Mario Lanza

List of Publications by Citations

151 papers	4,461 citations	33 h-index	62 g-index
173 ext. papers	5,610 ext. citations	8.6 avg, IF	5.82 L-index

#	Paper	IF	Citations
151	High-performance silicon photoanodes passivated with ultrathin nickel films for water oxidation. *Science*, **2013**, 342, 836-40	33.3	549
150	Electronic synapses made of layered two-dimensional materials. *Nature Electronics*, **2018**, 1, 458-465	28.4	316
149	Recommended Methods to Study Resistive Switching Devices. *Advanced Electronic Materials*, **2019**, 5, 1800143	6.4	297
148	A Review on Resistive Switching in High-k Dielectrics: A Nanoscale Point of View Using Conductive Atomic Force Microscope. *Materials*, **2014**, 7, 2155-2182	3.5	186
147	Coexistence of Grain-Boundaries-Assisted Bipolar and Threshold Resistive Switching in Multilayer Hexagonal Boron Nitride. *Advanced Functional Materials*, **2017**, 27, 1604811	15.6	149
146	Grain boundaries as preferential sites for resistive switching in the HfO2 resistive random access memory structures. *Applied Physics Letters*, **2012**, 100, 123508	3.4	142
145	Graphene and Related Materials for Resistive Random Access Memories. *Advanced Electronic Materials*, **2017**, 3, 1600195	6.4	137
144	Resistive switching in hafnium dioxide layers: Local phenomenon at grain boundaries. *Applied Physics Letters*, **2012**, 101, 193502	3.4	132
143	Wafer-scale integration of two-dimensional materials in high-density memristive crossbar arrays for artificial neural networks. *Nature Electronics*, **2020**, 3, 638-645	28.4	98
142	Insulators for 2D nanoelectronics: the gap to bridge. *Nature Communications*, **2020**, 11, 3385	17.4	85
141	Grain boundary mediated leakage current in polycrystalline HfO2 films. *Microelectronic Engineering*, **2011**, 88, 1272-1275	2.5	83
140	On the use of two dimensional hexagonal boron nitride as dielectric. *Microelectronic Engineering*, **2016**, 163, 119-133	2.5	77
139	Boron nitride as two dimensional dielectric: Reliability and dielectric breakdown. *Applied Physics Letters*, **2016**, 108, 012905	3.4	72
138	Leakage current through the poly-crystalline HfO2: Trap densities at grains and grain boundaries. *Journal of Applied Physics*, **2013**, 114, 134503	2.5	60
137	A Review on Dielectric Breakdown in Thin Dielectrics: Silicon Dioxide, High-k, and Layered Dielectrics. *Advanced Functional Materials*, **2020**, 30, 1900657	15.6	60
136	The trace element content of top-soil and wild edible mushroom samples collected in Tuscany, Italy. *Environmental Monitoring and Assessment*, **2012**, 184, 7579-95	3.1	55
135	Resistive Random Access Memory Cells with a Bilayer TiO2/SiOX Insulating Stack for Simultaneous Filamentary and Distributed Resistive Switching. *Advanced Functional Materials*, **2017**, 27, 1700384	15.6	53

134	The performance limits of hexagonal boron nitride as an insulator for scaled CMOS devices based on two-dimensional materials. *Nature Electronics*, **2021**, 4, 98-108	28.4	53
133	A Review on Principles and Applications of Scanning Thermal Microscopy (SThM). *Advanced Functional Materials*, **2020**, 30, 1900892	15.6	50
132	Scanning probe microscopy for advanced nanoelectronics. *Nature Electronics*, **2019**, 2, 221-229	28.4	49
131	Nanoscale characterization of PM2.5 airborne pollutants reveals high adhesiveness and aggregation capability of soot particles. *Scientific Reports*, **2015**, 5, 11232	4.9	49
130	Tuning graphene morphology by substrate towards wrinkle-free devices: Experiment and simulation. *Journal of Applied Physics*, **2013**, 113, 104301	2.5	46
129	Graphene-coated atomic force microscope tips for reliable nanoscale electrical characterization. *Advanced Materials*, **2013**, 25, 1440-4	24	44
128	Note: Electrical resolution during conductive atomic force microscopy measurements under different environmental conditions and contact forces. *Review of Scientific Instruments*, **2010**, 81, 106110	1.7	42
127	Micro and nano analysis of 0.2 □mm Ti/Al/Ni/Au ohmic contact to AlGaN/GaN. *Applied Physics Letters*, **2011**, 99, 213504	3.4	40
126	Electrical and mechanical performance of graphene sheets exposed to oxidative environments. *Nano Research*, **2013**, 6, 485-495	10	38
125	({ SIM}^2{ RRAM}): a physical model for RRAM devices simulation. *Journal of Computational Electronics*, **2017**, 16, 1095-1120	1.8	37
124	Distinguishing Oxygen Vacancy Electromigration and Conductive Filament Formation in TiO Resistance Switching Using Liquid Electrolyte Contacts. *Nano Letters*, **2017**, 17, 4390-4399	11.5	36
123	Standards for the Characterization of Endurance in Resistive Switching Devices. *ACS Nano*, **2021**,	16.7	36
122	Engineering Field Effect Transistors with 2D Semiconducting Channels: Status and Prospects. *Advanced Functional Materials*, **2020**, 30, 1901971	15.6	36
121	Degradation of polycrystalline HfO2-based gate dielectrics under nanoscale electrical stress. *Applied Physics Letters*, **2011**, 99, 103510	3.4	35
120	Advanced Data Encryption using 2D Materials. *Advanced Materials*, **2021**, 33, e2100185	24	35
119	Model for multi-filamentary conduction in graphene/hexagonal-boron-nitride/graphene based resistive switching devices. *2D Materials*, **2017**, 4, 025099	5.9	33
118	UHV CAFM characterization of high-k dielectrics: Effect of the technique resolution on the pre- and post-breakdown electrical measurements. *Microelectronics Reliability*, **2010**, 50, 1312-1315	1.2	32
117	Dielectric Breakdown in Chemical Vapor Deposited Hexagonal Boron Nitride. *ACS Applied Materials & Interfaces*, **2017**, 9, 39758-39770	9.5	31

116	Graphene-Boron Nitride-Graphene Cross-Point Memristors with Three Stable Resistive States. *ACS Applied Materials & Interfaces*, **2019**, 11, 37999-38005	9.5	29
115	Conductivity and Charge Trapping After Electrical Stress in Amorphous and Polycrystalline $hbox{Al}_{2}hbox{O}_{3}hbox{-Based}$ Devices Studied With AFM-Related Techniques. *IEEE Nanotechnology Magazine*, **2011**, 10, 344-351	2.6	29
114	Synthesis of large-area multilayer hexagonal boron nitride sheets on iron substrates and its use in resistive switching devices. *2D Materials*, **2018**, 5, 031011	5.9	29
113	Influence of the manufacturing process on the electrical properties of thin (. *Microelectronics Reliability*, **2007**, 47, 1424-1428	1.2	27
112	Water oxidation electrocatalysis using ruthenium coordination oligomers adsorbed on multiwalled carbon nanotubes. *Nature Chemistry*, **2020**, 12, 1060-1066	17.6	27
111	Ageing mechanisms of highly active and stable nickel-coated silicon photoanodes for water splitting. *Journal of Materials Chemistry A*, **2016**, 4, 8053-8060	13	27
110	Polycrystallization effects on the nanoscale electrical properties of high-k dielectrics. *Nanoscale Research Letters*, **2011**, 6, 108	5	26
109	The development of integrated circuits based on two-dimensional materials. *Nature Electronics*, **2021**, 4, 775-785	28.4	26
108	Crystallization and silicon diffusion nanoscale effects on the electrical properties of Al2O3 based devices. *Microelectronic Engineering*, **2009**, 86, 1921-1924	2.5	25
107	CuO-Functionalized Silicon Photoanodes for Photoelectrochemical Water Splitting Devices. *ACS Applied Materials & Interfaces*, **2016**, 8, 696-702	9.5	24
106	2022 roadmap on neuromorphic computing and engineering. *Neuromorphic Computing and Engineering*,		24
105	Dielectric Properties of Ultrathin CaF Ionic Crystals. *Advanced Materials*, **2020**, 32, e2002525	24	24
104	Yield, variability, reliability, and stability of two-dimensional materials based solid-state electronic devices. *Nature Communications*, **2020**, 11, 5689	17.4	24
103	Memristive technologies for data storage, computation, encryption, and radio-frequency communication. *Science*, **2022**, 376,	33.3	24
102	Time series statistical analysis: A powerful tool to evaluate the variability of resistive switching memories. *Journal of Applied Physics*, **2019**, 125, 174504	2.5	23
101	Nanoscale characterization of resistive switching using advanced conductive atomic force microscopy based setups. *Journal of Electroceramics*, **2017**, 39, 94-108	1.5	22
100	Repeated roll-to-roll transfer of two-dimensional materials by electrochemical delamination. *Nanoscale*, **2018**, 10, 5522-5531	7.7	22
99	Ageing mechanisms and reliability of graphene-based electrodes. *Nano Research*, **2014**, 7, 1820-1831	10	22

98	Moving graphene devices from lab to market: advanced graphene-coated nanoprobes. *Nanoscale*, **2016**, 8, 8466-73	7.7	21
97	High-Performance Piezoelectric Nanogenerators Using Two-Dimensional Flexible Top Electrodes. *Advanced Materials Interfaces*, **2014**, 1, 1300101	4.6	21
96	Scaling the CBRAM Switching Layer Diameter to 30 nm Improves Cycling Endurance. *IEEE Electron Device Letters*, **2018**, 39, 23-26	4.4	20
95	2D h-BN based RRAM devices **2016**,		20
94	Substitution of native silicon oxide by titanium in Ni-coated silicon photoanodes for water splitting solar cells. *Journal of Materials Chemistry A*, **2017**, 5, 1996-2003	13	19
93	Enhanced piezoelectric effect at the edges of stepped molybdenum disulfide nanosheets. *Nanoscale*, **2017**, 9, 6237-6245	7.7	17
92	Piezoelectricity in two dimensions: Graphene vs. molybdenum disulfide. *Applied Physics Letters*, **2017**, 111, 083107	3.4	17
91	Memristive Electronic Synapses Made by Anodic Oxidation. *Chemistry of Materials*, **2019**, 31, 8394-8401	9.6	16
90	Fabrication of scalable and ultra low power photodetectors with high light/dark current ratios using polycrystalline monolayer MoS2 sheets. *Nano Energy*, **2016**, 30, 494-502	17.1	16
89	Variability and Yield in h-BN-Based Memristive Circuits: The Role of Each Type of Defect. *Advanced Materials*, **2021**, 33, e2103656	24	16
88	High-resolution characterization of hexagonal boron nitride coatings exposed to aqueous and air oxidative environments. *Nano Research*, **2017**, 10, 2046-2055	10	15
87	Reliability of scalable MoS 2 FETs with 2 nm crystalline CaF 2 insulators. *2D Materials*, **2019**, 6, 045004	5.9	15
86	Chemical vapor deposition of hexagonal boron nitride on metal-coated wafers and transfer-free fabrication of resistive switching devices. *2D Materials*, **2019**, 6, 035021	5.9	15
85	Electrical Homogeneity of Large-Area Chemical Vapor Deposited Multilayer Hexagonal Boron Nitride Sheets. *ACS Applied Materials & Interfaces*, **2017**, 9, 39895-39900	9.5	15
84	Improving the electrical performance of a conductive atomic force microscope with a logarithmic current-to-voltage converter. *Review of Scientific Instruments*, **2008**, 79, 073701	1.7	15
83	Inkjet Printed Circuits with 2D Semiconductor Inks for High-Performance Electronics. *Advanced Electronic Materials*, **2021**, 7, 2100112	6.4	15
82	Nanogap based graphene coated AFM tips with high spatial resolution, conductivity and durability. *Nanoscale*, **2013**, 5, 10816-23	7.7	14
81	On the Limits of Scalpel AFM for the 3D Electrical Characterization of Nanomaterials. *Advanced Functional Materials*, **2018**, 28, 1802266	15.6	14

80	In Situ Demonstration of the Link Between Mechanical Strength and Resistive Switching in Resistive Random-Access Memories. *Advanced Electronic Materials*, **2015**, 1, 1400058	6.4	13
79	(Invited) Elucidating the Origin of Resistive Switching in Ultrathin Hafnium Oxides through High Spatial Resolution Tools. *ECS Transactions*, **2014**, 64, 19-28	1	13
78	Gate current analysis of AlGaN/GaN on silicon heterojunction transistors at the nanoscale. *Applied Physics Letters*, **2012**, 101, 093505	3.4	13
77	Nanoscale investigation of AlGaN/GaN-on-Si high electron mobility transistors. *Nanotechnology*, **2012**, 23, 395204	3.4	12
76	Nanoscale observations of resistive switching high and low conductivity states on TiN/HfO2/Pt structures. *Microelectronics Reliability*, **2012**, 52, 2110-2114	1.2	12
75	Time-dependent variability of high-k based MOS devices: Nanoscale characterization and inclusion in circuit simulators **2011**,		12
74	In Situ Observation of Current Generation in ZnO Nanowire Based Nanogenerators Using a CAFM Integrated into an SEM. *ACS Applied Materials & Interfaces*, **2019**, 11, 15183-15188	9.5	11
73	. *IEEE Transactions on Device and Materials Reliability*, **2009**, 9, 529-536	1.6	11
72	In Situ Observation of Low-Power Nano-Synaptic Response in Graphene Oxide Using Conductive Atomic Force Microscopy. *Small*, **2021**, 17, e2101100	11	11
71	Bimodal Dielectric Breakdown in Electronic Devices Using Chemical Vapor Deposited Hexagonal Boron Nitride as Dielectric. *Advanced Electronic Materials*, **2018**, 4, 1700506	6.4	10
70	Coexistence of volatile and non-volatile resistive switching in 2D h-BN based electronic synapses **2017**,		10
69	Nanoscale and Device Level Gate Conduction Variability of High-k Dielectrics-Based Metal-Oxide-Semiconductor Structures. *IEEE Transactions on Device and Materials Reliability*, **2011**, 11, 495-501	1.6	10
68	Fabrication of 3D silica with outstanding organic molecule separation and self-cleaning performance. *Applied Surface Science*, **2020**, 511, 145537	6.7	10
67	150□hm □200□hm Cross-Point Hexagonal Boron Nitride-Based Memristors. *Advanced Electronic Materials*, **2020**, 6, 1900115	6.4	10
66	Aging of a Vanadium Precursor Solution: Influencing Material Properties and Photoelectrochemical Water Oxidation Performance of Solution-Processed BiVO4 Photoanodes. *Advanced Functional Materials*, **2020**, 30, 1806662	15.6	10
65	Electroforming in Metal-Oxide Memristive Synapses. *ACS Applied Materials & Interfaces*, **2020**, 12, 11806-11814	9.5	9
64	Photo-electrochemical water splitting in silicon based photocathodes enhanced by plasmonic/catalytic nanostructures. *Materials Science and Engineering B: Solid-State Materials for Advanced Technology*, **2017**, 225, 128-133	3.1	9
63	Morphology and performance of graphene layers on as-grown and transferred substrates. *Acta Mechanica*, **2014**, 225, 1061-1073	2.1	9

62	Development of a conductive atomic force microscope with a logarithmic current-to-voltage converter for the study of metal oxide semiconductor gate dielectrics reliability. *Journal of Vacuum Science & Technology B*, **2009**, 27, 360		9
61	Growth of Two-Dimensional Materials at the Wafer Scale. *Advanced Materials*, **2021**, e2108258	24	9
60	Calcium fluoride as high-k dielectric for 2D electronics. *Applied Physics Reviews*, **2021**, 8, 021307	17.3	9
59	Defect-Free Metal Deposition on 2D Materials via Inkjet Printing Technology. *Advanced Materials*, **2021**, e2104138	24	8
58	Random Telegraph Noise in Metal-Oxide Memristors for True Random Number Generators: A Materials Study. *Advanced Functional Materials*, **2021**, 31, 2102172	15.6	8
57	**2018**,		8
56	Understanding Current Instabilities in Conductive Atomic Force Microscopy. *Materials*, **2019**, 12,	3.5	7
55	Nanoscale and device level electrical behavior of annealed ALD Hf-based gate oxide stacks grown with different precursors. *Microelectronics Reliability*, **2013**, 53, 867-871	1.2	7
54	Conductive Atomic Force Microscopy of Two-Dimensional Electron Systems: From AlGaN/GaN Heterostructures to Graphene and MoS2 **2017**, 163-185		7
53	Trapped charge and stress induced leakage current (SILC) in tunnel SiO2 layers of de-processed MOS non-volatile memory devices observed at the nanoscale. *Microelectronics Reliability*, **2009**, 49, 1188-1191	1.2	7
52	Mechanical properties of locally oxidized graphene electrodes. *Archive of Applied Mechanics*, **2015**, 85, 339-345	2.2	6
51	A Future Way of Storing Information: Resistive Random Access Memory.. *IEEE Nanotechnology Magazine*, **2015**, 9, 12-17	1.7	6
50	Experimental Observation and Mitigation of Dielectric Screening in Hexagonal Boron Nitride Based Resistive Switching Devices. *Crystal Research and Technology*, **2018**, 53, 1800006	1.3	6
49	Conductive AFM of 2D Materials and Heterostructures for Nanoelectronics. *Nanoscience and Technology*, **2019**, 303-350	0.6	6
48	A Conductive AFM Nanoscale Analysis of NBTI and Channel Hot-Carrier Degradation in MOSFETs. *IEEE Transactions on Electron Devices*, **2014**, 61, 3118-3124	2.9	6
47	History and Status of the CAFM **2017**, 1-28		6
46	Graphene Coated Nanoprobes: A Review. *Crystals*, **2017**, 7, 269	2.3	6
45	Reliability and gate conduction variability of HfO2-based MOS devices: A combined nanoscale and device level study. *Microelectronic Engineering*, **2011**, 88, 1334-1337	2.5	6

44	Variability of graphene devices fabricated using graphene inks: Atomic force microscope tips. *Surface and Coatings Technology*, **2017**, 320, 391-395	4.4	5
43	Effect of the Pressure Exerted by Probe Station Tips in the Electrical Characteristics of Memristors. *Advanced Electronic Materials*, **2020**, 6, 1901226	6.4	5
42	Suppression of nanowire clustering in hybrid energy harvesters. *Journal of Materials Chemistry C*, **2016**, 4, 3646-3653	7.1	5
41	Transmission Electron Microscopy-Based Statistical Analysis of Commercially Available Graphene Oxide Quantum Dots. *Crystal Research and Technology*, **2020**, 55, 1900231	1.3	4
40	On the Limits of Scanning Thermal Microscopy of Ultrathin Films. *Materials*, **2020**, 13,	3.5	4
39	Variability of metal/h-BN/metal memristors grown via chemical vapor deposition on different materials. *Microelectronics Reliability*, **2019**, 102, 113410	1.2	4
38	Potassium Hydroxide Mixed with Lithium Hydroxide: An Advanced Electrolyte for Oxygen Evolution Reaction. *Solar Rrl*, **2019**, 3, 1900195	7.1	4
37	Fabrication and Reliability of Conductive AFM Probes **2017**, 29-44		4
36	Nanoscale Three-Dimensional Characterization with Scalpel SPM **2017**, 187-210		4
35	**2017**,		4
34	On the properties of conducting filament in ReRAM **2014**,		4
33	An Electrical Model for Trap Coupling Effects on Random Telegraph Noise. *IEEE Electron Device Letters*, **2020**, 41, 1596-1599	4.4	4
32	Characterization of the photocurrents generated by the laser of atomic force microscopes. *Review of Scientific Instruments*, **2016**, 87, 083703	1.7	4
31	Emerging Scanning Probe-Based Setups for Advanced Nanoelectronic Research. *Advanced Functional Materials*, **2020**, 30, 1902776	15.6	4
30	Temperature of Conductive Nanofilaments in Hexagonal Boron Nitride Based Memristors Showing Threshold Resistive Switching. *Advanced Electronic Materials*,2100580	6.4	4
29	KPFM and its Use to Characterize the CPD in Different Materials **2017**, 297-317		3
28	Note: Fabrication of a fast-response and user-friendly environmental chamber for atomic force microscopes. *Review of Scientific Instruments*, **2015**, 86, 106105	1.7	3
27	Hybrid architecture based on two-dimensional memristor crossbar array and CMOS integrated circuit for edge computing. *Npj 2D Materials and Applications*, **2022**, 6,	8.8	3

26	High Solar-to-Hydrogen Conversion Efficiency at pH 7 Based on a PV-EC Cell with an Oligomeric Molecular Anode. *ACS Applied Materials & Interfaces*, **2020**, 12, 55856-55864	9.5	3
25	Highly Accurate Thickness Determination of 2D Materials. *Crystal Research and Technology*, **2021**, 56, 2100056	1.3	3
24	Memristors with Initial Low-Resistive State for Efficient Neuromorphic Systems. *Advanced Intelligent Systems*,2200001	6	3
23	Production of Large-Area Nucleus-Free Single-Crystal Graphene-Mesh Metamaterials with Zigzag Edges.. *Advanced Materials*, **2022**, e2201253	24	3
22	Improving the Consistency of Nanoscale Etching for Atomic Force Microscopy Tomography Applications. *Frontiers in Materials*, **2019**, 6,	4	2
21	On the ageing mechanisms of graphene-on-metal electrodes **2015**,		2
20	Nanoscale Potential Fluctuations in Zirconium Oxide and the Flash Memory Based on Electron and Hole Localization. *Advanced Electronic Materials*, **2018**, 4, 1700592	6.4	2
19	Channel hot-carriers degradation in MOSFETs: A conductive AFM study at the nanoscale **2013**,		2
18	Sputtering and amorphization of crystalline semiconductors by Nanodroplet Bombardment. *Crystal Research and Technology*, **2017**, 52, 1600240	1.3	1
17	**2019**,		1
16	Effect of IrO2 Spatial Distribution on the Stability and Charge Distribution of Ti1−xIrxO2 Alloys. *Chemistry of Materials*, **2019**, 31, 8742-8751	9.6	1
15	Enhanced Current Dynamic Range Using ResiScope and Soft-ResiScope AFM Modes **2017**, 263-276		1
14	Multiprobe Electrical Measurements without Optical Interference **2017**, 277-295		1
13	Fundamentals of CAFM Operation Modes **2017**, 45-77		1
12	Improvement of the electrical contact resistance at rough interfaces using two dimensional materials. *Journal of Applied Physics*, **2015**, 118, 215301	2.5	1
11	Analysis of Factors in the Nanoscale Physical and Electrical Characterization of High-K Materials by Conductive Atomic Force Microscope. *Integrated Ferroelectrics*, **2014**, 153, 1-8	0.8	1
10	Nano-memristors with 4mV Switching Voltage Based On Surface-modified Copper Nanoparticles.. *Advanced Materials*, **2022**, e2201197	24	1
9	Redefining microelectronics. *Microelectronic Engineering*, **2022**, 258, 111767	2.5	1

8	Nanoscale Characterization of Resistive Switching Using Advanced Conductive Atomic Force Microscopy Based Setups. *Kluwer International Series in Electronic Materials: Science and Technology*, **2022**, 121-145		0
7	Inkjet Printing: A Cheap and Easy-to-Use Alternative to Wire Bonding for Academics. *Crystal Research and Technology*, **2022**, 57, 2100210	1.3	0
6	Field Effect Transistors: Engineering Field Effect Transistors with 2D Semiconducting Channels: Status and Prospects (Adv. Funct. Mater. 18/2020). *Advanced Functional Materials*, **2020**, 30, 2070116	15.6	
5	Investigation of High-k Dielectric Stacks by C-AFM: Advantages, Limitations, and Possible Applications **2017**, 79-118		
4	Combination of Semiconductor Parameter Analyzer and Conductive Atomic Force Microscope for Advanced Nanoelectronic Characterization **2017**, 225-241		
3	Design and Fabrication of a Logarithmic Amplifier for Scanning Probe Microscopes to Allow Wide-Range Current Measurements **2017**, 243-262		
2	Characterization of Grain Boundaries in Polycrystalline HfO2 Dielectrics **2017**, 119-131		
1	Resistive Switching Devices Producing Giant Random Telegraph Noise. *IEEE Electron Device Letters*, **2022**, 43, 146-149	4.4	