

Jianshi Tang

List of Publications by Year in descending order

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135
papers

10,029
citations

61945

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all docs

141
docs citations

141
times ranked

11310
citing authors

#	ARTICLE	IF	CITATIONS
1	Fully hardware-implemented memristor convolutional neural network. <i>Nature</i> , 2020, 577, 641-646.	13.7	1,198
2	Magnetization switching through giant spin-orbit torque in a magnetically doped topological insulator heterostructure. <i>Nature Materials</i> , 2014, 13, 699-704.	13.3	773
3	Switching of perpendicular magnetization by spin-orbit torques in the absence of external magnetic fields. <i>Nature Nanotechnology</i> , 2014, 9, 548-554.	15.6	753
4	Scale-Invariant Quantum Anomalous Hall Effect in Magnetic Topological Insulators beyond the Two-Dimensional Limit. <i>Physical Review Letters</i> , 2014, 113, 137201.	2.9	453
5	Bridging Biological and Artificial Neural Networks with Emerging Neuromorphic Devices: Fundamentals, Progress, and Challenges. <i>Advanced Materials</i> , 2019, 31, e1902761.	11.1	418
6	Neuro-inspired computing chips. <i>Nature Electronics</i> , 2020, 3, 371-382.	13.1	402
7	Enhanced Charge Carrier Mobility in Two-Dimensional High Dielectric Molybdenum Oxide. <i>Advanced Materials</i> , 2013, 25, 109-114.	11.1	355
8	Synthesis of nanometre-thick MoO ₃ sheets. <i>Nanoscale</i> , 2010, 2, 429-433.	2.8	250
9	Dynamic memristor-based reservoir computing for high-efficiency temporal signal processing. <i>Nature Communications</i> , 2021, 12, 408.	5.8	231
10	Carbon Nanotube/Polyaniline Composite Nanofibers: Facile Synthesis and Chemosensors. <i>Nano Letters</i> , 2011, 11, 954-959.	4.5	215
11	Electric-field control of spin-orbit torque in a magnetically doped topological insulator. <i>Nature Nanotechnology</i> , 2016, 11, 352-359.	15.6	212
12	Reliability of analog resistive switching memory for neuromorphic computing. <i>Applied Physics Reviews</i> , 2020, 7, .	5.5	199
13	Proximity Induced High-Temperature Magnetic Order in Topological Insulator - Ferrimagnetic Insulator Heterostructure. <i>Nano Letters</i> , 2014, 14, 3459-3465.	4.5	192
14	End-bonded contacts for carbon nanotube transistors with low, size-independent resistance. <i>Science</i> , 2015, 350, 68-72.	6.0	180
15	Large-Area High-Performance Flexible Pressure Sensor with Carbon Nanotube Active Matrix for Electronic Skin. <i>Nano Letters</i> , 2018, 18, 2054-2059.	4.5	172
16	Electrical Detection of Spin-Polarized Surface States Conduction in (Bi _{0.53} Sb _{0.47}) ₂ Te ₃ Topological Insulator. <i>Nano Letters</i> , 2014, 14, 5423-5429.	4.5	150
17	Physically unclonable cryptographic primitives using self-assembled carbon nanotubes. <i>Nature Nanotechnology</i> , 2016, 11, 559-565.	15.6	147
18	Electric-field-controlled ferromagnetism in high-Curie-temperature Mn _{0.05} Ge _{0.95} quantum dots. <i>Nature Materials</i> , 2010, 9, 337-344.	13.3	142

#	ARTICLE	IF	CITATIONS
19	Power-efficient neural network with artificial dendrites. Nature Nanotechnology, 2020, 15, 776-782.	15.6	141
20	Flexible CMOS integrated circuits based on carbon nanotubes with sub-10 ns stage delays. Nature Electronics, 2018, 1, 191-196.	13.1	135
21	Gate-Controlled Surface Conduction in Na-Doped Bi ₂ Te ₃ Topological Insulator Nanoplates. Nano Letters, 2012, 12, 1170-1175.	4.5	126
22	High-speed logic integrated circuits with solution-processed self-assembled carbon nanotubes. Nature Nanotechnology, 2017, 12, 861-865.	15.6	125
23	Direct Imaging of Thermally Driven Domain Wall Motion in Magnetic Insulators. Physical Review Letters, 2013, 110, 177202.	2.9	124
24	Magnetization switching through spin-Hall-effect-induced chiral domain wall propagation. Physical Review B, 2014, 89, .	1.1	121
25	33.2 A Fully Integrated Analog ReRAM Based 78.4TOPS/W Compute-In-Memory Chip with Fully Parallel MAC Computing. , 2020, , .		121
26	Vertical Graphene-Base Hot-Electron Transistor. Nano Letters, 2013, 13, 2370-2375.	4.5	112
27	Revelation of Topological Surface States in Bi ₂ Se ₃ Thin Films by <i>In Situ</i> Al Passivation. ACS Nano, 2012, 6, 295-302.	7.3	102
28	DNA-directed nanofabrication of high-performance carbon nanotube field-effect transistors. Science, 2020, 368, 878-881.	6.0	99
29	Precise pitch-scaling of carbon nanotube arrays within three-dimensional DNA nanotrenches. Science, 2020, 368, 874-877.	6.0	97
30	In-memory Learning with Analog Resistive Switching Memory: A Review and Perspective. Proceedings of the IEEE, 2021, 109, 14-42.	16.4	96
31	ECRAM as Scalable Synaptic Cell for High-Speed, Low-Power Neuromorphic Computing. , 2018, , .		94
32	Epitaxial growth of high mobility Bi ₂ Se ₃ thin films on CdS. Applied Physics Letters, 2011, 98, 242102.	1.5	85
33	Analog-Type Resistive Switching Devices for Neuromorphic Computing. Physica Status Solidi - Rapid Research Letters, 2019, 13, 1900204.	1.2	83
34	Neural signal analysis with memristor arrays towards high-efficiency brain-machine interfaces. Nature Communications, 2020, 11, 4234.	5.8	82
35	Electric-Field Control of Ferromagnetism in Mn-Doped ZnO Nanowires. Nano Letters, 2014, 14, 1823-1829.	4.5	76
36	Artificial Synapse Based on van der Waals Heterostructures with Tunable Synaptic Functions for Neuromorphic Computing. ACS Applied Materials & Interfaces, 2020, 12, 11945-11954.	4.0	75

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37	Ferromagnetic Germanide in Ge Nanowire Transistors for Spintronics Application. ACS Nano, 2012, 6, 5710-5717.	7.3	63
38	Analog memristive synapse based on topotactic phase transition for high-performance neuromorphic computing and neural network pruning. Science Advances, 2021, 7, .	4.7	63
39	Oxide-Confined Formation of Germanium Nanowire Heterostructures for High-Performance Transistors. ACS Nano, 2011, 5, 6008-6015.	7.3	58
40	Electrical Spin Injection and Detection in Mn ₅ Ge ₃ /Ge/Mn ₅ Ge ₃ Nanowire Transistors. Nano Letters, 2013, 13, 4036-4043.	4.5	54
41	A Reliable All-2D Materials Artificial Synapse for High Energy-Efficient Neuromorphic Computing. Advanced Functional Materials, 2021, 31, 2011083.	7.8	53
42	Electrical spin injection and transport in semiconductor nanowires: challenges, progress and perspectives. Nanoscale, 2015, 7, 4325-4337.	2.8	52
43	High-Current Gain Two-Dimensional MoS ₂ -Base Hot-Electron Transistors. Nano Letters, 2015, 15, 7905-7912.	4.5	52
44	Gate-tunable large-scale flexible monolayer MoS ₂ devices for photodetectors and optoelectronic synapses. Nano Research, 2022, 15, 5418-5424.	5.8	48
45	Single-crystalline Ni ₂ Ge/Ge/Ni ₂ Ge nanowire heterostructure transistors. Nanotechnology, 2010, 21, 505704.	1.3	45
46	Separation of top and bottom surface conduction in Bi ₂ Te ₃ thin films. Nanotechnology, 2013, 24, 015705.	1.3	44
47	Rotating neurons for all-analog implementation of cyclic reservoir computing. Nature Communications, 2022, 13, 1549.	5.8	44
48	High-Uniformity Threshold Switching HfO ₂ -Based Selectors with Patterned Ag Nanodots. Advanced Science, 2020, 7, 2002251.	5.6	43
49	Memristor-based analogue computing for brain-inspired sound localization with in situ training. Nature Communications, 2022, 13, 2026.	5.8	42
50	Monolayer MoS ₂ Synaptic Transistors for High-Temperature Neuromorphic Applications. Nano Letters, 2021, 21, 10400-10408.	4.5	41
51	Edge Effect on Resistance Scaling Rules in Graphene Nanostructures. Nano Letters, 2011, 11, 1082-1086.	4.5	37
52	Multichannel parallel processing of neural signals in memristor arrays. Science Advances, 2020, 6, .	4.7	36
53	Enhancing electric-field control of ferromagnetism through nanoscale engineering of high-Tc Mn _x Ge _{1-x} nanomesh. Nature Communications, 2016, 7, 12866.	5.8	35
54	Direct Mapping of Charge Distribution during Lithiation of Ge Nanowires Using Off-Axis Electron Holography. Nano Letters, 2016, 16, 3748-3753.	4.5	34

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55	A Parallel Multibit Programming Scheme With High Precision for RRAM-Based Neuromorphic Systems. IEEE Transactions on Electron Devices, 2020, 67, 2213-2217.	1.6	34
56	A Highly Reliable RRAM Physically Unclonable Function Utilizing Post-Process Randomness Source. IEEE Journal of Solid-State Circuits, 2021, 56, 1641-1650.	3.5	32
57	A Compact Model of Analog RRAM With Device and Array Nonideal Effects for Neuromorphic Systems. IEEE Transactions on Electron Devices, 2020, 67, 1593-1599.	1.6	29
58	Compensated Ferrimagnet Based Artificial Synapse and Neuron for Ultrafast Neuromorphic Computing. Advanced Functional Materials, 2022, 32, 2107870.	7.8	29
59	Quest for high-Curie temperature Mn Ge ^{1-x} diluted magnetic semiconductors for room-temperature spintronics applications. Journal of Crystal Growth, 2015, 425, 279-282.	0.7	28
60	Enhanced Conductance Fluctuation by Quantum Confinement Effect in Graphene Nanoribbons. Nano Letters, 2010, 10, 4590-4594.	4.5	27
61	Concealable physically unclonable function chip with a memristor array. Science Advances, 2022, 8, .	4.7	27
62	Quantum Dot Behavior in Bilayer Graphene Nanoribbons. ACS Nano, 2011, 5, 8769-8773.	7.3	26
63	A Unified PUF and TRNG Design Based on 40-nm RRAM With High Entropy and Robustness for IoT Security. IEEE Transactions on Electron Devices, 2022, 69, 536-542.	1.6	26
64	Comparison of spin lifetimes in Ge characterized between three-terminal and four-terminal nonlocal Hanle measurements. Semiconductor Science and Technology, 2013, 28, 015018.	1.0	25
65	Spin Transport in Ge Nanowires for Diluted Magnetic Semiconductor-Based Nonvolatile Transpinor. ECS Transactions, 2014, 64, 613-623.	0.3	24
66	Hanle-effect measurements of spin injection from Mn ₅ Ge ₃ C _{0.8} /Al ₂ O ₃ -contacts into degenerately doped Ge channels on Si. Applied Physics Letters, 2014, 105, 222408.	1.5	22
67	A High-Speed and High-Reliability TRNG Based on Analog RRAM for IoT Security Application. , 2019, , .		21
68	Low-noise submicron channel graphene nanoribbons. Applied Physics Letters, 2010, 97, 073107.	1.5	19
69	Formation and Device Application of Ge Nanowire Heterostructures via Rapid Thermal Annealing. Advances in Materials Science and Engineering, 2011, 2011, 1-16.	1.0	18
70	A Memristor-Based Dendritic Neuron for High-Efficiency Spatial-Temporal Information Processing. Advanced Materials, 2023, 35, .	11.1	18
71	Monolithic 3D Integration of Logic, Memory and Computing-In-Memory for One-Shot Learning. , 2021, , .		17
72	Free-Standing and Single-Crystalline Fe _{1-x} Mn _x Si Nanowires with Room-Temperature Ferromagnetism and Excellent Magnetic Response. ACS Nano, 2012, 6, 4884-4891.	7.3	16

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73	Electrically Reconfigurable 3D Spin-Orbitronics. <i>Advanced Functional Materials</i> , 2021, 31, 2007485.	7.8	16
74	High-Purity Monochiral Carbon Nanotubes with a 1.2-nm Diameter for High-Performance Field-Effect Transistors. <i>Advanced Functional Materials</i> , 2022, 32, 2107119.	7.8	16
75	Vapor-Phase Transport Deposition, Characterization, and Applications of Large Nanographenes. <i>Journal of the American Chemical Society</i> , 2015, 137, 4453-4459.	6.6	15
76	Diagonal Matrix Regression Layer: Training Neural Networks on Resistive Crossbars With Interconnect Resistance Effect. <i>IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems</i> , 2021, 40, 1662-1671.	1.9	15
77	Rapid annealing and cooling induced surface cleaning of semiconducting carbon nanotubes for high-performance thin-film transistors. <i>Carbon</i> , 2021, 184, 764-771.	5.4	14
78	Tunneling spectroscopy of metal-oxide-graphene structure. <i>Applied Physics Letters</i> , 2010, 97, 032104.	1.5	13
79	Linewidth roughness in nanowire-mask-based graphene nanoribbons. <i>Applied Physics Letters</i> , 2011, 98, 243118.	1.5	13
80	Electrical Properties and Magnetic Response of Cobalt Germanosilicide Nanowires. <i>ACS Nano</i> , 2011, 5, 9552-9558.	7.3	13
81	Nanoengineering of an Si/MnGe quantum dot superlattice for high Curie-temperature ferromagnetism. <i>Nanoscale</i> , 2017, 9, 3086-3094.	2.8	13
82	Bayesian Neural Network Realization by Exploiting Inherent Stochastic Characteristics of Analog RRAM. , 2019, , .		13
83	Array-level boosting method with spatial extended allocation to improve the accuracy of memristor based computing-in-memory chips. <i>Science China Information Sciences</i> , 2021, 64, 1.	2.7	13
84	Electrical Probing of Magnetic Phase Transition and Domain Wall Motion in Single-Crystalline Mn ₅ Ge ₃ Nanowire. <i>Nano Letters</i> , 2012, 12, 6372-6379.	4.5	12
85	Electrical detection of spin transport in Si two-dimensional electron gas systems. <i>Nanotechnology</i> , 2016, 27, 365701.	1.3	12
86	Cryogenic HfO ₂ -Based Resistive Memory With a Thermal Enhancement Capping Layer. <i>IEEE Electron Device Letters</i> , 2021, 42, 1276-1279.	2.2	12
87	Investigation of Resistive Switching Mechanisms in Ti/TiO _x /Pd-Based RRAM Devices. <i>Advanced Electronic Materials</i> , 2022, 8, .	2.6	12
88	Carbon nanotube complementary logic with low-temperature processed end-bonded metal contacts. , 2016, , .		11
89	High-Performance Carbon Nanotube Complementary Logic With End-Bonded Contacts. <i>IEEE Transactions on Electron Devices</i> , 2017, 64, 2744-2750.	1.6	10
90	Reliability Perspective on Neuromorphic Computing Based on Analog RRAM. , 2019, , .		10

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91	The Impact of Thermal Enhance Layers on the Relaxation Effect in Analog RRAM. IEEE Transactions on Electron Devices, 2022, 69, 4254-4258.	1.6	10
92	Enhanced Charge Carrier Mobility in Two-Dimensional High Dielectric Molybdenum Oxide (Adv. Mater.) Tj ETQq0 0.0 rgBT /Qverlock 10	11.1	9
93	Compact Reliability Model of Analog RRAM for Computation-in-Memory Device-to-System Codesign and Benchmark. IEEE Transactions on Electron Devices, 2021, 68, 2686-2692.	1.6	9
94	A Closed-Form Model for Position-Dependent Potential across the Channel in DG-MOSFETs. Chinese Physics Letters, 2009, 26, 018501.	1.3	8
95	Oscillation neuron based on a low-variability threshold switching device for high-performance neuromorphic computing. Journal of Semiconductors, 2021, 42, 064101.	2.0	8
96	Crossbar-Level Retention Characterization in Analog RRAM Array-Based Computation-in-Memory System. IEEE Transactions on Electron Devices, 2021, 68, 3813-3818.	1.6	8
97	Mapping the domain wall pinning profile by stochastic imaging reconstruction. Physical Review B, 2013, 87, .	1.1	7
98	Atomic-Device Hybrid Modeling of Relaxation Effect in Analog RRAM for Neuromorphic Computing. , 2020, , .		7
99	Field Emission and Magnetic Properties of Free-Standing Cd Silicide Nanowires Prepared by Reacting Ultrahigh Vacuum Deposited Cd Films with Well-Aligned Si Nanowires. Journal of the Electrochemical Society, 2011, 158, K64.	1.3	6
100	Superlattice of FexGe1âˆ”xnanodots and nanolayers for spintronics application. Nanotechnology, 2014, 25, 505702.	1.3	6
101	Parasitic Resistance Effect Analysis in RRAM-based TCAM for Memory Augmented Neural Networks. , 2020, , .		6
102	A Unified Memory and Hardware Security Module Based on the Adjustable Switching Window of Resistive Memory. IEEE Journal of the Electron Devices Society, 2020, 8, 1257-1265.	1.2	5
103	Impact and Quantization of Short-Term Relaxation effect in Analog RRAM. , 2020, , .		5
104	An On-chip Layer-wise Training Method for RRAM based Computing-in-memory Chips. , 2021, , .		5
105	Application of mathematical morphology operation with memristor-based computation-in-memory architecture for detecting manufacturing defects. Fundamental Research, 2022, 2, 123-130.	1.6	5
106	Copper-Based 3-Terminal Synaptic Cell with Multiple Resistance Levels. ECS Meeting Abstracts, 2019, MA2019-01, 1165-1165.	0.0	5
107	A High-performance and Calibration-free True Random Number Generator Based on the Resistance Perturbation in RRAM Array. , 2020, , .		5
108	Versatile Fabrication of Self-Aligned Nanoscale Hall Devices Using Nanowire Masks. Nano Letters, 2016, 16, 3109-3115.	4.5	4

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109	A Novel Bi-functional Memory-PUF Module Utilizing Adjustable Switching Window of RRAM. , 2020, , .		4
110	Dipole-induced modulation of effective work function of metal gate in junctionless FETs. AIP Advances, 2020, 10, .	0.6	4
111	Oxygen Vacancy Formation Accompanied by Hf Oligomer in Amorphous-HfO _x -Based RRAM: A First Principles Study. , 2021, , .		4
112	A circuit-algorithm codesign method to reduce the accuracy drop of RRAM based computing-in-memory chip. , 2020, , .		4
113	Optimization Strategy for Accelerating Multi-Bit Resistive Weight Programming on the RRAM Array. , 2019, , .		3
114	A Compact Model of Analog RRAM Considering Temperature Coefficient for Neural Network Evaluation. , 2021, , .		3
115	Identifying relaxation and random telegraph noises in filamentary analog RRAM for neuromorphic computing. , 2021, , .		3
116	A Compact Model for Relaxation Effect in Analog RRAM for Computation-in-Memory System Design and Benchmark. , 2021, , .		3
117	Artificial Neuron with Spike Frequency Adaptation Based on Mott Memristor. , 2021, , .		3
118	Nanowire-mask based fabrication of high mobility and low noise graphene nanoribbon short-channel field-effect transistors. , 2010, , .		2
119	Contact engineering and channel doping for robust carbon nanotube NFETs. , 2017, , .		2
120	Artificial Synapses: A Reliable All-2D Materials Artificial Synapse for High Energy-Efficient Neuromorphic Computing (Adv. Funct. Mater. 27/2021). Advanced Functional Materials, 2021, 31, 2170197.	7.8	2
121	Pt/TiO _x /Ti-based Dynamic Optoelectronic Memristor for Neuromorphic Computing. , 2022, , .		2
122	Spin Injection from Ferromagnetic Metal Directly into Non-Magnetic Semiconductor under Different Injection Currents. Chinese Physics Letters, 2010, 27, 098501.	1.3	1
123	Nanoscale Engineering of Ge-based Diluted Magnetic Semiconductors for Room-Temperature Spintronics Application. , 2018, , 403-419.		1
124	A RRAM-based Data Hiding Technique Utilizing the Impact of Form Condition on SET Performance. , 2020, , .		1
125	Neuronal Firing Characteristics in the NbO ₂ based Mott Memristor. , 2021, , .		1
126	Impact of Bottom Electrode Roughness on the Analog Switching Characteristics in Nanoscale RRAM Array. , 2021, , .		1

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127	A Novel Page-Forming Scheme with Ultra-Low Bit-Error-Rate and High Reliability on a 1Mb RRAM Chip. , 2020, , .		1
128	Carbon Nanotube-Based Flexible Electronics. , 2020, , 137-156.		1
129	Ge nanowire transistors with high-quality interfaces by atomic-scale thermal annealing. , 2012, , .		0
130	Electric Control of Magnetic Devices for Spintronic Computing. , 2015, , 53-112.		0
131	(Invited) DNA-Directed High-Precision Assembly of CNT FETs. ECS Meeting Abstracts, 2020, MA2020-01, 685-685.	0.0	0
132	Neural Spike Detection Based on 1T1R Memristor. , 2020, , .		0
133	A Novel Neural Network with Digital Synaptic Weights Based on 3D NAND Flash Array. , 2020, , .		0
134	Effects of Gate Metal Work Function and Line Edge Roughness on the Variability of Junctionless Field-Effect Transistor. , 2022, , .		0
135	Real-Time-Scale 3D Kinetic Monte Carlo Simulation for Hafnium Oxide Based RRAM in 1T1R Cell. , 2022, , .		0