Sabina Spiga

List of Publications by Year
in descending order

137 papers	3,290 citations	147801 31 h-index	189892 50 g-index
142 all docs	142 docs citations	142 times ranked	2993 citing authors

#	Article	IF	Citations
1	2022 roadmap on neuromorphic computing and engineering. Neuromorphic Computing and Engineering, 2022, 2, 022501.	5.9	217
2	Analog Memristive Synapse in Spiking Networks Implementing Unsupervised Learning. Frontiers in Neuroscience, 2016, 10, 482.	2.8	142
3	Standards for the Characterization of Endurance in Resistive Switching Devices. ACS Nano, 2021, 15, 17214-17231.	14.6	128
4	Control of filament size and reduction of reset current below 10Î¼A in NiO resistance switching memories. Solid-State Electronics, 2011, 58, 42-47.	1.4	103
5	Atomic-layer deposition of Lu2O3. Applied Physics Letters, 2004, 85, 630-632.	3.3	100
6	Conductive-filament switching analysis and self-accelerated thermal dissolution model for reset in NiO-based RRAM. , 2007, , .		95
7	Interface engineering for Ge metal-oxideâ€“semiconductor devices. Thin Solid Films, 2007, 515, 6337-6343.	1.8	87
8	Resistive random access memory (RRAM) technology: From material, device, selector, 3D integration to bottom-up fabrication. Journal of Electroceramics, 2017, 39, 21-38.	2.0	79
9	Role of metal-oxide interfaces in the multiple resistance switching regimes of Pt/HfO2/TiN devices. Applied Physics Letters, 2015, 107, .	3.3	78
10	Resistive Switching in High-Density Nanodevices Fabricated by Block Copolymer Self-Assembly. ACS Nano, 2015, 9, 2518-2529.	14.6	72
11	Scaling analysis of submicrometer nickel-oxide-based resistive switching memory devices. Journal of Applied Physics, 2011, 109, .	2.5	70
12	HfO2 as gate dielectric on Ge: Interfaces and deposition techniques. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2006, 135, 256-260.	3.5	68
13	Formation and disruption of conductive filaments in a HfO₂/TiN structure. Nanotechnology, 2014, 25, 385705.	2.6	64
14	Energy-band diagram of metal/Lu2O3/silicon structures. Applied Physics Letters, 2004, 85, 5316-5318.	3.3	60
15	Vibrational and electrical properties of hexagonal La2O3 films. Applied Physics Letters, 2007, 91, .	3.3	59
16	Resistance switching in amorphous and crystalline binary oxides grown by electron beam evaporation and atomic layer deposition. Microelectronic Engineering, 2008, 85, 2414-2419.	2.4	55
17	Evidence of soft bound behaviour in analogue memristive devices for neuromorphic computing. Scientific Reports, 2018, 8, 7178.	3.3	54
18	Synaptic potentiation and depression in Al:HfO2-based memristor. Microelectronic Engineering, 2015, 147, 41-44.	2.4	53

#	Article	IF	Citations
19	Effects of the oxygen precursor on the electrical and structural properties of HfO2 films grown by atomic layer deposition on Ge. Applied Physics Letters, 2005, 87, 112904.	3.3	52
20	Effects of Thermal Treatments on the Trapping Properties of HfO$_{2}$ Films for Charge Trap Memories. Applied Physics Express, 2012, 5, 021102.	2.4	52
21	Effect of Al doping on the retention behavior of HfO2 resistive switching memories. Microelectronic Engineering, 2015, 147, 104-107.	2.4	52
22	Experimental study of gradual/abrupt dynamics of HfO2-based memristive devices. Applied Physics Letters, 2016, 109, .	3.3	49
23	Nanoscale morphological and electrical homogeneity of HfO2 and ZrO2 thin films studied by conducting atomic-force microscopy. Journal of Applied Physics, 2005, 97, 074315.	2.5	48
24	Conduction band offset of HfO2 on GaAs. Applied Physics Letters, 2007, 91, .	3.3	46
25	Cubic/Tetragonal Phase Stabilization in High-Î¤ ZrO2 Thin Films Grown Using O3-Based Atomic Layer Deposition. Journal of the Electrochemical Society, 2011, 158, G221.	2.9	42
26	Solid-state dewetting of ultra-thin Au films on SiO₂and HfO₂. Nanotechnology, 2014, 25, 495603.	2.6	41
27	Atomic Layer Deposition of NiO Films on Si(100) Using Cyclopentadienyl-Type Compounds and Ozone as Precursors. Journal of the Electrochemical Society, 2008, 155, H807.	2.9	40
28	Impact of Electrode Materials on Resistive-Switching Memory Programming. IEEE Electron Device Letters, 2009, 30, 817-819.	3.9	40
29	Dielectric properties of Erâ˜doped HfO2â€(Erâ¼15%) grown by atomic layer deposition for high-Î¤ gate stacks. Applied Physics Letters, 2010, 96, .	3.3	37
30	Switching of nanosized filaments in NiO by conductive atomic force microscopy. Journal of Applied Physics, 2012, 112, .	2.5	37
31	Role of Al doping in the filament disruption in HfO₂resistance switches. Nanotechnology, 2017, 28, 395202.	2.6	36
32	Structural and electrical characterization of ALCVD ZrO2 thin films on silicon. Journal of Non-Crystalline Solids, 2002, 303, 29-34.	3.1	35
33	Low-temperature atomic layer deposition of MgO thin films on Si. Journal Physics D: Applied Physics, 2013, 46, 485304.	2.8	33
34	Extended memory lifetime in spiking neural networks employing memristive synapses with nonlinear conductance dynamics. Nanotechnology, 2019, 30, 015102.	2.6	33
35	HfO2-based memristors for neuromorphic applications. , 2016, , .		32
36	Trends of structural and electrical properties in atomic layer deposited HfO2 films. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2004, 109, 11-16.	3.5	31

#	Article	IF	Citations
37	Band alignment at the La2Hf2O7âˆ•(001)Si interface. Applied Physics Letters, 2006, 88, 202903.	3.3	31
38	Ozone-Based Sequential Infiltration Synthesis of Al₂O₃ Nanostructures in Symmetric Block Copolymer. ACS Applied Materials & Interfaces, 2016, 8, 33933-33942.	8.0	29
39	Effects of growth temperature on the properties of atomic layer deposition grown ZrO2 films. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2003, 21, 1359-1365.	2.1	27
40	Local structure of Sn implanted in thinSiO2films. Physical Review B, 2003, 68, .	3.2	25
41	Time of flight secondary ion mass spectrometry study of silicon nanoclusters embedded in thin silicon oxide layers. Applied Physics Letters, 2003, 82, 121-123.	3.3	25
42	Ge-based interface passivation for atomic layer deposited La-doped ZrO2 on III-V compound (GaAs,In0.15Ga0.85As) substrates. Applied Physics Letters, 2009, 95, 023507.	3.3	25
43	Phase Stabilization of Al:HfO₂ Grown on In_xGa_{1â€“x}As Substrates (x = 0, 0.15, 0.53) via Trimethylaluminum-Based Atomic Layer Deposition. ACS Applied Materials & Interfaces, 2014, 6, 3455-3461.	8.0	25
44	Study of the interfaces in resistive switching NiO thin films deposited by both ALD and e-beam coupled with different electrodes (Si, Ni, Pt, W, TiN). Microelectronic Engineering, 2008, 85, 2425-2429.	2.4	24
45	X-ray absorption study of the growth ofY2O3on Si(001). Physical Review B, 2005, 71, .	3.2	23
46	Low-power resistive switching in Au/NiO/Au nanowire arrays. Applied Physics Letters, 2012, 101, .	3.3	23
47	Spike-driven threshold-based learning with memristive synapses and neuromorphic silicon neurons. Journal Physics D: Applied Physics, 2018, 51, 344003.	2.8	23
48	Non-linear Memristive Synaptic Dynamics for Efficient Unsupervised Learning in Spiking Neural Networks. Frontiers in Neuroscience, 2021, 15, 580909.	2.8	23
49	Germanium diffusion during HfO2 growth on Ge by molecular beam epitaxy. Applied Physics Letters, 2006, 89, 122906.	3.3	22
50	Structural and electrical properties of atomic layer deposited Al-doped ZrO2 films and of the interface with TaN electrode. Journal of Applied Physics, 2012, 112, .	2.5	22
51	Low Temperature Rectifying Junctions for Crossbar Non-Volatile Memory Devices. , 2009, , .		21
52	Stochastic circuit breaker network model for bipolar resistance switching memories. Journal of Computational Electronics, 2017, 16, 1154-1166.	2.5	21
53	Stack engineering of TANOS charge-trap flash memory cell using high-Îº ZrO2 grown by ALD as charge trapping layer. Microelectronic Engineering, 2011, 88, 1174-1177.	2.4	20
54	Stimulated Ionic Telegraph Noise in Filamentary Memristive Devices. Scientific Reports, 2019, 9, 6310.	3.3	20

#	Article	IF	Citations
55	Thermal stability of highâ€Î¤ oxides on SiO₂/Si or Si_xN_y/SiO₂/Si for chargeâ€trapping nonvolatile memories. Surface and Interface Analysis, 2013, 45, 390-393.	1.8	19
56	Stability and interface quality of GeO2 films grown on Ge by atomic oxygen assisted deposition. Journal of Chemical Physics, 2008, 129, 011104.	3.0	17
57	Mechanisms for Substrate-Enhanced Growth during the Early Stages of Atomic Layer Deposition of Alumina onto Silicon Nitride Surfaces. Chemistry of Materials, 2012, 24, 1080-1090.	6.7	17
58	Bipolar Resistive Electrical Switching of CuTCNQ Memories Incorporating a Dedicated Switching Layer. IEEE Electron Device Letters, 2009, 30, 620-622.	3.9	16
59	Effects of surface passivation during atomic layer deposition of Al2O3 on In0.53Ga0.47As substrates. Microelectronic Engineering, 2011, 88, 431-434.	2.4	16
60	Atomic layer-deposited Alâ€“HfO2/SiO2 bi-layers towards 3D charge trapping non-volatile memory. Thin Solid Films, 2013, 533, 9-14.	1.8	16
61	Bipolar resistive switching of Au/NiOx/Ni/Au heterostructure nanowires. Applied Physics Letters, 2013, 103, .	3.3	16
62	Effects of the oxygen precursor on the interface between (100)Si and HfO2 films grown by atomic layer deposition. Applied Physics Letters, 2007, 91, 172905.	3.3	15
63	High permittivity materials for oxide gate stack in Ge-based metal oxide semiconductor capacitors. Thin Solid Films, 2010, 518, S96-S103.	1.8	15
64	Direct Observation at Nanoscale of Resistance Switching in NiO Layers by Conductive-Atomic Force Microscopy. Applied Physics Express, 2011, 4, 051101.	2.4	15
65	Gradual set dynamics in HfO₂-based memristor driven by sub-threshold voltage pulses. , 2015, , .		15
66	(Invited) Analog HfO2-RRAM Switches for Neural Networks. ECS Transactions, 2017, 75, 85-94.	0.5	15
67	Effects of thermal treatments on chemical composition and electrical properties of ultra-thin Lu oxide layers on Si. Microelectronic Engineering, 2007, 84, 2263-2266.	2.4	13
68	Annealing effects on silicon-rich oxide films studied by spectroscopic ellipsometry. Thin Solid Films, 1998, 325, 36-41.	1.8	12
69	High-k Materials in Flash Memories. ECS Transactions, 2006, 1, 91-105.	0.5	12
70	Engineered fabrication of ordered arrays of Auâ€“NiOâ€“Au nanowires. Nanotechnology, 2013, 24, 045302.	2.6	12
71	Reconstruction dependent reactivity of As-decapped In0.53Ga0.47As(001) surfaces and its influence on the electrical quality of the interface with Al2O3 grown by atomic layer deposition. Applied Physics Letters, 2011, 99, .	3.3	11
72	Reset Instability in Pulsed-Operated Unipolar Resistive-Switching Random Access Memory Devices. IEEE Electron Device Letters, 2011, 32, 719-721.	3.9	11

#	Article	IF	Citations
73	Atomic Layer Deposition of Al-Doped ZrO2Thin Films as Gate Dielectric for In0.53Ga0.47As. Journal of the Electrochemical Society, 2012, 159, H220-H224.	2.9	11
74	Fabrication of periodic arrays of metallic nanoparticles by block copolymer templates on HfO₂substrates. Nanotechnology, 2015, 26, 215301.	2.6	11
75	Sub-1 nm Equivalent Oxide Thickness Al-HfO2 Trapping Layer with Excellent Thermal Stability and Retention for Nonvolatile Memory. ACS Applied Nano Materials, 2018, 1, 4633-4641.	5.0	11
76	Atomic Layer Deposition of Lu Silicate Films Using [(Me[sub 3]Si)[sub 2]N][sub 3]Lu. Journal of the Electrochemical Society, 2006, 153, F271.	2.9	10
77	Resistance change in memory structures integrating CuTCNQ nanowires grown on dedicated HfO2 switching layer. Solid-State Electronics, 2011, 56, 168-174.	1.4	10
78	Resistive switching characteristics of NiO films deposited on top of W or Cu pillar bottom electrodes. Thin Solid Films, 2011, 519, 3798-3803.	1.8	10
79	Simulation Study of the Trapping Properties of <inline-formula> <tex-math notation="TeX">${m HfO}_{2}$ </tex-math> </inline-formula>-Based Charge-Trap Memory Cells. IEEE Transactions on Electron Devices, 2014, 61, 2056-2063.	3.0	10
80	Improving HfO₂-Based Resistive Switching Devices by Inserting a TaO_x Thin Film via Engineered In Situ Oxidation. ACS Applied Materials & Interfaces, 2022, 14, 24565-24574.	8.0	10
81	Atomic oxygen-assisted molecular beam deposition of Gd2O3 films for ultra-scaled Ge-based electronic devices. Materials Science in Semiconductor Processing, 2008, 11, 236-240.	4.0	9
82	Structure and interface bonding of GeO2âˆ•Geâˆ•In0.15Ga0.85As heterostructures. Applied Physics Letters, 2008, 93, 133504.	3.3	9
83	Transition Metal Binary Oxides for ReRAM Applications. ECS Transactions, 2009, 25, 411-425.	0.5	9
84	Extraction of Defects Properties in Dielectric Materials From I-V Curve Hysteresis. IEEE Electron Device Letters, 2021, 42, 220-223.	3.9	9
85	Reliability of NiO-Based Resistive Switching Memory (ReRAM) Elements with Pillar W Bottom Electrode. , 2009, , .		8
86	Structural and Electrical Properties of Terbium Scandate Films Deposited by Atomic Layer Deposition and High Temperature Annealing Effects. ECS Journal of Solid State Science and Technology, 2012, 1, P5-P10.	1.8	8
87	Temperature dependence of transient and steady-state gate currents in HfO2 capacitors. Applied Physics Letters, 2006, 89, 103504.	3.3	7
88	Effect of high-temperature annealing on lanthanum aluminate thin films grown by ALD on Si(100). Microelectronic Engineering, 2009, 86, 1696-1699.	2.4	7
89	Sub-10 µA reset in NiO-based resistive switching memory (RRAM) cells. , 2010, , .		7
90	Multi-Layered Al2O3/HfO2/SiO2/Si3N4/SiO2Thin Dielectrics for Charge Trap Memory Applications. ECS Journal of Solid State Science and Technology, 2013, 2, N1-N5.	1.8	7

#	Article	IF	Citations
91	Role of resistive memory devices in brain-inspired computing. , 2020, , 3-16.		7
92	Interface analysis of Ge ultra thin layers intercalated between GaAs substrates and oxide stacks. Thin Solid Films, 2010, 518, S123-S127.	1.8	6
93	Synthesis and characterization of DyScO films deposited on Si and Si-rich SiN by atomic layer deposition for blocking layer replacement in TANOS stack. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2011, 29, 01AE03.	1.2	6
94	Evaluation of DyScOx as an alternative blocking dielectric in TANOS memories with Si3N4 or Si-rich SiN charge trapping layers. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2011, 29, .	1.2	6
95	Atomic Defects Profiling and Reliability of Amorphous Al₂O₃ Metalâ€“Insulatorâ€“Metal Stacks. IEEE Transactions on Electron Devices, 2022, 69, 3884-3891.	3.0	6
96	Formation and structure of Sn and Sb nanoclusters in thin SiO2 films. Nuclear Instruments & Methods in Physics Research B, 2003, 200, 171-177.	1.4	5
97	Nanocrystals depth profiling by means of Cs+ in negative polarity with dual beam ToF-SIMS. Applied Surface Science, 2003, 203-204, 110-113.	6.1	5
98	Improved Performance of In$_{0.53}$Ga$_{0.47}$As-Based Metalâ€“Oxideâ€“Semiconductor Capacitors with Al:ZrO$_{2}$ Gate Dielectric Grown by Atomic Layer Deposition. Applied Physics Express, 2011, 4, 094103.	2.4	5
99	Physics-based compact modelling of the analog dynamics of HfOx resistive memories. Neuromorphic Computing and Engineering, 0, , .	5.9	5
100	Kinetics of Ion Beam Synthesis of Sn and Sb Clusters in SiO₂ Layers. Materials Research Society Symposia Proceedings, 2000, 647, 1.	0.1	4
101	AFM measurement of the grain size in polycrystalline titanium silicides. Microelectronic Engineering, 2001, 55, 93-99.	2.4	4
102	Structural characterization of epitaxial Y2O3 on Si (0 0 1) and of the Y2O3/Si interface. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2004, 109, 47-51.	3.5	4
103	Electrical Characterization of Rare Earth Oxides Grown by Atomic Layer Deposition. , 0, , 203-223.		4
104	Experimental and simulation study of the program efficiency of HfO<inf>2</inf> based charge trapping memories. , 2010, , .		4
105	Al2O3 stacks on In0.53Ga0.47As substrates: In situ investigation of the interface. Microelectronic Engineering, 2011, 88, 435-439.	2.4	4
106	Effect of Electric Dipoles on Fermi Level Positioning at the Interface between Ultrathin Al₂O₃ Films and Differently Reconstructed In_{0.53}Ga_{0.47}As(001) Surfaces. Journal of Physical Chemistry C, 2012, 116, 18746-18751.	3.1	4
107	Monitoring the formation of Sb nanocrystals in SiO2 by grazing incidence x-ray techniques. Applied Physics Letters, 2003, 83, 2148-2150.	3.3	3
108	Low temperature CEMS of Sn-implanted SiO2. Hyperfine Interactions, 2007, 165, 69-73.	0.5	3

#	Article	IF	Citations
109	(Invited) Active Trap Determination at the Interface of Ge and In0.53Ga0.47 as Substrates with Dielectric Layers. ECS Transactions, 2011, 41, 203-221.	0.5	3
110	Structural and Electrical Properties of HfO₂ Films Grown by Atomic Layer Deposition on Si, Ge, GaAs and GaN. Materials Research Society Symposia Proceedings, 2003, 786, 6141.	0.1	2
111	Effect of heat treatments on electric dipole at metal/high-k dielectric interfaces measured by in situ XPS. Microelectronic Engineering, 2009, 86, 1777-1779.	2.4	2
112	Synthesis and investigation of new materials in MIS structures for the development of physical foundations of CMOS technologies of nanoelectronics. Russian Microelectronics, 2010, 39, 165-174.	0.5	2
113	A Viable Route to Enhance Permittivity of Gate Dielectrics on In_{0.53}Ga_{0.47}As(001): Trimethylaluminum-Based Atomic Layer Deposition of MeO₂(Me = Zr, Hf). ECS Journal of Solid State Science and Technology, 2013, 2, P395-P399.	1.8	2
114	Impact of annealing on the current conduction and trap properties of CeO2/La2O3 metal-insulator-metal capacitors. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2019, 37, 021205.	1.2	2
115	Physical, Chemical, and Electrical Characterization of High-Îº Dielectrics on Ge and GaAs. , 2007, , 181-209.		2
116	Characterisation of Nanocrystals by Scanning Capacitance Force Microscopy. Materials Research Society Symposia Proceedings, 2002, 738, 511.	0.1	1
117	Characterization of transient currents in HfO2 capacitors in the short timescale. Microelectronic Engineering, 2006, 83, 1927-1930.	2.4	1
118	Transient currents in HfO2 and their impact on circuit and memory applications. , 2006, , .		1
119	Atomic Layer Deposition of Al-Doped ZrO2 Thin Films for Advanced Gate Stack on III-V Substrates. ECS Transactions, 2011, 35, 431-440.	0.5	1
120	Trimethylaluminum-based Atomic Layer Deposition of MO2 (M=Zr, Hf): Gate Dielectrics on In0.53Ga0.47As(001) Substrates. ECS Transactions, 2013, 50, 11-19.	0.5	1
121	Memristive devices for spiking neural networks. , 2020, , 399-405.		1
122	Resistive Random Access Memory (RRAM) Technology: From Material, Device, Selector, 3D Integration to Bottom-Up Fabrication. Kluwer International Series in Electronic Materials: Science and Technology, 2022, , 33-64.	0.5	1
123	The electrons' journey in thick metal oxides. Applied Physics Letters, 2022, 121, .	3.3	1
124	EBIC Characterization of Oxygen Precipitation and Denuded Zone in Intrinsically Gettered P-Type Czochralski Silicon. Solid State Phenomena, 1998, 63-64, 97-104.	0.3	0
125	Evaluating the Denuded Zone Depth by Measurements of the Recombination Activity of Bulk Defects. Materials Research Society Symposia Proceedings, 1998, 510, 569.	0.1	0
126	Denuded zone and diffusion length investigation by electron beam induced current technique in intrinsically gettered Czochralski silicon. Journal of Applied Physics, 1999, 85, 1395-1400.	2.5	0

#	Article	IF	Citations
127	Interface quality of atomic layer deposited La-doped ZrO2 films on Ge-passivated In0.15Ga0.85As substrates. Materials Research Society Symposia Proceedings, 2009, 1194, 80.	0.1	0
128	Reset Current Reduction and Set-Reset Instabilities in Unipolar NiO RRAM. , 2011, , .		0
129	Effect on Al:MO2/In0.53Ga0.47As interface (M=Hf, Zr) of trimethyl-aluminum pre-treatment during atomic layer deposition. Thin Solid Films, 2014, 563, 44-49.	1.8	0
130	Resistive switching in oxides for nonvolatile memories and neuromorphic computing. , 2015, , .		0
131	EU COST action IC1401 â€" Pushing the frontiers of memristive devices to systems. , 2016, , .		0
132	Memristive devices for deep learning applications. , 2020, , 313-327.		0
133	Memristive devices as computational memory. , 2020, , 167-174.		0
134	Grazing incidence X-ray study of ion implanted Sb nanocrystals formation. Acta Crystallographica Section A: Foundations and Advances, 2002, 58, c186-c186.	0.3	0
135	Scanning Capacitance Force Microscopy and Kelvin Probe Force Microscopy of Nanostructures Embedded in SiO2. , 2005, , 405-411.		0
136	Low temperature CEMS of Sn-implanted SiO2. , 2006, , 69-73.		0
137	MOx materials by ALD method. , 2022, , 169-199.		0