Asif Khan

List of Publications by Year in descending order

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88 papers	4,197 citations	257450 24 h-index	144013 57 g-index
92 all docs	92 docs citations	92 times ranked	2997 citing authors

#	Article	IF	Citations
1	Negative capacitance in a ferroelectric capacitor. Nature Materials, 2015, 14, 182-186.	27.5	611
2	The future of ferroelectric field-effect transistor technology. Nature Electronics, 2020, 3, 588-597.	26.0	398
3	Experimental evidence of ferroelectric negative capacitance in nanoscale heterostructures. Applied Physics Letters, 2011, 99, .	3.3	256
4	Spatially resolved steady-state negative capacitance. Nature, 2019, 565, 468-471.	27.8	245
5	Ferroelectric negative capacitance MOSFET: Capacitance tuning & antiferroelectric operation. , 2011, , .		241
6	Direct Observation of Negative Capacitance in Polycrystalline Ferroelectric HfO₂. Advanced Functional Materials, 2016, 26, 8643-8649.	14.9	234
7	Negative Capacitance in Short-Channel FinFETs Externally Connected to an Epitaxial Ferroelectric Capacitor. IEEE Electron Device Letters, 2016, 37, 111-114.	3.9	198
8	Effects of the Variation of Ferroelectric Properties on Negative Capacitance FET Characteristics. IEEE Transactions on Electron Devices, 2016, 63, 2197-2199.	3.0	160
9	Single crystal functional oxides on silicon. Nature Communications, 2016, 7, 10547.	12.8	156
10	Room-Temperature Negative Capacitance in a Ferroelectricâ€“Dielectric Superlattice Heterostructure. Nano Letters, 2014, 14, 5814-5819.	9.1	123
11	Negative Capacitance Behavior in a Leaky Ferroelectric. IEEE Transactions on Electron Devices, 2016, 63, 4416-4422.	3.0	108
12	Self-Aligned, Gate Last, FDSOI, Ferroelectric Gate Memory Device With 5.5-nm Hf_{0.8}Zr_{0.2}O₂, High Endurance and Breakdown Recovery. IEEE Electron Device Letters, 2017, 38, 1379-1382.	3.9	76
13	Enabling Energy-Efficient Nonvolatile Computing With Negative Capacitance FET. IEEE Transactions on Electron Devices, 2017, 64, 3452-3458.	3.0	72
14	Ferroelectric negative capacitance domain dynamics. Journal of Applied Physics, 2018, 123, .	2.5	72
15	Impact of Parasitic Capacitance and Ferroelectric Parameters on Negative Capacitance FinFET Characteristics. IEEE Electron Device Letters, 2017, 38, 142-144.	3.9	71
16	Compact models of negative-capacitance FinFETs: Lumped and distributed charge models. , 2016, , .		69
17	Work Function Engineering for Performance Improvement in Leaky Negative Capacitance FETs. IEEE Electron Device Letters, 2017, 38, 1335-1338.	3.9	64
18	Experimental Demonstration of Ferroelectric Spiking Neurons for Unsupervised Clustering. , 2018, , .		55

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19	Ferroelectric Oscillators and Their Coupled Networks. IEEE Electron Device Letters, 2017, 38, 1614-1617.	3.9	46
20	Nonvolatile MoS2 field effect transistors directly gated by single crystalline epitaxial ferroelectric. Applied Physics Letters, 2017, 111, .	3.3	45
21	Direct comparison of ferroelectric properties in Hf_{0.5}Zr_{0.5}O₂ between thermal and plasma-enhanced atomic layer deposition. Nanotechnology, 2020, 31, 505707.	2.6	45
22	A Ferroelectric FET-Based Processing-in-Memory Architecture for DNN Acceleration. IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2019, 5, 113-122.	1.5	40
23	Neuro-Mimetic Dynamics of a Ferroelectric FET-Based Spiking Neuron. IEEE Electron Device Letters, 2019, 40, 1213-1216.	3.9	39
24	Differential voltage amplification from ferroelectric negative capacitance. Applied Physics Letters, 2017, 111, .	3.3	36
25	Circuit performance analysis of negative capacitance FinFETs. , 2016, , .		33
26	Drain-Erase Scheme in Ferroelectric Field Effect Transistorâ€”Part II: 3-D-NAND Architecture for In-Memory Computing. IEEE Transactions on Electron Devices, 2020, 67, 962-967.	3.0	29
27	Drainâ€“Erase Scheme in Ferroelectric Field-Effect Transistorâ€”Part I: Device Characterization. IEEE Transactions on Electron Devices, 2020, 67, 955-961.	3.0	26
28	Impact of Random Spatial Fluctuation in Non-Uniform Crystalline Phases on the Device Variation of Ferroelectric FET. IEEE Electron Device Letters, 2021, 42, 1160-1163.	3.9	26
29	Ferroelectricity in CMOS-Compatible Hafnium Oxides: Reviving the ferroelectric field-effect transistor technology. IEEE Nanotechnology Magazine, 2021, 15, 20-32.	1.3	25
30	Device design considerations for ultra-thin body non-hysteretic negative capacitance FETs. , 2013, , .		24
31	Cryogenic behavior of NbO2 based threshold switching devices as oscillation neurons. Applied Physics Letters, 2020, 116, .	3.3	24
32	Ferroelectric Hafnium Zirconium Oxide Compatible With Back-End-of-Line Process. IEEE Transactions on Electron Devices, 2021, 68, 3176-3180.	3.0	23
33	BEOL-Compatible Superlattice FEFET Analog Synapse With Improved Linearity and Symmetry of Weight Update. IEEE Transactions on Electron Devices, 2022, 69, 2094-2100.	3.0	22
34	Antiferroelectric negative capacitance from a structural phase transition in zirconia. Nature Communications, 2022, 13, 1228.	12.8	22
35	Antiferroelectricity in lanthanum doped zirconia without metallic capping layers and post-deposition/-metallization anneals. Applied Physics Letters, 2018, 112, .	3.3	21
36	Low power negative capacitance FETs for future quantum-well body technology. , 2013, , .		19

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37	Cryogenic characterization of a ferroelectric field-effect-transistor. Applied Physics Letters, 2020, 116, .	3.3	19
38	The Impacts of Ferroelectric and Interfacial Layer Thicknesses on Ferroelectric FET Design. IEEE Electron Device Letters, 2021, 42, 1156-1159.	3.9	19
39	Electrically induced, non-volatile, metal insulator transition in a ferroelectric-controlled MoS2 transistor. Applied Physics Letters, 2018, 112, .	3.3	18
40	A ferroelectric FET based power-efficient architecture for data-intensive computing. , 2018, , .		18
41	A Swarm Optimization Solver Based on Ferroelectric Spiking Neural Networks. Frontiers in Neuroscience, 2019, 13, 855.	2.8	18
42	Investigating Ferroelectric Minor Loop Dynamics and History Effectâ€"Part I: Device Characterization. IEEE Transactions on Electron Devices, 2020, 67, 3592-3597.	3.0	18
43	BEOL Compatible Superlattice FerroFET-based High Precision Analog Weight Cell with Superior Linearity and Symmetry. , 2021, , .		18
44	Why Do Ferroelectrics Exhibit Negative Capacitance?. Materials, 2019, 12, 3743.	2.9	16
45	Non-volatile, small-signal capacitance in ferroelectric capacitors. Applied Physics Letters, 2020, 117, .	3.3	16
46	Nonvolatile Capacitive Crossbar Array for Inâ€Memory Computing. Advanced Intelligent Systems, 2022, 4, .	6.1	16
47	Impact of Random Phase Distribution in Ferroelectric Transistors-Based 3-D NAND Architecture on In-Memory Computing. IEEE Transactions on Electron Devices, 2021, 68, 2543-2548.	3.0	15
48	Investigating Ferroelectric Minor Loop Dynamics and History Effectâ€"Part II: Physical Modeling and Impact on Neural Network Training. IEEE Transactions on Electron Devices, 2020, 67, 3598-3604.	3.0	15
49	Ferroelectric Relaxation Oscillators and Spiking Neurons. IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2019, 5, 151-157.	1.5	14
50	Ferroelectric Tunnel Junction Optimization by Plasma-Enhanced Atomic Layer Deposition. , 2020, , .		12
51	Synthesis of GF(3) Based Reversible/Quantum Logic Circuits without Garbage Output. , 2009, , .		11
52	The effects of strain relaxation on the dielectric properties of epitaxial ferroelectric Pb(Zr0.2Ti0.8)TiO3 thin films. Applied Physics Letters, 2014, 105, .	3.3	11
53	Local epitaxial-like templating effects and grain size distribution in atomic layer deposited Hf0.5Zr0.5O2 thin film ferroelectric capacitors. Applied Physics Letters, 2021, 119, .	3.3	11
54	Depolarization Field Induced Instability of Polarization States in HfO₂ Based Ferroelectric FET. , 2020, , .		11

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55	Interplay of Switching Characteristics, Cycling Endurance and Multilevel Retention of Ferroelectric Capacitor. , 2020, , .		11
56	Characterizing Ferroelectric Properties of Hf_{0.5}Zr_{0.5}O₂ From Deep-Cryogenic Temperature (4 K) to 400 K. IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2021, 7, 168-174.	1.5	11
57	On the Microscopic Origin of Negative Capacitance in Ferroelectric Materials: A Toy Model. , 2018, , .		10
58	Experimental Demonstration of Non-volatile Capacitive Crossbar Array for In-memory Computing. , 2021, , .		10
59	Standby Bias Improvement of Read After Write Delay in Ferroelectric Field Effect Transistors. , 2021, , .		10
60	Understanding negative capacitance dynamics in ferroelectric capacitors. , 2015, , .		8
61	Experimental RF Characterization of Ferroelectric Hafnium Zirconium Oxide Material at GHz for Microwave Applications. , 2021, , .		8
62	A Janovecâ€Kayâ€Dunnâ€Like Behavior at Thickness Scaling in Ultraâ€Thin Antiferroelectric ZrO₂ Films. Advanced Electronic Materials, 2021, 7, 2100485.	5.1	8
63	Exploring argon plasma effect on ferroelectric Hf0.5Zr0.5O2 thin film atomic layer deposition. Journal of Materials Research, 2021, 36, 1206-1213.	2.6	7
64	A FerroFET-Based In-Memory Processor for Solving Distributed and Iterative Optimizations via Least-Squares Method. IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2019, 5, 132-141.	1.5	6
65	Cross-Domain Optimization of Ferroelectric Parameters for Negative Capacitance Transistorsâ€"Part I: Constant Supply Voltage. IEEE Transactions on Electron Devices, 2020, 67, 365-370.	3.0	6
66	Characterization of Drain Current Variations in FeFETs for PIM-based DNN Accelerators. , 2021, , .		6
67	Extending CMOS with negative capacitance. , 2014, , 56-76.		5
68	Negative capacitance in ferroelectric materials and implications for steep transistors. , 2015, , .		5
69	Ferroelectricity in HfO<inf>2</inf> thin films as a function of Zr doping. , 2017, , .		5
70	Epitaxial growth and dielectric characterization of atomically smooth 0.5Ba(Zr0.2Ti0.8)O3â€"0.5(Ba0.7Ca0.3)TiO3 thin films. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2019, 37, .	2.1	5
71	Extraction of Preisach model parameters for fluorite-structure ferroelectrics and antiferroelectrics. Scientific Reports, 2021, 11, 12474.	3.3	5
72	Impact of Random Phase Distribution in 3D Vertical NAND Architecture of Ferroelectric Transistors on In-Memory Computing. , 2020, , .		5

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73	Efficiency of Ferroelectric Field-Effect Transistors: An Experimental Study. IEEE Transactions on Electron Devices, 2022, 69, 1568-1574.	3.0	5
74	A Technology Path for Scaling Embedded FeRAM to 28 nm and Beyond With 2T1C Structure. IEEE Transactions on Electron Devices, 2022, 69, 109-114.	3.0	5
75	On the Possibility of Dynamically Tuning and Collapsing the Ferroelectric Hysteresis/Memory Window in an Asymmetric DG MOS Device: A Path to a Reconfigurable Logic-Memory Device. , 2018, , .		4
76	Optimal Ferroelectric Parameters for Negative Capacitance Field-Effect Transistors Based on Full-Chip Implementationsâ€"Part II: Scaling of the Supply Voltage. IEEE Transactions on Electron Devices, 2020, 67, 371-376.	3.0	4
77	Differential charge boost in hysteretic ferroelectricâ€"dielectric heterostructure capacitors at steady state. Applied Physics Letters, 2021, 118, .	3.3	3
78	An Empirical Compact Model for Ferroelectric Field-Effect Transistor Calibrated to Experimental Data. IEEE Transactions on Electron Devices, 2022, 69, 1519-1523.	3.0	3
79	Cryogenic Characterization of Antiferroelectric Zirconia down to 50 mK. , 2019, , .		2
80	Investigating Dynamic Minor Loop of Ferroelectric Capacitor. , 2019, , .		2
81	Modeling Multi-states in Ferroelectric Tunnel Junction. , 2020, , .		2
82	A microscopic â€œtoyâ€•model of ferroelectric negative capacitance. , 2020, , .		2
83	Negative capacitance in ferroelectric materials and its potential use for transistors with <60 mV/decade subthreshold swing. , 2014, , .		0
84	Impact of HKMG and FDSOI FeFET drain current variation in processing-in-memory architectures. Journal of Materials Research, 2021, 36, 4379-4393.	2.6	0
85	Exploring argon plasma effect on ferroelectric Hf_{0.5}Zr_{0.5}O₂ thin film atomic layer deposition. Journal of Materials Research, 2021, 36, 1-8.	2.6	0
86	Materials opportunities for low-energy computing. MRS Bulletin, 2021, 46, 925.	3.5	0
87	Standby Bias Improves the Endurance in Ferroelectric Field Effect Transistors due to Fast Neutralization of Interface Traps. , 2022, , .		0
88	The Effect of Annealing Temperature on Antiferroelectric Zirconia. , 2022, , .		0