Jianhua Joshua Yang

List of Publications by Year in Descending Order

167 papers	22,138 citations	65 h-index	148 g-index
178 ext. papers	26,862 ext. citations	11.9 avg, IF	7.24 L-index

#	Paper	IF	Citations
167	Timing Selector: Using Transient Switching Dynamics to Solve the Sneak Path Issue of Crossbar Arrays. *Small Science*, **2022**, 2, 2270001		2
166	Reset Switching Statistics of TaOx-Based Memristor. *Kluwer International Series in Electronic Materials: Science and Technology*, **2022**, 187-195		
165	Ta/HfO2-based Memristor and Crossbar Arrays for In-Memory Computing **2022**, 167-188		
164	Standards for the Characterization of Endurance in Resistive Switching Devices. *ACS Nano*, **2021**,	16.7	36
163	A fully hardware-based memristive multilayer neural network. *Science Advances*, **2021**, 7, eabj4801	14.3	10
162	The secret order of disorder. *Nature Materials*, **2021**,	27	1
161	Engineering Tunneling Selector to Achieve High Non-linearity for 1S1R Integration. *Frontiers in Nanotechnology*, **2021**, 3,	5.5	2
160	Roadmap on emerging hardware and technology for machine learning. *Nanotechnology*, **2021**, 32, 012002	3.4	45
159	Integration and Co-design of Memristive Devices and Algorithms for Artificial Intelligence. *IScience*, **2020**, 23, 101809	6.1	20
158	A Memristor with Low Switching Current and Voltage for 1S1R Integration and Array Operation. *Advanced Electronic Materials*, **2020**, 6, 1901411	6.4	21
157	Neuronal realizations based on memristive devices **2020**, 407-426		
156	Power-efficient neural network with artificial dendrites. *Nature Nanotechnology*, **2020**, 15, 776-782	28.7	55
155	Gate-tunable van der Waals heterostructure for reconfigurable neural network vision sensor. *Science Advances*, **2020**, 6, eaba6173	14.3	66
154	Power-efficient combinatorial optimization using intrinsic noise in memristor Hopfield neural networks. *Nature Electronics*, **2020**, 3, 409-418	28.4	79
153	Resistive switching materials for information processing. *Nature Reviews Materials*, **2020**, 5, 173-195	73.3	318
152	A Low-Current and Analog Memristor with Ru as Mobile Species. *Advanced Materials*, **2020**, 32, e1904599	24	32
151	Fully hardware-implemented memristor convolutional neural network. *Nature*, **2020**, 577, 641-646	50.4	529

150	Brain-inspired computing with memristors: Challenges in devices, circuits, and systems. *Applied Physics Reviews*, **2020**, 7, 011308	17.3	105
149	Three-dimensional memristor circuits as complex neural networks. *Nature Electronics*, **2020**, 3, 225-232	28.4	112
148	An artificial spiking afferent nerve based on Mott memristors for neurorobotics. *Nature Communications*, **2020**, 11, 51	17.4	105
147	Bioinspired bio-voltage memristors. *Nature Communications*, **2020**, 11, 1861	17.4	79
146	Bridging Biological and Artificial Neural Networks with Emerging Neuromorphic Devices: Fundamentals, Progress, and Challenges. *Advanced Materials*, **2019**, 31, e1902761	24	220
145	In situ training of feed-forward and recurrent convolutional memristor networks. *Nature Machine Intelligence*, **2019**, 1, 434-442	22.5	93
144	Low-Voltage, CMOS-Free Synaptic Memory Based on LiTiO Redox Transistors. *ACS Applied Materials & Interfaces*, **2019**, 11, 38982-38992	9.5	47
143	RRAM/memristor for computing **2019**, 539-583		2
142	Parallel programming of an ionic floating-gate memory array for scalable neuromorphic computing. *Science*, **2019**, 364, 570-574	33.3	296
141	Memristive crossbar arrays for brain-inspired computing. *Nature Materials*, **2019**, 18, 309-323	27	582
140	A Survey on Architecture Advances Enabled by Emerging Beyond-CMOS Technologies. *IEEE Design and Test*, **2019**, 36, 46-68	1.4	10
139	Artificial Neural Network (ANN) to Spiking Neural Network (SNN) Converters Based on Diffusive Memristors. *Advanced Electronic Materials*, **2019**, 5, 1900060	6.4	55
138	Reinforcement learning with analogue memristor arrays. *Nature Electronics*, **2019**, 2, 115-124	28.4	166
137	Scalable 3D Ta:SiOx Memristive Devices. *Advanced Electronic Materials*, **2019**, 5, 1800958	6.4	2
136	Understanding memristive switching via in situ characterization and device modeling. *Nature Communications*, **2019**, 10, 3453	17.4	138
135	Mott-transition-based RRAM. *Materials Today*, **2019**, 28, 63-80	21.8	24
134	Reservoir Computing Using Diffusive Memristors. *Advanced Intelligent Systems*, **2019**, 1, 1900084	6	65
133	CMOS-integrated memristive non-volatile computing-in-memory for AI edge processors. *Nature Electronics*, **2019**, 2, 420-428	28.4	74

132	Learning with Resistive Switching Neural Networks **2019**,		4
131	Experimental Demonstration of Conversion-Based SNNs with 1T1R Mott Neurons for Neuromorphic Inference **2019**,		10
130	Memristor crossbar arrays with 6-nm half-pitch and 2-nm critical dimension. *Nature Nanotechnology* , **2019**, 14, 35-39	28.7	231
129	Long short-term memory networks in memristor crossbar arrays. *Nature Machine Intelligence*, **2019**, 1, 49-57	22.5	176
128	Emerging Memory Devices for Neuromorphic Computing. *Advanced Materials Technologies*, **2019**, 4, 1800589	6.8	181
127	Recommended Methods to Study Resistive Switching Devices. *Advanced Electronic Materials*, **2019**, 5, 1800143	6.4	297
126	Robust memristors based on layered two-dimensional materials. *Nature Electronics*, **2018**, 1, 130-136	28.4	348
125	An artificial nociceptor based on a diffusive memristor. *Nature Communications*, **2018**, 9, 417	17.4	183
124	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
123	Fully memristive neural networks for pattern classification with unsupervised learning. *Nature Electronics*, **2018**, 1, 137-145	28.4	511
122	Threshold Switching of Ag or Cu in Dielectrics: Materials, Mechanism, and Applications. *Advanced Functional Materials*, **2018**, 28, 1704862	15.6	168
121	Nanoscale diffusive memristor crossbars as physical unclonable functions. *Nanoscale*, **2018**, 10, 2721-2726	7.7	36
120	Memristor-Based Analog Computation and Neural Network Classification with a Dot Product Engine. *Advanced Materials*, **2018**, 30, 1705914	24	339
119	A compact model for selectors based on metal doped electrolyte. *Applied Physics A: Materials Science and Processing*, **2018**, 124, 1	2.6	2
118	Inducing tunable switching behavior in a single memristor. *Applied Materials Today*, **2018**, 11, 280-290	6.6	18
117	Unconventional computing with diffusive memristors **2018**,		2
116	Large Memristor Crossbars for Analog Computing **2018**,		6
115	In-situ TEM Characterization of Ultra-robust Memristors Based on Fully Layered Two-dimensional Materials. *Microscopy and Microanalysis*, **2018**, 24, 1886-1887	0.5	1

114	Capacitive neural network with neuro-transistors. *Nature Communications*, **2018**, 9, 3208	17.4	132
113	Pulse-Width Modulation based Dot-Product Engine for Neuromorphic Computing System using Memristor Crossbar Array **2018**,		10
112	Efficient and self-adaptive in-situ learning in multilayer memristor neural networks. *Nature Communications*, **2018**, 9, 2385	17.4	371
111	Analogue signal and image processing with large memristor crossbars. *Nature Electronics*, **2018**, 1, 52-59	28.4	550
110	Data related to the nanoscale structural and compositional evolution in resistance change memories. *Data in Brief*, **2018**, 21, 18-24	1.2	4
109	A provable key destruction scheme based on memristive crossbar arrays. *Nature Electronics*, **2018**, 1, 548-554	28.4	32
108	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
107	Review of memristor devices in neuromorphic computing: materials sciences and device challenges. *Journal Physics D: Applied Physics*, **2018**, 51, 503002	3	183
106	Artificial neural networks based on memristive devices. *Science China Information Sciences*, **2018**, 61, 1	3.4	9
105	Silicon Oxide (SiO): A Promising Material for Resistance Switching?. *Advanced Materials*, **2018**, 30, e1801187	24	105
104	In-Memory Computing with Memristor Arrays **2018**,		12
103	Anatomy of Ag/Hafnia-Based Selectors with 10 Nonlinearity. *Advanced Materials*, **2017**, 29, 1604457	24	245
102	Organic electronics: Battery-like artificial synapses. *Nature Materials*, **2017**, 16, 396-397	27	24
101	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
100	A niobium oxide-tantalum oxide selector-memristor self-aligned nanostack. *Applied Physics Letters*, **2017**, 110, 103102	3.4	17
99	Characteristics and transport mechanisms of triple switching regimes of TaOx memristor. *Applied Physics Letters*, **2017**, 110, 173504	3.4	20
98	Reset switching statistics of TaOx-based Memristor. *Journal of Electroceramics*, **2017**, 39, 132-136	1.5	4
97	Three-dimensional crossbar arrays of self-rectifying Si/SiO/Si memristors. *Nature Communications*, **2017**, 8, 15666	17.4	115

96	Mimicking Classical Conditioning Based on a Single Flexible Memristor. *Advanced Materials*, **2017**, 29, 1602890	24	93
95	Flexible three-dimensional artificial synapse networks with correlated learning and trainable memory capability. *Nature Communications*, **2017**, 8, 752	17.4	176
94	A novel true random number generator based on a stochastic diffusive memristor. *Nature Communications*, **2017**, 8, 882	17.4	180
93	Truly Electroforming-Free and Low-Energy Memristors with Preconditioned Conductive Tunneling Paths. *Advanced Functional Materials*, **2017**, 27, 1702010	15.6	56
92	A Compact Memristor-Based Dynamic Synapse for Spiking Neural Networks. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, **2017**, 36, 1353-1366	2.5	59
91	Enabling selectivity and fast recovery of ZnO nanowire gas sensors through resistive switching. *Sensors and Actuators B: Chemical*, **2017**, 238, 357-363	8.5	36
90	Memristors with diffusive dynamics as synaptic emulators for neuromorphic computing. *Nature Materials*, **2017**, 16, 101-108	27	1201
89	An energy-efficient and high-throughput bitwise CNN on sneak-path-free digital ReRAM crossbar **2017**,		12
88	Dot-product engine for neuromorphic computing **2016**,		303
87	Quantized conductance coincides with state instability and excess noise in tantalum oxide memristors. *Nature Communications*, **2016**, 7, 11142	17.4	69
86	Thermally induced crystallization in NbO thin films. *Scientific Reports*, **2016**, 6, 34294	4.9	16
85	Cyclical sensing integrate-and-fire circuit for memristor array based neuromorphic computing **2016**,		8
84	A neuromorphic ASIC design using one-selector-one-memristor crossbar **2016**,		10
83	High-Speed and Low-Energy Nitride Memristors. *Advanced Functional Materials*, **2016**, 26, 5290-5296	15.6	177
82	Built-in selectors self-assembled into memristors **2016**,		1
81	Voltage divider effect for the improvement of variability and endurance of TaO(x) memristor. *Scientific Reports*, **2016**, 6, 20085	4.9	70
80	Sub-10 nm Ta Channel Responsible for Superior Performance of a HfO2 Memristor. *Scientific Reports*, **2016**, 6, 28525	4.9	128
79	Trilayer Tunnel Selectors for Memristor Memory Cells. *Advanced Materials*, **2016**, 28, 356-62	24	83

78	Correction: Electrochemical metallization switching with a platinum group metal in different oxides. *Nanoscale*, **2016**, 8, 11766	7.7	1
77	Electrochemical metallization switching with a platinum group metal in different oxides. *Nanoscale*, **2016**, 8, 14023-30	7.7	33
76	Low-Power, Self-Rectifying, and Forming-Free Memristor with an Asymmetric Programing Voltage for a High-Density Crossbar Application. *Nano Letters*, **2016**, 16, 6724-6732	11.5	131
75	Synaptic electronics and neuromorphic computing. *Science China Information Sciences*, **2016**, 59, 1	3.4	58
74	Low Variability Resistor–Memristor Circuit Masking the Actual Memristor States. *Advanced Electronic Materials*, **2015**, 1, 1500095	6.4	25
73	A selector device based on graphene–oxide heterostructures for memristor crossbar applications. *Applied Physics A: Materials Science and Processing*, **2015**, 120, 403-407	2.6	9
72	TEM and EELS Study on TaOx-based Nanoscale Resistive Switching Devices. *Materials Research Society Symposia Proceedings*, **2015**, 1805, 1		
71	Structural and Chemical Analysis of Nanoscale Resistive Switching Devices: Assessment on Nonlinear Properties. *Materials Research Society Symposia Proceedings*, **2015**, 1805, 1		1
70	Low voltage two-state-variable memristor model of vacancy-drift resistive switches. *Applied Physics A: Materials Science and Processing*, **2015**, 119, 1-9	2.6	19
69	New materials for memristive switching **2014**,		3
68	Electrode-material dependent switching in TaOxmemristors. *Semiconductor Science and Technology*, **2014**, 29, 104003	1.8	17
67	Oxide Based Memristive Nanodevices **2014**, 219-256		1
66	Memristive Devices for Computing: Mechanisms, Applications and Challenges. *ECS Transactions*, **2013**, 58, 9-14	1	6
65	Memristive devices for computing. *Nature Nanotechnology*, **2013**, 8, 13-24	28.7	2406
64	A compact modeling of TiO2-TiO2− memristor. *Applied Physics Letters*, **2013**, 102, 153503	3.4	32
63	Electrical performance and scalability of Pt dispersed SiO2 nanometallic resistance switch. *Nano Letters*, **2013**, 13, 3213-7	11.5	146
62	Memristor structures for high scalability: Non-linear and symmetric devices utilizing fabrication friendly materials and processes. *Microelectronic Engineering*, **2013**, 103, 66-69	2.5	19
61	State Dynamics and Modeling of Tantalum Oxide Memristors. *IEEE Transactions on Electron Devices*, **2013**, 60, 2194-2202	2.9	120

60	Memristive devices in computing system. *ACM Journal on Emerging Technologies in Computing Systems*, **2013**, 9, 1-20	1.7	38
59	A physical model of switching dynamics in tantalum oxide memristive devices. *Applied Physics Letters*, **2013**, 102, 223502	3.4	59
58	A replacement of high-k process for CMOS transistor by atomic layer deposition. *Semiconductor Science and Technology*, **2013**, 28, 082003	1.8	4
57	Band offsets in transition-metal oxide heterostructures. *Journal Physics D: Applied Physics*, **2013**, 46, 295303	3	10
56	Characterization of electroforming-free titanium dioxide memristors. *Beilstein Journal of Nanotechnology*, **2013**, 4, 467-73	3	54
55	Inverse TMR in a nominally symmetric CoFe/AlOx/CoFe junction induced by interfacial Fe3O4 investigated by STEM-EELS. *Journal of Magnetism and Magnetic Materials*, **2012**, 324, 1837-1844	2.8	2
54	Nitride memristors. *Applied Physics A: Materials Science and Processing*, **2012**, 109, 1-4	2.6	58
53	Engineering nonlinearity into memristors for passive crossbar applications. *Applied Physics Letters*, **2012**, 100, 113501	3.4	162
52	Continuous electrical tuning of the chemical composition of TaO(x)-based memristors. *ACS Nano*, **2012**, 6, 2312-8	16.7	100
51	Designing memristors: Physics, materials science and engineering **2012**,		1
50	Metal oxide memories based on thermochemical and valence change mechanisms. *MRS Bulletin*, **2012**, 37, 131-137	3.2	102
49	Electronic structure and transport measurements of amorphous transition-metal oxides: observation of Fermi glass behavior. *Applied Physics A: Materials Science and Processing*, **2012**, 107, 1-11	2.6	47
48	Emerging non-volatile memories **2011**,		121
47	Dopant Control by Atomic Layer Deposition in Oxide Films for Memristive Switches. *Chemistry of Materials*, **2011**, 23, 123-125	9.6	56
46	Two- and Three-Terminal Resistive Switches: Nanometer-Scale Memristors and Memistors. *Advanced Functional Materials*, **2011**, 21, 2660-2665	15.6	64
45	The switching location of a bipolar memristor: chemical, thermal and structural mapping. *Nanotechnology*, **2011**, 22, 254015	3.4	82
44	Metal/TiO2 interfaces for memristive switches. *Applied Physics A: Materials Science and Processing*, **2011**, 102, 785-789	2.6	128
43	Feedback write scheme for memristive switching devices. *Applied Physics A: Materials Science and Processing*, **2011**, 102, 973-982	2.6	63

42	Coexistence of memristance and negative differential resistance in a nanoscale metal-oxide-metal system. *Advanced Materials*, **2011**, 23, 1730-3	24	91
41	Anatomy of a nanoscale conduction channel reveals the mechanism of a high-performance memristor. *Advanced Materials*, **2011**, 23, 5633-40	24	338
40	Spectromicroscopy of tantalum oxide memristors. *Applied Physics Letters*, **2011**, 98, 242114	3.4	77
39	Progress in CMOS-memristor integration **2011**,		6
38	Impact of geometry on the performance of memristive nanodevices. *Nanotechnology*, **2011**, 22, 254026	3.4	22
37	Observation of two resistance switching modes in TiO2 memristive devices electroformed at low current. *Nanotechnology*, **2011**, 22, 254007	3.4	62
36	R MemristiveR switches enable R statefulR logic operations via material implication. *Nature*, **2010**, 464, 873-6	50.4	1405
35	Radiation Hardness of ${rm TiO}_{2}$ Memristive Junctions. *IEEE Transactions on Nuclear Science*, **2010**, 57, 1640-1643	1.7	58
34	Hybrid CMOS/memristor circuits **2010**,		39
33	High switching endurance in TaOx memristive devices. *Applied Physics Letters*, **2010**, 97, 232102	3.4	467
32	Self-aligned memristor cross-point arrays fabricated with one nanoimprint lithography step. *Nano Letters*, **2010**, 10, 2909-14	11.5	85
31	Corrigendum on R The mechanism of electroforming of metal oxide memristive switchesR *Nanotechnology*, **2010**, 21, 339803-339803	3.4	5
30	Morphological and electrical changes in TiO2 memristive devices induced by electroforming and switching. *Physica Status Solidi - Rapid Research Letters*, **2010**, 4, 16-18	2.5	59
29	Compositional effect of bcc Co100 Fe x electrodes on magnetoresistance in AlO x -based magnetic tunnel junctions. *Applied Physics A: Materials Science and Processing*, **2010**, 98, 707-710	2.6	7
28	Direct identification of the conducting channels in a functioning memristive device. *Advanced Materials*, **2010**, 22, 3573-7	24	278
27	Diffusion of adhesion layer metals controls nanoscale memristive switching. *Advanced Materials*, **2010**, 22, 4034-8	24	95
26	Origin of inverse tunneling magnetoresistance in a symmetric junction revealed by delaminating the buried electronic interface. *Applied Physics Letters*, **2009**, 95, 233117	3.4	4
25	Electrical transport and thermometry of electroformed titanium dioxide memristive switches. *Journal of Applied Physics*, **2009**, 106, 124504	2.5	81

24	Structural and chemical characterization of TiO2 memristive devices by spatially-resolved NEXAFS. *Nanotechnology*, **2009**, 20, 485701	3.4	52
23	On the integration of memristors with CMOS using nanoimprint lithography **2009**,		8
22	A Family of Electronically Reconfigurable Nanodevices. *Advanced Materials*, **2009**, 21, 3754-3758	24	195
21	Effect of tetragonal lattice distortion of Co70Fe30 on the tunneling magnetoresistance of AlO x based magnetic tunnel junction. *Applied Physics A: Materials Science and Processing*, **2009**, 97, 73-77	2.6	2
20	Memristor-CMOS hybrid integrated circuits for reconfigurable logic. *Nano Letters*, **2009**, 9, 3640-5	11.5	507
19	The mechanism of electroforming of metal oxide memristive switches. *Nanotechnology*, **2009**, 20, 215201	3.4	591
18	Switching dynamics in titanium dioxide memristive devices. *Journal of Applied Physics*, **2009**, 106, 074508	2.5	506
17	Force modulation of tunnel gaps in metal oxide memristive nanoswitches. *Applied Physics Letters*, **2009**, 95, 113503	3.4	36
16	Memristive switching mechanism for metal/oxide/metal nanodevices. *Nature Nanotechnology*, **2008** , 3, 429-33	28.7	2239
15	Oxide and carbide formation at titanium/organic monolayer interfaces. *Journal of the American Chemical Society*, **2008**, 130, 4041-7	16.4	30
14	Growth and physical property of epitaxial Co70Fe30 thin film on Si substrate via TiN buffer. *Applied Physics Letters*, **2008**, 92, 022504	3.4	10
13	Epitaxial Growth and Surface Roughness Control of Ferromagnetic Thin Films on Si by Sputter Deposition. *Journal of Electronic Materials*, **2008**, 37, 355-360	1.9	4
12	Crystal structure effect of ferromagnetic electrode on tunneling magnetoresistance. *Acta Materialia*, **2008**, 56, 1491-1495	8.4	4
11	Thickness determination of ultrathin oxide films and its application in magnetic tunnel junctions. *Journal of Electronic Materials*, **2006**, 35, 2142-2146	1.9	1
10	An investigation of phase transformation behavior in sputter-deposited PtMn thin films. *Jom*, **2006**, 58, 50-54	2.1	32
9	Over 70% tunneling magnetoresistance at room temperature for a CoFe and AlOx based magnetic tunnel junction. *Applied Physics Letters*, **2006**, 89, 202502	3.4	20
8	Thermal expansion coefficients of rare earth metal disilicides and their influence on the growth of disilicide nanowires. *Applied Physics A: Materials Science and Processing*, **2006**, 82, 39-42	2.6	3
7	Selective oxidation of an individual layer in a magnetic tunnel junction through the use of thermodynamic control. *Applied Physics Letters*, **2005**, 87, 061901	3.4	3

6	The formation of amorphous alloy oxides as barriers used in magnetic tunnel junctions. *Journal of Applied Physics*, **2005**, 98, 074508	2.5	16
5	Oxidation of tunnel barrier metals in magnetic tunnel junctions. *Journal of Applied Physics*, **2005**, 97, 10C918	2.5	8
4	2022 roadmap on neuromorphic computing and engineering. *Neuromorphic Computing and Engineering*,		24
3	Timing Selector: Using Transient Switching Dynamics to Solve the Sneak Path Issue of Crossbar Arrays. *Small Science*,2100072		8
2	A Dynamical Compact Model of Diffusive and Drift Memristors for Neuromorphic Computing. *Advanced Electronic Materials*,2100696	6.4	6
1	Nonlinearity in Memristors for Neuromorphic Dynamic Systems. *Small Science*,2100049		12