Jianhua Joshua Yang

List of Publications by Year
in descending order

175 papers	31,814 citations	9786 73 h-index	7745 150 g-index
178 all docs	178 docs citations	178 times ranked	13710 citing authors

#	Article	IF	Citations
1	Nonlinearity in Memristors for Neuromorphic Dynamic Systems. Small Science, 2022, 2, 2100049.	9.9	46
2	Timing Selector: Using Transient Switching Dynamics to Solve the Sneak Path Issue of Crossbar Arrays. Small Science, 2022, 2, 2100072.	9.9	18
3	A Dynamical Compact Model of Diffusive and Drift Memristors for Neuromorphic Computing. Advanced Electronic Materials, 2022, 8, 2100696.	5.1	19
4	Reset Switching Statistics of TaOx-Based Memristor. Kluwer International Series in Electronic Materials: Science and Technology, 2022, , 187-195.	0.5	0
5	2022 roadmap on neuromorphic computing and engineering. Neuromorphic Computing and Engineering, 2022, 2, 022501.	5.9	217
6	Efficient AI with MRAM. Nature Electronics, 2022, 5, 67-68.	26.0	9
7	Ta/HfO2-based Memristor and Crossbar Arrays for In-Memory Computing. , 2022, , 167-188.		1
8	Timing Selector: using transient switching dynamics to solve the sneak path issue of crossbar arrays. , 2022, , .		0
9	Roadmap on emerging hardware and technology for machine learning. Nanotechnology, 2021, 32, 012002.	2.6	104
10	Engineering Tunneling Selector to Achieve High Non-linearity for 1S1R Integration. Frontiers in Nanotechnology, 2021, 3, .	4.8	10
11	All Hardware-Based Two-Layer Perceptron Implemented in Memristor Crossbar Arrays. , 2021, , .		0
12	The secret order of disorder. Nature Materials, 2021, , .	27.5	3
13	Standards for the Characterization of Endurance in Resistive Switching Devices. ACS Nano, 2021, 15, 17214-17231.	14.6	128
14	A fully hardware-based memristive multilayer neural network. Science Advances, 2021, 7, eabj4801.	10.3	37
15	An artificial spiking afferent nerve based on Mott memristors for neurorobotics. Nature Communications, 2020, 11, 51.	12.8	217
16	Integration and Co-design of Memristive Devices and Algorithms for Artificial Intelligence. IScience, 2020, 23, 101809.	4.1	49
17	A Memristor with Low Switching Current and Voltage for 1S1R Integration and Array Operation. Advanced Electronic Materials, 2020, 6, 1901411.	5.1	51
18	Neuronal realizations based on memristive devices. , 2020, , 407-426.		0

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19	Power-efficient neural network with artificial dendrites. Nature Nanotechnology, 2020, 15, 776-782.	31.5	141
20	Gate-tunable van der Waals heterostructure for reconfigurable neural network vision sensor. Science Advances, 2020, 6, eaba6173.	10.3	202
21	Power-efficient combinatorial optimization using intrinsic noise in memristor Hopfield neural networks. Nature Electronics, 2020, 3, 409-418.	26.0	196
22	Resistive switching materials forÂinformation processing. Nature Reviews Materials, 2020, 5, 173-195.	48.7	668
23	A Lowâ€Current and Analog Memristor with Ru as Mobile Species. Advanced Materials, 2020, 32, e1904599.	21.0	59
24	Fully hardware-implemented memristor convolutional neural network. Nature, 2020, 577, 641-646.	27.8	1,198
25	Brain-inspired computing with memristors: Challenges in devices, circuits, and systems. Applied Physics Reviews, 2020, 7, .	11.3	217
26	Three-dimensional memristor circuits as complex neural networks. Nature Electronics, 2020, 3, 225-232.	26.0	242
27	Bioinspired bio-voltage memristors. Nature Communications, 2020, 11, 1861.	12.8	144
28	Memristive devices and arrays for neuromorphic computing. , 2020, , .		0
29	Understanding memristive switching via in situ characterization and device modeling. Nature Communications, 2019, 10, 3453.	12.8	275
30	Mott-transition-based RRAM. Materials Today, 2019, 28, 63-80.	14.2	56
31	Reservoir Computing Using Diffusive Memristors. Advanced Intelligent Systems, 2019, 1, 1900084.	6.1	147
32	Bridging Biological and Artificial Neural Networks with Emerging Neuromorphic Devices: Fundamentals, Progress, and Challenges. Advanced Materials, 2019, 31, e1902761.	21.0	418
33	In situ training of feed-forward and recurrent convolutional memristor networks. Nature Machine Intelligence, 2019, 1, 434-442.	16.0	201
34	Low-Voltage, CMOS-Free Synaptic Memory Based on Li<i>_X</i>TiO₂ Redox Transistors. ACS Applied Materials & Interfaces, 2019, 11, 38982-38992.	8.0	78
35	RRAM/memristor for computing. , 2019, , 539-583.		4
36	Parallel programming of an ionic floating-gate memory array for scalable neuromorphic computing. Science, 2019, 364, 570-574.	12.6	484

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37	Memristive crossbar arrays for brain-inspired computing. Nature Materials, 2019, 18, 309-323.	27.5	1,058
38	A Survey on Architecture Advances Enabled by Emerging Beyond-CMOS Technologies. IEEE Design and Test, 2019, 36, 46-68.	1.2	16
39	Artificial Neural Network (ANN) to Spiking Neural Network (SNN) Converters Based on Diffusive Memristors. Advanced Electronic Materials, 2019, 5, 1900060.	5.1	92
40	Reinforcement learning with analogue memristor arrays. Nature Electronics, 2019, 2, 115-124.	26.0	247
41	Scalable 3D Ta:SiO x Memristive Devices. Advanced Electronic Materials, 2019, 5, 1800958.	5.1	2
42	Learning with Resistive Switching Neural Networks. , 2019, , .		6
43	Experimental Demonstration of Conversion-Based SNNs with 1T1R Mott Neurons for Neuromorphic Inference. , 2019, , .		17
44	Memristor crossbar arrays with 6-nm half-pitch and 2-nm critical dimension. Nature Nanotechnology, 2019, 14, 35-39.	31.5	381
45	Long short-term memory networks in memristor crossbar arrays. Nature Machine Intelligence, 2019, 1, 49-57.	16.0	288
46	Emerging Memory Devices for Neuromorphic Computing. Advanced Materials Technologies, 2019, 4, 1800589.	5.8	307
47	Recommended Methods to Study Resistive Switching Devices. Advanced Electronic Materials, 2019, 5, 1800143.	5.1	452
48	CMOS-integrated memristive non-volatile computing-in-memory for AI edge processors. Nature Electronics, 2019, 2, 420-428.	26.0	161
49	Robust memristors based on layered two-dimensional materials. Nature Electronics, 2018, 1, 130-136.	26.0	539
50	An artificial nociceptor based on a diffusive memristor. Nature Communications, 2018, 9, 417.	12.8	295
51	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.	14.9	10
52	Fully memristive neural networks for pattern classification with unsupervised learning. Nature Electronics, 2018, 1, 137-145.	26.0	787
53	Threshold Switching of Ag or Cu in Dielectrics: Materials, Mechanism, and Applications. Advanced Functional Materials, 2018, 28, 1704862.	14.9	239
54	Nanoscale diffusive memristor crossbars as physical unclonable functions. Nanoscale, 2018, 10, 2721-2726.	5.6	52

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55	Memristorâ€Based Analog Computation and Neural Network Classification with a Dot Product Engine. Advanced Materials, 2018, 30, 1705914.	21.0	517
56	A compact model for selectors based on metal doped electrolyte. Applied Physics A: Materials Science and Processing, 2018, 124, 1.	2.3	2
57	Memristor-CMOS Analog Co-Processor for Acceleration of High Performance Computing Applications. , 2018, , .		0
58	Data related to the nanoscale structural and compositional evolution in resistance change memories. Data in Brief, 2018, 21, 18-24.	1.0	4
59	A provable key destruction scheme based on memristive crossbar arrays. Nature Electronics, 2018, 1, 548-554.	26.0	61
60	Memristor-CMOS Analog Coprocessor for Acceleration of High-Performance Computing Applications. ACM Journal on Emerging Technologies in Computing Systems, 2018, 14, 1-30.	2.3	5
61	Review of memristor devices in neuromorphic computing: materials sciences and device challenges. Journal Physics D: Applied Physics, 2018, 51, 503002.	2.8	326
62	Artificial neural networks based on memristive devices. Science China Information Sciences, 2018, 61, 1.	4.3	18
63	Silicon Oxide (SiO<i>_x</i>): A Promising Material for Resistance Switching?. Advanced Materials, 2018, 30, e1801187.	21.0	156
64	In-Memory Computing with Memristor Arrays. , 2018, , .		26
65	Inducing tunable switching behavior in a single memristor. Applied Materials Today, 2018, 11, 280-290.	4.3	21
66	Unconventional computing with diffusive memristors. , 2018, , .		4
67	Large Memristor Crossbars for Analog Computing. , 2018, , .		14
68	In-situ TEM Characterization of Ultra-robust Memristors Based on Fully Layered Two-dimensional Materials. Microscopy and Microanalysis, 2018, 24, 1886-1887.	0.4	1
69	Capacitive neural network with neuro-transistors. Nature Communications, 2018, 9, 3208.	12.8	199
70	Pulse-Width Modulation based Dot-Product Engine for Neuromorphic Computing System using Memristor Crossbar Array. , 2018, , .		17
71	Efficient and self-adaptive in-situ learning in multilayer memristor neural networks. Nature Communications, 2018, 9, 2385.	12.8	575
72	Analogue signal and image processing with large memristor crossbars. Nature Electronics, 2018, 1, 52-59.	26.0	879

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73	Anatomy of Ag/Hafniaâ€Based Selectors with 10¹⁰ Nonlinearity. Advanced Materials, 2017, 29, 1604457.	21.0	292
74	Battery-like artificial synapses. Nature Materials, 2017, 16, 396-397.	27.5	35
75	An efficient analog Hamming distance comparator realized with a unipolar memristor array: a showcase of physical computing. Scientific Reports, 2017, 7, 40135.	3.3	27
76	A niobium oxide-tantalum oxide selector-memristor self-aligned nanostack. Applied Physics Letters, 2017, 110, .	3.3	25
77	Characteristics and transport mechanisms of triple switching regimes of TaOx memristor. Applied Physics Letters, 2017, 110, .	3.3	35
78	Reset switching statistics of TaOx-based Memristor. Journal of Electroceramics, 2017, 39, 132-136.	2.0	8
79	Three-dimensional crossbar arrays of self-rectifying Si/SiO2/Si memristors. Nature Communications, 2017, 8, 15666.	12.8	153
80	Mimicking Classical Conditioning Based on a Single Flexible Memristor. Advanced Materials, 2017, 29, 1602890.	21.0	119
81	Flexible three-dimensional artificial synapse networks with correlated learning and trainable memory capability. Nature Communications, 2017, 8, 752.	12.8	245
82	A novel true random number generator based on a stochastic diffusive memristor. Nature Communications, 2017, 8, 882.	12.8	287
83	Truly Electroformingâ€Free and Lowâ€Energy Memristors with Preconditioned Conductive Tunneling Paths. Advanced Functional Materials, 2017, 27, 1702010.	14.9	75
84	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.	2.7	81
85	Enabling selectivity and fast recovery of ZnO nanowire gas sensors through resistive switching. Sensors and Actuators B: Chemical, 2017, 238, 357-363.	7.8	50
86	Memristors with diffusive dynamics as synaptic emulators for neuromorphic computing. Nature Materials, 2017, 16, 101-108.	27.5	1,655
87	An energy-efficient and high-throughput bitwise CNN on sneak-path-free digital ReRAM crossbar. , 2017, , .		17
88	Built-in selectors self-assembled into memristors. , 2016, , .		1
89	Voltage divider effect for the improvement of variability and endurance of TaOx memristor. Scientific Reports, 2016, 6, 20085.	3.3	93
90	Sub-10 nm Ta Channel Responsible for Superior Performance of a HfO2 Memristor. Scientific Reports, 2016, 6, 28525.	3.3	177

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91	Trilayer Tunnel Selectors for Memristor Memory Cells. Advanced Materials, 2016, 28, 356-362.	21.0	96
92	Correction: Electrochemical metallization switching with a platinum group metal in different oxides. Nanoscale, 2016, 8, 11766-11766.	5.6	1
93	Electrochemical metallization switching with a platinum group metal in different oxides. Nanoscale, 2016, 8, 14023-14030.	5.6	35
94	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.	9.1	171
95	Synaptic electronics and neuromorphic computing. Science China Information Sciences, 2016, 59, 1.	4.3	76
96	Dot-product engine for neuromorphic computing. , 2016, , .		481
97	Quantized conductance coincides with state instability and excess noise in tantalum oxide memristors. Nature Communications, 2016, 7, 11142.	12.8	95
98	Thermally induced crystallization in NbO2 thin films. Scientific Reports, 2016, 6, 34294.	3.3	20
99	Cyclical sensing integrate-and-fire circuit for memristor array based neuromorphic computing. , 2016, , .		10
100	A neuromorphic ASIC design using one-selector-one-memristor crossbar. , 2016, , .		13
101	Highâ€Speed and Lowâ€Energy Nitride Memristors. Advanced Functional Materials, 2016, 26, 5290-5296.	14.9	264
102	TEM and EELS Study on TaOx-based Nanoscale Resistive Switching Devices. Materials Research Society Symposia Proceedings, 2015, 1805, 1.	0.1	0
103	Structural and Chemical Analysis of Nanoscale Resistive Switching Devices: Assessment on Nonlinear Properties. Materials Research Society Symposia Proceedings, 2015, 1805, 1.	0.1	1
104	Low voltage two-state-variable memristor model of vacancy-drift resistive switches. Applied Physics A: Materials Science and Processing, 2015, 119, 1-9.	2.3	22
105	Low Variability Resistorâ€"Memristor Circuit Masking the Actual Memristor States. Advanced Electronic Materials, 2015, 1, 1500095.	5.1	34
106	A selector device based on grapheneâ€"oxide heterostructures for memristor crossbar applications. Applied Physics A: Materials Science and Processing, 2015, 120, 403-407.	2.3	11
107	A heterogeneous computing system with memristor-based neuromorphic accelerators. , 2014, , .		0
108	Electrode-material dependent switching in TaO_{<i>x</i>}memristors. Semiconductor Science and Technology, 2014, 29, 104003.	2.0	27

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109	New materials for memristive switching. , 2014, , .		3
110	Oxide Based Memristive Nanodevices. , 2014, , 219-256.		1
111	Memristive Devices for Computing: Mechanisms, Applications and Challenges. ECS Transactions, 2013, 58, 9-14.	0.5	6
112	Memristive devices for computing. Nature Nanotechnology, 2013, 8, 13-24.	31.5	3,019
113	A compact modeling of TiO2-TiO2â€“<i>x</i> memristor. Applied Physics Letters, 2013, 102, .	3.3	40
114	Electrical Performance and Scalability of Pt Dispersed SiO₂ Nanometallic Resistance Switch. Nano Letters, 2013, 13, 3213-3217.	9.1	175
115	Memristor structures for high scalability: Non-linear and symmetric devices utilizing fabrication friendly materials and processes. Microelectronic Engineering, 2013, 103, 66-69.	2.4	23
116	State Dynamics and Modeling of Tantalum Oxide Memristors. IEEE Transactions on Electron Devices, 2013, 60, 2194-2202.	3.0	183
117	Memristive devices in computing system. ACM Journal on Emerging Technologies in Computing Systems, 2013, 9, 1-20.	2.3	57
118	A physical model of switching dynamics in tantalum oxide memristive devices. Applied Physics Letters, 2013, 102, 223502.	3.3	66
119	A replacement of high-<i>k</i> process for CMOS transistor by atomic layer deposition. Semiconductor Science and Technology, 2013, 28, 082003.	2.0	4
120	Band offsets in transition-metal oxide heterostructures. Journal Physics D: Applied Physics, 2013, 46, 295303.	2.8	10
121	Characterization of electroforming-free titanium dioxide memristors. Beilstein Journal of Nanotechnology, 2013, 4, 467-473.	2.8	60
122	Oxide based memristive devices. , 2012, , .		1
123	Nitride memristors. Applied Physics A: Materials Science and Processing, 2012, 109, 1-4.	2.3	63
124	Engineering nonlinearity into memristors for passive crossbar applications. Applied Physics Letters, 2012, 100, .	3.3	179
125	Continuous Electrical Tuning of the Chemical Composition of TaO_{<i>x</i>}-Based Memristors. ACS Nano, 2012, 6, 2312-2318.	14.6	119
126	Designing memristors: Physics, materials science and engineering. , 2012, , .		1

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127	Metal oxide memories based on thermochemical and valence change mechanisms. MRS Bulletin, 2012, 37, 131-137.	3.5	114
128	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.	2.3	58
129	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.	2.3	2
130	Non-volatile memory based on nanostructures. Nanotechnology, 2011, 22, 250201-250201.	2.6	1
131	Spectromicroscopy of tantalum oxide memristors. Applied Physics Letters, 2011, 98, .	3.3	85
132	Progress in CMOS-memristor integration. , 2011, , .		7
133	Emerging non-volatile memories. , 2011, , .		165
134	Dopant Control by Atomic Layer Deposition in Oxide Films for Memristive Switches. Chemistry of Materials, 2011, 23, 123-125.	6.7	65
135	Twoâ€•and Threeâ€•Terminal Resistive Switches: Nanometerâ€•Scale Memristors and Memistors. Advanced Functional Materials, 2011, 21, 2660-2665.	14.9	74
136	The switching location of a bipolar memristor: chemical, thermal and structural mapping. Nanotechnology, 2011, 22, 254015.	2.6	101
137	Metal/TiO2 interfaces for memristive switches. Applied Physics A: Materials Science and Processing, 2011, 102, 785-789.	2.3	138
138	Feedback write scheme for memristive switching devices. Applied Physics A: Materials Science and Processing, 2011, 102, 973-982.	2.3	75
139	Coexistence of Memristance and Negative Differential Resistance in a Nanoscale Metalâ€•Oxideâ€•Metal System. Advanced Materials, 2011, 23, 1730-1733.	21.0	103
140	Anatomy of a Nanoscale Conduction Channel Reveals the Mechanism of a Highâ€•Performance Memristor. Advanced Materials, 2011, 23, 5633-5640.	21.0	393
141	Impact of geometry on the performance of memristive nanodevices. Nanotechnology, 2011, 22, 254026.	2.6	26
142	Observation of two resistance switching modes in TiO₂memristive devices electroformed at low current. Nanotechnology, 2011, 22, 254007.	2.6	71
143	Corrigendum on 'The mechanism of electroforming of metal oxide memristive switches'. Nanotechnology, 2010, 21, 339803-339803.	2.6	5
144	Morphological and electrical changes in TiO₂ memristive devices induced by electroforming and switching. Physica Status Solidi - Rapid Research Letters, 2010, 4, 16-18.	2.4	67

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145	Compositional effect of bcc Co100â˜x Fe x electrodes onÂmagnetoresistance in AlO x -based magnetic tunnel junctions. Applied Physics A: Materials Science and Processing, 2010, 98, 707-710.	2.3	7
146	Direct Identification of the Conducting Channels in a Functioning Memristive Device. Advanced Materials, 2010, 22, 3573-3577.	21.0	307
147	Diffusion of Adhesion Layer Metals Controls Nanoscale Memristive Switching. Advanced Materials, 2010, 22, 4034-4038.	21.0	104
148	â€˜Memristiveâ€™ switches enable â€˜statefulâ€™ logic operations via material implication. Nature, 2010, 464, 873-876.	27.8	1,828
149	Radiation Hardness of ${m TiO}_{2}$ Memristive Junctions. IEEE Transactions on Nuclear Science, 2010, 57, 1640-1643.	2.0	67
150	Hybrid CMOS/memristor circuits. , 2010, , .		57
151	High switching endurance in TaOx memristive devices. Applied Physics Letters, 2010, 97, .	3.3	543
152	Self-Aligned Memristor Cross-Point Arrays Fabricated with One Nanoimprint Lithography Step. Nano Letters, 2010, 10, 2909-2914.	9.1	98
153	Origin of inverse tunneling magnetoresistance in a symmetric junction revealed by delaminating the buried electronic interface. Applied Physics Letters, 2009, 95, 233117.	3.3	6
154	Electrical transport and thermometry of electroformed titanium dioxide memristive switches. Journal of Applied Physics, 2009, 106, .	2.5	87
155	Structural and chemical characterization of TiO2memristive devices by spatially-resolved NEXAFS. Nanotechnology, 2009, 20, 485701.	2.6	58
156	On the integration of memristors with CMOS using nanoimprint lithography. Proceedings of SPIE, 2009, , .	0.8	8
157	A Family of Electronically Reconfigurable Nanodevices. Advanced Materials, 2009, 21, 3754-3758.	21.0	213
158	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.	2.3	2
159	Memristorâ˜CMOS Hybrid Integrated Circuits for Reconfigurable Logic. Nano Letters, 2009, 9, 3640-3645.	9.1	628
160	The mechanism of electroforming of metal oxide memristive switches. Nanotechnology, 2009, 20, 215201.	2.6	699
161	Switching dynamics in titanium dioxide memristive devices. Journal of Applied Physics, 2009, 106, .	2.5	609
162	Force modulation of tunnel gaps in metal oxide memristive nanoswitches. Applied Physics Letters, 2009, 95, 113503.	3.3	38

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163	Epitaxial Growth and Surface Roughness Control of Ferromagnetic Thin Films on Si by Sputter Deposition. Journal of Electronic Materials, 2008, 37, 355-360.	2.2	4
164	Crystal structure effect of ferromagnetic electrode on tunneling magnetoresistance. Acta Materialia, 2008, 56, 1491-1495.	7.9	6
165	Memristive switching mechanism for metal/oxide/metal nanodevices. Nature Nanotechnology, 2008, 3, 429-433.	31.5	2,578
166	Oxide and Carbide Formation at Titanium/Organic Monolayer Interfaces. Journal of the American Chemical Society, 2008, 130, 4041-4047.	13.7	34
167	Growth and physical property of epitaxial Co70Fe30 thin film on Si substrate via TiN buffer. Applied Physics Letters, 2008, 92, 022504.	3.3	10
168	Origin of the dependence of magnetoresistance on the composition of Co100â˜xFex electrodes in magnetic tunnel junctions. Journal of Applied Physics, 2008, 103, 056102.	2.5	8
169	Over 70% tunneling magnetoresistance at room temperature for a CoFe and AlOx based magnetic tunnel junction. Applied Physics Letters, 2006, 89, 202502.	3.3	21
170	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.	2.3	3
171	Thickness determination of ultrathin oxide films and its application in magnetic tunnel junctions. Journal of Electronic Materials, 2006, 35, 2142-2146.	2.2	2
172	An investigation of phase transformation behavior in sputter-deposited PtMn thin films. Jom, 2006, 58, 50-54.	1.9	33
173	The formation of amorphous alloy oxides as barriers used in magnetic tunnel junctions. Journal of Applied Physics, 2005, 98, 074508.	2.5	17
174	Oxidation of tunnel barrier metals in magnetic tunnel junctions. Journal of Applied Physics, 2005, 97, 10C918.	2.5	10
175	Selective oxidation of an individual layer in a magnetic tunnel junction through the use of thermodynamic control. Applied Physics Letters, 2005, 87, 061901.	3.3	3