Supriyo Bandyopadhyay

List of Publications by Year
in descending order

134	2,698	201385	223531
papers	citations	27 h-index	46 g-index

150	150	150	1698
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Hybrid spintronics and straintronics: A magnetic technology for ultra low energy computing and signal processing. Applied Physics Letters, 2011, 99, .	1.5	201
2	Introduction to Spintronics. , 0, , .		112
3	Energy dissipation and switching delay in stress-induced switching of multiferroic nanomagnets in the presence of thermal fluctuations. Journal of Applied Physics, 2012, 112, .	1.1	111
4	Experimental Clocking of Nanomagnets with Strain for Ultralow Power Boolean Logic. Nano Letters, 2016, 16, 1069-1075.	4.5	109
5	Experimental Demonstration of Complete 180Â° Reversal of Magnetization in Isolated Co Nanomagnets on a PMNâ€“PT Substrate with Voltage Generated Strain. Nano Letters, 2017, 17, 3478-3484.	4.5	92
6	Electron spin for classical information processing: a brief survey of spin-based logic devices, gates and circuits. Nanotechnology, 2009, 20, 412001.	1.3	86
7	Magnetization dynamics, Bennett clocking and associated energy dissipation in multiferroic logic. Nanotechnology, 2011, 22, 155201.	1.3	86
8	Switching dynamics of a magnetostrictive single-domain nanomagnet subjected to stress. Physical Review B, 2011, 83, .	1.1	79
9	Giant voltage manipulation of MgO-based magnetic tunnel junctions via localized anisotropic strain: A potential pathway to ultra-energy-efficient memory technology. Applied Physics Letters, 2016, 109, .	1.5	75
10	Binary switching in a â€˜symmetricâ€™ potential landscape. Scientific Reports, 2013, 3, 3038.	1.6	68
11	Complete magnetization reversal in a magnetostrictive nanomagnet with voltage-generated stress: A reliable energy-efficient non-volatile magneto-elastic memory. Applied Physics Letters, 2014, 105, .	1.5	66
12	Reversible strain-induced magnetization switching in FeGa nanomagnets: Pathway to a rewritable, non-volatile, non-toggle, extremely low energy straintronic memory. Scientific Reports, 2016, 5, 18264.	1.6	65
13	Acoustic-Wave-Induced Magnetization Switching of Magnetostrictive Nanomagnets from Single-Domain to Nonvolatile Vortex States. Nano Letters, 2016, 16, 5681-5687.	4.5	65
14	Magnetization dynamics, throughput and energy dissipation in a universal multiferroic nanomagnetic logic gate with fan-in and fan-out. Nanotechnology, 2012, 23, 105201.	1.3	61
15	Energy-efficient magnetoelastic non-volatile memory. Applied Physics Letters, 2014, 104, 232403.	1.5	45
16	Computational Paradigms in Nanoelectronics: Quantum Coupled Single Electron Logic and Neuromorphic Networks. Japanese Journal of Applied Physics, 1996, 35, 3350-3362.	0.8	44
17	Low Power Restricted Boltzmann Machine Using Mixed-Mode Magneto-Tunneling Junctions. IEEE Electron Device Letters, 2019, 40, 345-348.	2.2	41
18	Four-state nanomagnetic logic using multiferroics. Journal Physics D: Applied Physics, 2011, 44, 265001.	1.3	39

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19	Switching of Dipole Coupled Multiferroic Nanomagnets in the Presence of Thermal Noise: Reliability of Nanomagnetic Logic. IEEE Nanotechnology Magazine, 2013, 12, 1206-1212.	1.1	39
20	Acoustically assisted spin-transfer-torque switching of nanomagnets: An energy-efficient hybrid writing scheme for non-volatile memory. Applied Physics Letters, 2013, 103, .	1.5	38
21	Normal and inverse spin-valve effect in organic semiconductor nanowires and the background monotonic magnetoresistance. Physical Review B, 2006, 74, .	1.1	35
22	Wetting behavior of polymer coated nanoporous anodic alumina films: transition from super-hydrophilicity to super-hydrophobicity. Nanotechnology, 2011, 22, 035703.	1.3	35
23	The straintronic spin-neuron. Nanotechnology, 2015, 26, 285201.	1.3	34
24	Electric field control of magnetic states in isolated and dipole-coupled FeGa nanomagnets delineated on a PMN-PT substrate. Nanotechnology, 2015, 26, 401001.	1.3	33
25	Static and Dynamic Magnetic Properties of Sputtered Feâ€“Ga Thin Films. IEEE Transactions on Magnetics, 2017, 53, 1-4.	1.2	32
26	Hybrid Magnetodynamical Modes in a Single Magnetostrictive Nanomagnet on a Piezoelectric Substrate Arising from Magnetoelastic Modulation of Precessional Dynamics. ACS Applied Materials & Interfaces, 2018, 10, 43970-43977.	4.0	32
27	Fluorescence and infrared spectroscopy of electrochemically self assembled ZnO nanowires: evidence of the quantum confined Stark effect. Journal of Materials Science: Materials in Electronics, 2006, 17, 651-655.	1.1	31
28	Self-Similar Magneto-Electric Nanocircuit Technology for Probabilistic Inference Engines. IEEE Nanotechnology Magazine, 2015, 14, 980-991.	1.1	30
29	An error-resilient non-volatile magneto-elastic universal logic gate with ultralow energy-delay product. Scientific Reports, 2014, 4, 7553.	1.6	27
30	Reducing error rates in straintronic multiferroic nanomagnetic logic by pulse shaping. Nanotechnology, 2015, 26, 245202.	1.3	27
31	Analysis of the two-dimensional Dattaâ€“Das spin field effect transistor. Physica E: Low-Dimensional Systems and Nanostructures, 2010, 42, 1736-1740.	1.3	25
32	Dominant spin relaxation mechanism in compound organic semiconductors. Physical Review B, 2010, 81, .	1.1	25
33	Architecting for Causal Intelligence at Nanoscale. Computer, 2015, 48, 54-64.	1.2	25
34	Image Processing With Dipole-Coupled Nanomagnets: Noise Suppression and Edge Enhancement Detection. IEEE Transactions on Electron Devices, 2017, 64, 2417-2424.	1.6	25
35	Magnetic straintronics: Manipulating the magnetization of magnetostrictive nanomagnets with strain for energy-efficient applications. Applied Physics Reviews, 2021, 8, .	5.5	25
36	Dynamic Error in Strain-Induced Magnetization Reversal of Nanomagnets Due to Incoherent Switching and Formation of Metastable States: A Size-Dependent Study. IEEE Transactions on Electron Devices, 2016, 63, 3307-3313.	1.6	24

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37	Reliability of Magnetoelastic Switching of Nonideal Nanomagnets with Defects: A Case Study for the Viability of Straintronic Logic and Memory. Physical Review Applied, 2019, 12, .	1.5	24
38	Experimental demonstration of acoustic wave induced magnetization switching in dipole coupled magnetostrictive nanomagnets for ultralow power computing. Applied Physics Letters, 2016, 109, .	1.5	23
39	Energy-efficient switching of nanomagnets for computing: straintronics and other methodologies. Nanotechnology, 2018, 29, 442001.	1.3	23
40	Extreme Subwavelength Magnetoelastic Electromagnetic Antenna Implemented with Multiferroic Nanomagnets. Advanced Materials Technologies, 2020, 5, 2000316.	3.0	23
41	Low Energy Barrier Nanomagnet Design for Binary Stochastic Neurons: Design Challenges for Real Nanomagnets With Fabrication Defects. IEEE Magnetics Letters, 2019, 10, 1-5.	0.6	21
42	Energy dispersion relations of spin-split subbands in a quantum wire and electrostatic modulation of carrier spin polarization. Physical Review B, 2007, 76, .	1.1	19
43	An Ultrafast Image Recovery and Recognition System Implemented With Nanomagnets Possessing Biaxial Magnetocrystalline Anisotropy. IEEE Nanotechnology Magazine, 2012, 11, 896-901.	1.1	17
44	Energy-Efficient Bennett Clocking Scheme for Four-State Multiferroic Logic. IEEE Nanotechnology Magazine, 2012, 11, 418-425.	1.1	17
45	Energy dissipation and error probability in fault-tolerant binary switching. Scientific Reports, 2013, 3, 3204.	1.6	16
46	Effect of Nanomagnet Geometry on Reliability, Energy Dissipation, and Clock Speed in Strain-Clocked DC-NML. IEEE Transactions on Electron Devices, 2015, 62, 2978-2986.	1.6	16
47	Bayesian reasoning machine on a magneto-tunneling junction network. Nanotechnology, 2020, 31, 484001.	1.3	16
48	Metastable state in a shape-anisotropic single-domain nanomagnet subjected to spin-transfer-torque. Applied Physics Letters, 2012, 101, .	1.5	15
49	Reliability and Scalability of p-Bits Implemented With Low Energy Barrier Nanomagnets. IEEE Magnetics Letters, 2019, 10, 1-4.	0.6	15
50	Spin Wave Electromagnetic Nanoâ€Antenna Enabled by Tripartite Phononâ€Magnonâ€Photon Coupling. Advanced Science, 2022, 9, e2104644.	5.6	15
51	Fluorescence spectroscopy of electrochemically self-assembled ZnSe and Mn:ZnSe nanowires. Nanotechnology, 2008, 19, 195601.	1.3	14
52	Precessional switching of a perpendicular anisotropy magneto-tunneling junction without a magnetic field. Japanese Journal of Applied Physics, 2017, 56, 100309.	0.8	14
53	Electrically programmable probabilistic bit anti-correlator on a nanomagnetic platform. Scientific Reports, 2020, 10, 12361.	1.6	14
54	Power Dissipation in Spintronic Devices: A General Perspective. Journal of Nanoscience and Nanotechnology, 2007, 7, 3689-3689.	0.9	13

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55	Resonant amplification of intrinsic magnon modes and generation of new extrinsic modes in a two-dimensional array of interacting multiferroic nanomagnets by surface acoustic waves. Nanoscale, 2021, 13, 10016-10023.	2.8	13
56	Skewed Straintronic Magnetotunneling-Junction-Based Ternary Content-Addressable Memoryâ€"Part I. IEEE Transactions on Electron Devices, 2017, 64, 2835-2841.	1.6	13
57	Coherent Spin Transport and Suppression of Spin Relaxation in InSb Nanowires with Single Subband Occupancy at Room Temperature. Small, 2014, 10, 4379-4385.	5.2	12
58	Magneto-elastic switching of magnetostrictive nanomagnets with in-plane anisotropy: the effect of material defects. Journal of Physics Condensed Matter, 2018, 30, 394001.	0.7	12
59	Microwave Oscillator Based on a Single Straintronic Magnetotunneling Junction. Physical Review Applied, 2019, 11, .	1.5	12
60	Rashba effect in an asymmetric quantum dot in a magnetic field. Superlattices and Microstructures, 2002, 32, 171-177.	1.4	11
61	Magnetization dynamics, Bennett clocking and associated energy dissipation in multiferroic logic. Nanotechnology, 2011, 22, 309501.	1.3	11
62	Antimicrobial properties of nanorods: killing bacteria via impalement. IET Nanobiotechnology, 2017, 11, 501-505.	1.9	11
63	Experimental Demonstration of an Extreme Subwavelength Nanomagnetic Acoustic Antenna Actuated by Spinâ€"Orbit Torque from a Heavy Metal Nanostrip. Advanced Materials Technologies, 2020, 5, 1901076.	3.0	11
64	Incoherent magnetization dynamics in strain mediated switching of magnetostrictive nanomagnets. Nanotechnology, 2017, 28, 015202.	1.3	10
65	The effect of material defects on resonant spin wave modes in a nanomagnet. Scientific Reports, 2019, 9, 16635.	1.6	10
66	An observable effect of spin inertia in slow magneto-dynamics: Increase of the switching error rates in nanoscale ferromagnets. Journal of Physics Condensed Matter, 2021, 33, .	0.7	10
67	An electron's spin---Part I. IEEE Potentials, 2009, 28, 31-35.	0.2	9
68	Straintronics: Digital and Analog Electronics With Strain-Switched Nanomagnets. IEEE Open Journal of Nanotechnology, 2020, 1, 57-64.	0.9	9
69	Applications of nanomagnets as dynamical systems: I. Nanotechnology, 2022, 33, 062007.	1.3	9
70	Skewed Straintronic Magnetotunneling-Junction-Based Ternary Content-Addressable Memoryâ€"Part II. IEEE Transactions on Electron Devices, 2017, 64, 2842-2848.	1.6	8
71	Nanomagnetic Boolean Logicâ€"The Tempered (and Realistic) Vision. IEEE Access, 2021, 9, 7743-7750.	2.6	8
72	Applications of nanomagnets as dynamical systems: II. Nanotechnology, 2022, 33, 082002.	1.3	8

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73	Semiconductor Quantum Devices. Advances in Electronics and Electron Physics, 1994, , 93-253.	0.6	7
74	Single-spin measurement in the solid state:â€ƒA reader for a spin qubit. Physical Review B, 2003, 67, .	1.1	7
75	Electrochemically self-assembled nanostructure arrays. Journal of Crystal Growth, 2004, 268, 342-345.	0.7	7
76	The inequality of charge and spin diffusion coefficients. Journal of Applied Physics, 2008, 104, 014304.	1.1	7
77	Sensitivity of the Power Spectra of Thermal Magnetization Fluctuations in Low Barrier Nanomagnets Proposed for Stochastic Computing to In-Plane Barrier Height Variations and Structural Defects. Spin, 2020, 10, .	0.6	7
78	Fluctuations in the optical spectra of disordered microstructures due to quantum-interference effects. Physical Review B, 1988, 38, 7466-7473.	1.1	6
79	Gate control of the spin-splitting energy in a quantum dot: Application in single qubit rotation. Physica E: Low-Dimensional Systems and Nanostructures, 2009, 41, 587-592.	1.3	6
80	Hybrid spintronic/straintronics: A super energy efficient computing scheme based on interacting multiferroic nanomagnets. , 2012, , .		6
81	A self-assembled room temperature nanowire infrared photodetector based on quantum mechanical wavefunction engineering. Physica E: Low-Dimensional Systems and Nanostructures, 2012, 44, 1478-1485.	1.3	6
82	Spin Transport in Self Assembled All-Metal Nanowire Spin Valves: A Study of the Pure Elliott-Yafet Mechanism. Journal of Nanoscience and Nanotechnology, 2006, 6, 1973-1978.	0.9	5
83	Spin relaxation of â€œupstreamâ€•electrons in quantum wires: Failure of the drift diffusion model. Physical Review B, 2006, 73, .	1.1	5
84	Signature of quasi one-dimensionality in the absorption spectra of electrochemically self-assembled nanowires. Physica E: Low-Dimensional Systems and Nanostructures, 2011, 43, 1255-1261.	1.3	5
85	Physically equivalent magneto-electric nanoarchitecture for probabilistic reasoning. , 2015, , .		5
86	Mixed-mode Magnetic Tunnel Junction-based Deep Belief Network. , 2019, , .		5
87	The Cost of Energy-Efficiency in Digital Hardware: The Trade-Off between Energy Dissipation, Energyâ€“Delay Product and Reliability in Electronic, Magnetic and Optical Binary Switches. Applied Sciences (Switzerland), 2021, 11, 5590.	1.3	5
88	Spin Injection Efficiency at the Source/Channel Interface of Spin Transistors. IEEE Nanotechnology Magazine, 2008, 7, 34-39.	1.1	4
89	An electron's spin--Part II. IEEE Potentials, 2009, 28, 36-39.	0.2	4
90	Review: Voltage induced strain control of magnetization: computing and other applications. Multifunctional Materials, 2019, 2, 032001.	2.4	4

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91	Reflection and refraction of an electron spin at the junction between two quasi-two-dimensional regions with and without spin-orbit interaction. Physica Scripta, 2021, 96, 065806.	1.2	4
92	Spin dynamics and spin noise in the presence of randomly varying spinâ€“orbit interaction in a semiconductor quantum wire. Journal of Physics Condensed Matter, 2012, 24, 215302.	0.7	3
93	Modulating spin relaxation in nanowires with infrared light at room temperature. Nanotechnology, 2015, 26, 281001.	1.3	3
94	Energy-Efficient Hybrid Spintronicâ€“Straintronic Nonvolatile Reconfigurable Equality Bit Comparator. Spin, 2017, 07, 1750004.	0.6	3
95	Effect of CoFe dusting layer and annealing on the magnetic properties of sputtered Ta/W/CoFeB/CoFe/MgO layer structures. Journal Physics D: Applied Physics, 2020, 53, 105001.	1.3	3
96	Surface acoustic wave induced modulation of tunneling magnetoresistance in magnetic tunnel junctions. Journal of Applied Physics, 2021, 130, .	1.1	3
97	Simulated annealing with surface acoustic wave in a dipole-coupled array of magnetostrictive nanomagnets for collective ground state computing. Journal Physics D: Applied Physics, 2020, 53, 445002.	1.3	3
98	Reflection and Refraction of a Spin at the Edge of a Quasi-Two-Dimensional Semiconductor Layer (Quantum Well) and a Topological Insulator. Magnetism, 2022, 2, 117-129.	0.6	3
99	Modulated interfacial disorder scattering in quantum wells and its device applications. Surface and Interface Analysis, 1989, 14, 590-594.	0.8	2
100	Spin Relaxation Mechanisms in the Organic Semiconductor Alq3. International Journal of Nanotechnology and Molecular Computation, 2009, 1, 20-38.	0.3	2
101	Information Processing with Electron Spins. ISRN Materials Science, 2012, 2012, 1-20.	1.0	2
102	Hybrid straintronics and spintronics: An ultra energy-efficient paradigm for logic and memory. , 2012, , .		2
103	Comment on â€œUltra-low-energy non-volatile straintronic computing using single multiferroic compositesâ€•[Appl. Phys. Lett. 103, 173110 (2013)]. Applied Physics Letters, 2014, 105, .	1.5	2
104	A 3-D NanoMagnetoElectrokinetic model for ultra-high precision assembly of ferromagnetic NWs using magnetic-field assisted dielectrophoresis. RSC Advances, 2020, 10, 39763-39770.	1.7	2
105	Editorial: Focus on non-Boolean computing with nanomagnetic devices. Nanotechnology, 2021, 32, 260201.	1.3	2
106	Nearly Universal $hbox{1}/f^{2}$ Spectrum of Mobility Fluctuation Noise in a Quantum Wire at Radio and Microwave Frequencies. IEEE Transactions on Electron Devices, 2010, 57, 3101-3105.	1.6	1
107	Motional modes in bulk powder and few-molecule clusters of tris(8-hydroxyquinoline aluminum) and their relation to spin dephasing. Applied Physics Letters, 2011, 98, 063109.	1.5	1
108	Optical Properties of Solids. , 2012, , 257-340.		1

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109	Hybrid spintronics-straintronic nanomagnetic logic with two-state elliptical and four-state concave magnetostrictive nanomagnets. , 2014, , .		1
110	Experimental demonstration of strain-clocked Boolean nanomagnetic logic and information propagation. , 2014, , .		1
111	Spin Transport in Nanowires Synthesized Using Anodic Nanoporous Alumina Films. , 2020, , .		1
112	Hybrid Spintronics/Straintronics:A Super Energy-Efficient ComputingParadigm Based on InteractingMultiferroic Nanomagnets. , 2013, , .		1
113	Power dissipation in spintronic devices: a general perspective. Journal of Nanoscience and Nanotechnology, 2007, 7, 168-80.	0.9	1
114	Optical, electronic, magnetic, and superconducting properties of quasiperiodic quantum dot arrays synthesized by a novel electrochemical technique. , 1995, , .		0
115	<title>Nonlinear magneto-optical properties of quantum wires</title>. , 1998, , .		0
116	<title>Self-assembled neuromorphic networks</title>. , 2001, , .		0
117	Oscillatory magnetoresistance in a quantum wire spin valve: A means to estimate the saturated drift velocity or mobility of carriers. Physica E: Low-Dimensional Systems and Nanostructures, 2008, 40, 2814-2816.	1.3	0
118	Self-Assembled Nanowire Arrays of Metalâ€“Insulatorâ€“Semiconductor Diodes Exhibiting S-Type Nonlinearity. IEEE Nanotechnology Magazine, 2008, 7, 800-805.	1.1	0
119	Phonon Bottleneck Effect in Organic Molecules. Materials Research Society Symposia Proceedings, 2009, 1172, 19.	0.1	0
120	Four-State Straintronics: Extremely Low Power Nanomagnetic Logic Using Multiferroics With Biaxial Anisotropy. , 2011, , .		0
121	Quantum Devices and Mesoscopic Phenomena. , 2012, , 491-546.		0
122	Quantum Transport Formalisms. , 2012, , 395-490.		0
123	Boltzmann Transport: Beyond the Driftâ€“Diffusion Model. , 2012, , 35-90.		0
124	Some Essential Elements of Quantum Mechanics. , 2012, , 91-145.		0
125	Carrier Scattering in Solids. , 2012, , 209-255.		0
126	Magnetic Field Effects in a Nanostructured Device. , 2012, , 341-394.		0

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127	General Principles of Spin Transistors and Spin Logic Devices. , 2013, , 1-57.		0
128	Reply to â€œComment on â€˜Metastable state in a shape-anisotropic single-domain nanomagnet subjected to spin-transfer torqueâ€™â€•[Appl. Phys. Lett. 105, 116101 (2014)]. Applied Physics Letters, 2014, 105, 116103.	1.5	0
129	Magnetotunneling Junction Logic and Memory: Low-energy logic paradigms for the next decade and beyond.. IEEE Nanotechnology Magazine, 2015, 9, 6-12.	0.9	0
130	Corrigendum to â€œSwitching of Dipole Coupled Multiferroic Nanomagnets in the Presence of Thermal Noise: Reliability of Nanomagnetic Logicâ€•[Nov 13 1206-1212]. IEEE Nanotechnology Magazine, 2015, 14, 196-197.	1.1	0
131	The Many Facets of Nanotechnology [Highlights]. IEEE Nanotechnology Magazine, 2020, 14, 8-11.	0.9	0
132	General Principles of Spin Transistors and Spin Logic Devices. , 2016, , 1175-1242.		0
133	Numerical model for predictive high yield assembly of Cobalt nanowires using floating electrode dielectrophoresis. , 2019, , .		0
134	Dominant Spin Relaxation Mechanisms in Organic Semiconductor Alq3. , 0, , 259-278.		0