

Zhongrui Wang

List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

70
papers

6,698
citations

34
h-index

76
g-index

76
ext. papers

8,656
ext. citations

12.3
avg, IF

5.88
L-index

#	Paper	IF	Citations
70	Ta/HfO ₂ -based Memristor and Crossbar Arrays for In-Memory Computing 2022 , 167-188		
69	A fully hardware-based memristive multilayer neural network. <i>Science Advances</i> , 2021 , 7, eabj4801	14.3	10
68	Energy-Efficient Memristive Euclidean Distance Engine for Brain-Inspired Competitive Learning. <i>Advanced Intelligent Systems</i> , 2021 , 3, 2170079	6	2
67	One transistor one electrolyte-gated transistor for supervised learning in spiking neural networks. <i>IEEE Electron Device Letters</i> , 2021 , 1-1	4.4	0
66	Hybrid memristor-CMOS neurons for in-situ learning in fully hardware memristive spiking neural networks. <i>Science Bulletin</i> , 2021 , 66, 1624-1624	10.6	13
65	One Transistor One Electrolyte-Gated Transistor Based Spiking Neural Network for Power-Efficient Neuromorphic Computing System. <i>Advanced Functional Materials</i> , 2021 , 31, 2100042	15.6	17
64	In-sensor reservoir computing for language learning via two-dimensional memristors. <i>Science Advances</i> , 2021 , 7,	14.3	33
63	Memristive Crossbar Arrays for Storage and Computing Applications. <i>Advanced Intelligent Systems</i> , 2021 , 3, 2100017	6	18
62	Memristive Crossbar Arrays for Storage and Computing Applications. <i>Advanced Intelligent Systems</i> , 2021 , 3, 2170065	6	
61	A Memristor with Low Switching Current and Voltage for 1S1R Integration and Array Operation. <i>Advanced Electronic Materials</i> , 2020 , 6, 1901411	6.4	21
60	Neuronal realizations based on memristive devices 2020 , 407-426		
59	Gate-tunable van der Waals heterostructure for reconfigurable neural network vision sensor. <i>Science Advances</i> , 2020 , 6, eaba6173	14.3	66
58	Resistive switching materials for information processing. <i>Nature Reviews Materials</i> , 2020 , 5, 173-195	73.3	318
57	Brain-inspired computing with memristors: Challenges in devices, circuits, and systems. <i>Applied Physics Reviews</i> , 2020 , 7, 011308	17.3	105
56	Three-dimensional memristor circuits as complex neural networks. <i>Nature Electronics</i> , 2020 , 3, 225-232	28.4	112
55	An artificial spiking afferent nerve based on Mott memristors for neurorobotics. <i>Nature Communications</i> , 2020 , 11, 51	17.4	105
54	Oxide-Based Electrolyte-Gated Transistors for Spatiotemporal Information Processing. <i>Advanced Materials</i> , 2020 , 32, e2003018	24	48

53	Bioinspired bio-voltage memristors. <i>Nature Communications</i> , 2020 , 11, 1861	17.4	79
52	Bridging Biological and Artificial Neural Networks with Emerging Neuromorphic Devices: Fundamentals, Progress, and Challenges. <i>Advanced Materials</i> , 2019 , 31, e1902761	24	220
51	In situ training of feed-forward and recurrent convolutional memristor networks. <i>Nature Machine Intelligence</i> , 2019 , 1, 434-442	22.5	93
50	RRAM/memristor for computing 2019 , 539-583		2
49	Parallel programming of an ionic floating-gate memory array for scalable neuromorphic computing. <i>Science</i> , 2019 , 364, 570-574	33.3	296
48	Artificial Neural Network (ANN) to Spiking Neural Network (SNN) Converters Based on Diffusive Memristors. <i>Advanced Electronic Materials</i> , 2019 , 5, 1900060	6.4	55
47	Reinforcement learning with analogue memristor arrays. <i>Nature Electronics</i> , 2019 , 2, 115-124	28.4	166
46	Reservoir Computing Using Diffusive Memristors. <i>Advanced Intelligent Systems</i> , 2019 , 1, 1900084	6	65
45	Learning with Resistive Switching Neural Networks 2019 ,		4
44	Experimental Demonstration of Conversion-Based SNNs with 1T1R Mott Neurons for Neuromorphic Inference 2019 ,		10
43	Long short-term memory networks in memristor crossbar arrays. <i>Nature Machine Intelligence</i> , 2019 , 1, 49-57	22.5	176
42	Emerging Memory Devices for Neuromorphic Computing. <i>Advanced Materials Technologies</i> , 2019 , 4, 1800589	6.589	181
41	An artificial nociceptor based on a diffusive memristor. <i>Nature Communications</i> , 2018 , 9, 417	17.4	183
40	Threshold Switching: Threshold Switching of Ag or Cu in Dielectrics: Materials, Mechanism, and Applications (Adv. Funct. Mater. 6/2018). <i>Advanced Functional Materials</i> , 2018 , 28, 1870036	15.6	7
39	Fully memristive neural networks for pattern classification with unsupervised learning. <i>Nature Electronics</i> , 2018 , 1, 137-145	28.4	511
38	Threshold Switching of Ag or Cu in Dielectrics: Materials, Mechanism, and Applications. <i>Advanced Functional Materials</i> , 2018 , 28, 1704862	15.6	168
37	Nanoscale diffusive memristor crossbars as physical unclonable functions. <i>Nanoscale</i> , 2018 , 10, 2721-2726	27	36
36	Unconventional computing with diffusive memristors 2018 ,		2

35	Large Memristor Crossbars for Analog Computing 2018 ,		6
34	Capacitive neural network with neuro-transistors. <i>Nature Communications</i> , 2018 , 9, 3208	17.4	132
33	Efficient and self-adaptive in-situ learning in multilayer memristor neural networks. <i>Nature Communications</i> , 2018 , 9, 2385	17.4	371
32	Analogue signal and image processing with large memristor crossbars. <i>Nature Electronics</i> , 2018 , 1, 52-59	28.4	550
31	Review of memristor devices in neuromorphic computing: materials sciences and device challenges. <i>Journal Physics D: Applied Physics</i> , 2018 , 51, 503002	3	183
30	Anatomy of Ag/Hafnia-Based Selectors with 10 Nonlinearity. <i>Advanced Materials</i> , 2017 , 29, 1604457	24	245
29	A novel true random number generator based on a stochastic diffusive memristor. <i>Nature Communications</i> , 2017 , 8, 882	17.4	180
28	Truly Electroforming-Free and Low-Energy Memristors with Preconditioned Conductive Tunneling Paths. <i>Advanced Functional Materials</i> , 2017 , 27, 1702010	15.6	56
27	Memristors with diffusive dynamics as synaptic emulators for neuromorphic computing. <i>Nature Materials</i> , 2017 , 16, 101-108	27	1201
26	Sub-10 nm Ta Channel Responsible for Superior Performance of a HfO ₂ Memristor. <i>Scientific Reports</i> , 2016 , 6, 28525	4.9	128
25	Correction: Electrochemical metallization switching with a platinum group metal in different oxides. <i>Nanoscale</i> , 2016 , 8, 11766	7.7	1
24	Electrochemical metallization switching with a platinum group metal in different oxides. <i>Nanoscale</i> , 2016 , 8, 14023-30	7.7	33
23	Impact of local structural and electrical properties of grain boundaries in polycrystalline HfO ₂ on reliability of SiO _x interfacial layer. <i>Microelectronics Reliability</i> , 2014 , 54, 1712-1717	1.2	11
22	Observation of the Ambient Effect in BTI Characteristics of Back-Gated Single Layer Graphene Field Effect Transistors. <i>IEEE Transactions on Electron Devices</i> , 2013 , 60, 2682-2686	2.9	11
21	Study of preferential localized degradation and breakdown of HfO ₂ /SiO _x dielectric stacks at grain boundary sites of polycrystalline HfO ₂ dielectrics. <i>Microelectronic Engineering</i> , 2013 , 109, 364-369	2.5	34
20	The transport properties of oxygen vacancy-related polaron-like bound state in HfO _x . <i>Scientific Reports</i> , 2013 , 3, 3246	4.9	13
19	. <i>IEEE Electron Device Letters</i> , 2012 , 33, 585-587	4.4	20
18	Highly Uniform, Self-Compliance, and Forming-Free ALD HfO ₂ -Based RRAM With Ge Doping. <i>IEEE Transactions on Electron Devices</i> , 2012 , 59, 1203-1208	2.9	62

17	Mechanism of Different Switching Directions in Graphene Oxide Based RRAM. <i>Journal of the Electrochemical Society</i> , 2012 , 159, K177-K182	3.9	12
16	V_{th} Shift in Single-Layer Graphene Field-Effect Transistors and Its Correlation With Raman Inspection. <i>IEEE Transactions on Device and Materials Reliability</i> , 2012 , 12, 478-481	1.6	9
15	Positive Bias-Induced V_{th} Instability in Graphene Field Effect Transistors. <i>IEEE Electron Device Letters</i> , 2012 , 33, 339-341	4.4	11
14	Transport properties of HfO ₂ based resistive-switching memories. <i>Physical Review B</i> , 2012 , 85,	3.3	43
13	Investigation of HfO ₂ high-k dielectrics electronic structure on SiO ₂ /Si substrate by x-ray photoelectron spectroscopy. <i>Applied Physics Letters</i> , 2011 , 99, 012902	3.4	24
12	Oxide-based RRAM: Unified microscopic principle for both unipolar and bipolar switching 2011 ,		45
11	. <i>IEEE Electron Device Letters</i> , 2011 , 32, 396-398	4.4	48
10	2010 ,		3
9	Temperature Instability of Resistive Switching on HfO_x -Based RRAM Devices. <i>IEEE Electron Device Letters</i> , 2010 , 31, 476-478	4.4	84
8	Schottky-Ohmic transition in metal-all-around electrical contacts to silicon nanowires. <i>Journal of Applied Physics</i> , 2009 , 105, 094508	2.5	9
7	Electronic trap characterization of the Sc ₂ O ₃ /Al ₂ O ₃ high- κ gate stack by scanning tunneling microscopy. <i>Applied Physics Letters</i> , 2008 , 92, 022904	3.4	12
6	Volatile and Nonvolatile Memristive Devices for Neuromorphic Computing. <i>Advanced Electronic Materials</i> , 2101127	6.4	17
5	Timing Selector: Using Transient Switching Dynamics to Solve the Sneak Path Issue of Crossbar Arrays. <i>Small Science</i> , 2100072		8
4	A Dynamical Compact Model of Diffusive and Drift Memristors for Neuromorphic Computing. <i>Advanced Electronic Materials</i> , 2100696	6.4	6
3	Energy-Efficient Memristive Euclidean Distance Engine for Brain-Inspired Competitive Learning. <i>Advanced Intelligent Systems</i> , 2100114	6	3
2	Mixed-Precision Continual Learning Based on Computational Resistance Random Access Memory. <i>Advanced Intelligent Systems</i> , 2200026	6	1
1	Convolutional Echo-State Network with Random Memristors for Spatiotemporal Signal Classification. <i>Advanced Intelligent Systems</i> , 2200027	6	1