

# Michael Waltl

## List of Publications by Year in descending order

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104  
papers

2,097  
citations

361413

20  
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302126

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104  
docs citations

104  
times ranked

1959  
citing authors

#	ARTICLE	IF	CITATIONS
1	Perspective of 2D Integrated Electronic Circuits: Scientific Pipe Dream or Disruptive Technology?. <i>Advanced Materials</i> , 2022, 34, e2201082.	21.0	24
2	Editorial for the Special Issue on Robust Microelectronic Devices. <i>Crystals</i> , 2022, 12, 16.	2.2	0
3	TCAD Modeling of Temperature Activation of the Hysteresis Characteristics of Lateral 4H-SiC MOSFETs. <i>IEEE Transactions on Electron Devices</i> , 2022, 69, 3290-3295.	3.0	1
4	Temperature Dependent Mismatch and Variability in a Cryo-CMOS Array with 30k Transistors. , 2022, , .		2
5	Efficient Evaluation of the Time-Dependent Threshold Voltage Distribution Due to NBTI Stress Using Transistor Arrays. , 2022, , .		2
6	Improving stability in two-dimensional transistors with amorphous gate oxides by Fermi-level tuning. <i>Nature Electronics</i> , 2022, 5, 356-366.	26.0	31
7	The Importance of Secondary Generated Carriers in Modeling of Full Bias Space. , 2022, , .		1
8	Single- Versus Multi-Step Trap Assisted Tunneling Currentsâ€™Part II: The Role of Polarons. <i>IEEE Transactions on Electron Devices</i> , 2022, 69, 4486-4493.	3.0	9
9	Single- Versus Multi-Step Trap Assisted Tunneling Currentsâ€™Part I: Theory. <i>IEEE Transactions on Electron Devices</i> , 2022, 69, 4479-4485.	3.0	8
10	Impact of negative bias temperature instability on single event transients in scaled logic circuits. <i>International Journal of Numerical Modelling: Electronic Networks, Devices and Fields</i> , 2021, 34, e2854.	1.9	0
11	The performance limits of hexagonal boron nitride as an insulator for scaled CMOS devices based on two-dimensional materials. <i>Nature Electronics</i> , 2021, 4, 98-108.	26.0	161
12	CV Stretch-Out Correction after Bias Temperature Stress: Work-Function Dependence of Donor-/Acceptor-Like Traps, Fixed Charges, and Fast States. , 2021, , .		1
13	Design of Fault-Tolerant and Thermally Stable XOR Gate in Quantum dot Cellular Automata. , 2021, , .		2
14	On the Distribution of Single Defect Threshold Voltage Shifts in SiON Transistors. <i>IEEE Transactions on Device and Materials Reliability</i> , 2021, 21, 199-206.	2.0	4
15	Quantum Chemistry Treatment of Silicon-Hydrogen Bond Rupture by Nonequilibrium Carriers in Semiconductor Devices. <i>Physical Review Applied</i> , 2021, 16, .	3.8	5
16	Error-Tolerant Reconfigurable VDD 10T SRAM Architecture for IoT Applications. <i>Electronics (Switzerland)</i> , 2021, 10, 1718.	3.1	4
17	High-performance radiation hardened NMOS only Schmitt Trigger based latch designs. <i>Analog Integrated Circuits and Signal Processing</i> , 2021, 109, 657-671.	1.4	4
18	Toward Automated Defect Extraction From Bias Temperature Instability Measurements. <i>IEEE Transactions on Electron Devices</i> , 2021, 68, 4057-4063.	3.0	23

#	ARTICLE	IF	CITATIONS
19	Physical Modeling of Charge Trapping in 4H-SiC DMOSFET Technologies. IEEE Transactions on Electron Devices, 2021, 68, 4016-4021.	3.0	22
20	Impact of Bias Temperature Instabilities on the Performance of Logic Inverter Circuits Using Different SiC Transistor Technologies. Crystals, 2021, 11, 1150.	2.2	2
21	Impact of single-defects on the variability of CMOS inverter circuits. Microelectronics Reliability, 2021, 126, 114275.	1.7	1
22	Efficient Modeling of Charge Trapping at Cryogenic Temperaturesâ€”Part I: Theory. IEEE Transactions on Electron Devices, 2021, 68, 6365-6371.	3.0	6
23	Efficient Modeling of Charge Trapping at Cryogenic Temperaturesâ€”Part II: Experimental. IEEE Transactions on Electron Devices, 2021, 68, 6372-6378.	3.0	3
24	Evidence of Tunneling Driven Random Telegraph Noise in Cryo-CMOS. , 2021, , .		6
25	Separation of electron and hole trapping components of PBTI in SiON nMOS transistors. Microelectronics Reliability, 2020, 114, 113746.	1.7	13
26	Quantum Mechanical Charge Trap Modeling to Explain BTI at Cryogenic Temperatures. , 2020, , .		4
27	Reliability and Variability of Advanced CMOS Devices at Cryogenic Temperatures. , 2020, , .		31
28	The Mysterious Bipolar Bias Temperature Stress from the Perspective of Gate-Sided Hydrogen Release. , 2020, , .		8
29	Reliability of Miniaturized Transistors from the Perspective of Single-Defects. Micromachines, 2020, 11, 736.	2.9	11
30	Extraction of Statistical Gate Oxide Parameters From Large MOSFET Arrays. IEEE Transactions on Device and Materials Reliability, 2020, 20, 251-257.	2.0	2
31	Ultra-Low Noise Defect Probing Instrument for Defect Spectroscopy of MOS Transistors. IEEE Transactions on Device and Materials Reliability, 2020, 20, 242-250.	2.0	15
32	Mixed Hot-Carrier/Bias Temperature Instability Degradation Regimes in Full $\{V_G, V_D\}$ Bias Space: Implications and Peculiarities. IEEE Transactions on Electron Devices, 2020, 67, 3315-3322.	3.0	20
33	Defect Spectroscopy in SiC Devices. , 2020, , .		4
34	Bias Temperature Instability Aware and Soft Error Tolerant Radiation Hardened 10T SRAM Cell. Electronics (Switzerland), 2020, 9, 256.	3.1	6
35	Semi-Automated Extraction of the Distribution of Single Defects for nMOS Transistors. Micromachines, 2020, 11, 446.	2.9	8
36	Soft error hardening enhancement analysis of NBTI tolerant Schmitt trigger circuit. Microelectronics Reliability, 2020, 107, 113617.	1.7	10

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37	Machine Learning Prediction of Defect Formation Energies in a-SiO <sub>2</sub> . , 2020, , .		1
38	Atomistic Modeling of Oxide Defects. , 2020, , 609-648.		4
39	Advanced Electrical Characterization of Single Oxide Defects Utilizing Noise Signals. , 2020, , 229-257.		5
40	Distribution of Step Heights of Electron and Hole Traps in SiON nMOS Transistors. , 2020, , .		0
41	Modeling the Hysteresis of Current-Voltage Characteristics in 4H-SiC Transistors. , 2020, , .		3
42	Ultrathin calcium fluoride insulators for two-dimensional field-effect transistors. Nature Electronics, 2019, 2, 230-235.	26.0	156
43	Reliability of scalable MoS <sub>2</sub> FETs with 2-nm crystalline CaF <sub>2</sub> insulators. 2D Materials, 2019, 6, 045004.	4.4	29
44	Evaluation of Advanced MOSFET Threshold Voltage Drift Measurement Techniques. IEEE Transactions on Device and Materials Reliability, 2019, 19, 358-362.	2.0	9
45	Electrostatic Coupling and Identification of Single-Defects in GaN/AlGaN Fin-MIS-HEMTs. Solid-State Electronics, 2019, 156, 41-47.	1.4	6
46	Minimum Energy Paths for Non-Adiabatic Charge Transitions in Oxide Defects. , 2019, , .		3
47	Statistical Characterization of BTI and RTN using Integrated pMOS Arrays. , 2019, , .		2
48	Characterization and Modeling of Single Charge Trapping in MOS Transistors. , 2019, , .		1
49	IIRW 2019 Discussion Group II: Reliability for Aerospace Applications. , 2019, , .		0
50	Physical Modeling of Bias Temperature Instabilities in SiC MOSFETs. , 2019, , .		17
51	First-Principles Parameter-Free Modeling of n- and p-FET Hot-Carrier Degradation. , 2019, , .		10
52	Low Cost and High Performance Radiation Hardened Latch Design for Reliable Circuits. , 2019, , .		1
53	Impact of Mixed Negative Bias Temperature Instability and Hot Carrier Stress on MOSFET Characteristics—Part II: Theory. IEEE Transactions on Electron Devices, 2019, 66, 241-248.	3.0	23
54	Impact of Mixed Negative Bias Temperature Instability and Hot Carrier Stress on MOSFET Characteristics—Part I: Experimental. IEEE Transactions on Electron Devices, 2019, 66, 232-240.	3.0	22

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55	Utilizing NBTI for Operation Detection of Integrated Circuits. Communications in Computer and Information Science, 2019, , 190-201.	0.5	1
56	A brief overview of gate oxide defect properties and their relation to MOSFET instabilities and device and circuit time-dependent variability. Microelectronics Reliability, 2018, 81, 186-194.	1.7	49
57	A Physical Model for the Hysteresis in MoS <sub>2</sub> Transistors. IEEE Journal of the Electron Devices Society, 2018, 6, 972-978.	2.1	43
58	Comphy " A compact-physics framework for unified modeling of BTI. Microelectronics Reliability, 2018, 85, 49-65.	1.7	137
59	Characterization and physical modeling of the temporal evolution of near-interfacial states resulting from NBTI/PBTI stress in nMOS/pMOS transistors. , 2018, , .		11
60	Annealing and Encapsulation of CVD-MoS <sub>2</sub> FETs with 10 <sup>10</sup> On/Off Current Ratio. , 2018, , .		3
61	Reliability of next-generation field-effect transistors with transition metal dichalcogenides. , 2018, , .		2
62	Characterization of Single Defects in Ultrascaled MoS <sub>2</sub> Field-Effect Transistors. ACS Nano, 2018, 12, 5368-5375.	14.6	48
63	Characterization of Interface Defects With Distributed Activation Energies in GaN-Based MIS-HEMTs. IEEE Transactions on Electron Devices, 2017, 64, 1045-1052.	3.0	10
64	Superior NBTI in High-k SiGe Transistors"Part II: Theory. IEEE Transactions on Electron Devices, 2017, 64, 2099-2105.	3.0	13
65	Energetic mapping of oxide traps in MoS <sub>2</sub> field-effect transistors. 2D Materials, 2017, 4, 025108.	4.4	49
66	Implications of gate-sided hydrogen release for post-stress degradation build-up after BTI stress. , 2017, , .		9
67	Superior NBTI in High- $\kappa$ SiGe Transistors"Part I: Experimental. IEEE Transactions on Electron Devices, 2017, 64, 2092-2098.	3.0	22
68	(Invited) Impact of Gate Dielectrics on the Threshold Voltage in MoS <sub>2</sub> Transistors. ECS Transactions, 2017, 80, 203-217.	0.5	5
69	Highly-stable black phosphorus field-effect transistors with low density of oxide traps. Npj 2D Materials and Applications, 2017, 1, .	7.9	57
70	Efficient physical defect model applied to PBTI in high- $\hat{\rho}$ stacks. , 2017, , .		19
71	Characterization and modeling of single defects in GaN/AlGaIn fin-MIS-HEMTs. , 2017, , .		7
72	Accurate mapping of oxide traps in highly-stable black phosphorus FETs. , 2017, , .		0

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73	Physical modeling of the hysteresis in MOS <sub>2</sub> transistors. , 2017, , .		3
74	The impact of mixed negative bias temperature instability and hot carrier stress on single oxide defects. , 2017, , .		8
75	Improved Hysteresis and Reliability of MoS <sub>2</sub> Transistors With High-Quality CVD Growth and Al <sub>2</sub> O <sub>3</sub> Encapsulation. IEEE Electron Device Letters, 2017, 38, 1763-1766.	3.9	81
76	Reliability of black phosphorus field-effect transistors with respect to bias-temperature and hot-carrier stress. , 2017, , .		1
77	Reliability of single-layer MoS <sub>2</sub> field-effect transistors with SiO <sub>2</sub> and hBN gate insulators. , 2016, , .		2
78	A systematic study of charge trapping in single-layer double-gated GFETs. , 2016, , .		0
79	Nanoscale evidence for the superior reliability of SiGe high-k pMOSFETs. , 2016, , .		6
80	The "permanent" component of NBTI revisited: Saturation, degradation-reversal, and annealing. , 2016, , .		17
81	Bias-temperature instability on the back gate of single-layer double-gated graphene field-effect transistors. Japanese Journal of Applied Physics, 2016, 55, 04EP03.	1.5	6
82	Long-Term Stability and Reliability of Black Phosphorus Field-Effect Transistors. ACS Nano, 2016, 10, 9543-9549.	14.6	158
83	The role of charge trapping in MoS <sub>2</sub> /SiO <sub>2</sub> and MoS <sub>2</sub> /hBN field-effect transistors. 2D Materials, 2016, 3, 035004.	4.4	174
84	The defect-centric perspective of device and circuit reliability"From gate oxide defects to circuits. Solid-State Electronics, 2016, 125, 52-62.	1.4	17
85	Complete extraction of defect bands responsible for instabilities in n and pFinFETs. , 2016, , .		24
86	Gate-sided hydrogen release as the origin of "permanent" NBTI degradation: From single defects to lifetimes. , 2015, , .		23
87	Hot-carrier degradation in single-layer double-gated graphene field-effect transistors. , 2015, , .		1
88	On the volatility of oxide defects: Activation, deactivation, and transformation. , 2015, , .		25
89	Impact of hot carrier stress on the defect density and mobility in double-gated graphene field-effect transistors. , 2015, , .		1
90	Microscopic oxide defects causing BTI, RTN, and SILC on high-k FinFETs. , 2015, , .		12

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91	Interplay between hot carrier and bias stress components in single-layer double-gated graphene field-effect transistors. , 2015, , .		1
92	Back Gate Bias-Temperature Instability in Single-Layer Double-Gated Graphene Field-Effect Transistors. , 2015, , .		0
93	A single-trap study of PBTI in SiON nMOS transistors: Similarities and differences to the NBTI/pMOS case. , 2014, , .		13
94	NBTI in Nanoscale MOSFETsâ€”The Ultimate Modeling Benchmark. IEEE Transactions on Electron Devices, 2014, 61, 3586-3593.	3.0	49
95	On the microscopic structure of hole traps in pMOSFETs. , 2014, , .		57
96	Advanced modeling of charge trapping: RTN, 1/f noise, SILC, and BTI. , 2014, , .		14
97	Evidence for defect pairs in SiON pMOSFETs. , 2014, , .		0
98	A unified perspective of RTN and BTI. , 2014, , .		71
99	Characterization and modeling of charge trapping: From single defects to devices. , 2014, , .		3
100	Reduction of the BTI time-dependent variability in nanoscaled MOSFETs by body bias. , 2013, , .		22
101	Advanced characterization of oxide traps: The dynamic time-dependent defect spectroscopy. , 2013, , .		38
102	Hydrogen-related volatile defects as the possible cause for the recoverable component of NBTI. , 2013, , .		30
103	Advanced data analysis algorithms for the time-dependent defect spectroscopy of NBTI. , 2012, , .		9
104	Performance Analysis of 4H-SiC Pseudo-D CMOS Inverter Circuits Employing Physical Charge Trapping Models. Materials Science Forum, 0, 1062, 688-695.	0.3	0