, **2018**, 14, 1-30	1.7	2
6	Nanoscale memristors: Devices engineering, CMOS integration and novel applications **2015**,		1
5	The secret order of disorder. *Nature Materials*, **2021**,	27	1
4	Built-in selectors self-assembled into memristors **2016**,		1
3	Correction: Electrochemical metallization switching with a platinum group metal in different oxides. *Nanoscale*, **2016**, 8, 11766	7.7	1
2	Three-dimensional hybrid circuits: the future of neuromorphic computing hardware. *Nano Express*, **2021**, 2, 031003	2	
1	Ta/HfO2-based Memristor and Crossbar Arrays for In-Memory Computing **2022**, 167-188		