

Toshikazu Nishida

List of Publications by Year in descending order

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155
papers

5,623
citations

101543

36
h-index

88630

70
g-index

156
all docs

156
docs citations

156
times ranked

4826
citing authors

#	ARTICLE	IF	CITATIONS
1	Uniaxial-process-induced strained-Si: extending the CMOS roadmap. IEEE Transactions on Electron Devices, 2006, 53, 1010-1020.	3.0	516
2	Physics of strain effects in semiconductors and metal-oxide-semiconductor field-effect transistors. Journal of Applied Physics, 2007, 101, 104503.	2.5	431
3	Lumped Element Modeling of Piezoelectric-Driven Synthetic Jet Actuators. AIAA Journal, 2003, 41, 240-247.	2.6	274
4	Comprehensive characterization and failure modes of tungsten microwire arrays in chronic neural implants. Journal of Neural Engineering, 2012, 9, 056015.	3.5	254
5	A MEMS acoustic energy harvester. Journal of Micromechanics and Microengineering, 2006, 16, S174-S181.	2.6	199
6	Direct-current measurements of oxide and interface traps on oxidized silicon. IEEE Transactions on Electron Devices, 1995, 42, 1657-1662.	3.0	171
7	TaN interface properties and electric field cycling effects on ferroelectric Si-doped HfO ₂ thin films. Journal of Applied Physics, 2015, 117, .	2.5	165
8	Abiotic-biotic characterization of Pt/Ir microelectrode arrays in chronic implants. Frontiers in Neuroengineering, 2014, 7, 2.	4.8	159
9	Corrosion of tungsten microelectrodes used in neural recording applications. Journal of Neuroscience Methods, 2011, 198, 158-171.	2.5	142
10	Acoustic energy harvesting using an electromechanical Helmholtz resonator. Journal of the Acoustical Society of America, 2008, 123, 1983-1990.	1.1	136
11	Ferroelectric phenomena in Si-doped HfO ₂ thin films with TiN and Ir electrodes. Journal of Vacuum Science and Technology B: Nanotechnology and Microelectronics, 2014, 32, .	1.2	110
12	Key differences for process-induced uniaxial vs. substrate-induced biaxial stressed Si and Ge channel MOSFETs. , 0, , .		109
13	Effect of external strain on the conductivity of AlGa _N /Ga _N high-electron-mobility transistors. Applied Physics Letters, 2003, 83, 4845-4847.	3.3	97
14	Development of a micromachined piezoelectric microphone for aeroacoustics applications. Journal of the Acoustical Society of America, 2007, 122, 3428-3436.	1.1	88
15	Hole mobility in silicon inversion layers: Stress and surface orientation. Journal of Applied Physics, 2007, 102, .	2.5	87
16	Doped Hf _{0.5} Zr _{0.5} O ₂ for high efficiency integrated supercapacitors. Applied Physics Letters, 2017, 110, .	3.3	87
17	Simulation of AlGa _N /Ga _N high-electron-mobility transistor gauge factor based on two-dimensional electron gas density and electron mobility. Journal of Applied Physics, 2010, 108, .	2.5	84
18	Process compatible polysilicon-based electrical through-wafer interconnects in silicon substrates. Journal of Microelectromechanical Systems, 2002, 11, 631-640.	2.5	81

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19	Piezoresistance Coefficients of (100) Silicon nMOSFETs Measured at Low and High (~ 1.5 GPa) Channel Stress. IEEE Electron Device Letters, 2007, 28, 58-61.	3.9	78
20	A Micromachined Dual-Backplate Capacitive Microphone for Aeroacoustic Measurements. Journal of Microelectromechanical Systems, 2007, 16, 1289-1302.	2.5	72
21	Constant-beamwidth and constant-powerwidth wideband robust Capon beamformers for acoustic imaging. Journal of the Acoustical Society of America, 2004, 116, 1621-1631.	1.1	69
22	Annealing behavior of ferroelectric Si-doped HfO ₂ thin films. Thin Solid Films, 2016, 615, 139-144.	1.8	68
23	Electrode impedance analysis of chronic tungsten microwire neural implants: understanding abiotic vs. biotic contributions. Frontiers in Neuroengineering, 2014, 7, 13.	4.8	67
24	A physically based mobility model for MOSFET numerical simulation. IEEE Transactions on Electron Devices, 1987, 34, 310-320.	3.0	63
25	Low Frequency Pulsed Resonant Converter for Energy Harvesting. IEEE Transactions on Power Electronics, 2007, 22, 63-68.	7.9	59
26	Future of Strained Si/Semiconductors in Nanoscale MOSFETs. , 2006, , .		58
27	Ferroelectric Si-Doped HfO ₂ Device Properties on Highly Doped Germanium. IEEE Electron Device Letters, 2015, 36, 766-768.	3.9	57
28	Chemical-Assisted Bonding of Thermoplastics/Elastomer for Fabricating Microfluidic Valves. Analytical Chemistry, 2011, 83, 446-452.	6.5	56
29	Characterization of a Silicon-Micromachined Thermal Shear-Stress Sensor. AIAA Journal, 2002, 40, 1099-1104.	2.6	55
30	A multiple degree of freedom electromechanical Helmholtz resonator. Journal of the Acoustical Society of America, 2007, 122, 291-301.	1.1	55
31	The effects of layering in ferroelectric Si-doped HfO ₂ thin films. Applied Physics Letters, 2014, 105, .	3.3	54
32	Strain effects on three-dimensional, two-dimensional, and one-dimensional silicon logic devices: Predicting the future of strained silicon. Journal of Applied Physics, 2010, 108, 093716.	2.5	52
33	Wideband RELAX and wideband CLEAN for aeroacoustic imaging. Journal of the Acoustical Society of America, 2004, 115, 757-767.	1.1	49
34	MEMS Shear Stress Sensors: Promise and Progress. , 2004, , .		48
35	An ultrathin integrated nanoelectromechanical transducer based on hafnium zirconium oxide. Nature Electronics, 2019, 2, 506-512.	26.0	42
36	Piezoresistive Microphone Design Pareto Optimization: Tradeoff Between Sensitivity and Noise Floor. Journal of Microelectromechanical Systems, 2006, 15, 1632-1643.	2.5	41

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37	Nonlinear model and system identification of a capacitive dual-backplate MEMS microphone. Journal of Sound and Vibration, 2008, 309, 276-292.	3.9	39
38	Measurement of conduction band deformation potential constants using gate direct tunneling current in n-type metal oxide semiconductor field effect transistors under mechanical stress. Applied Physics Letters, 2006, 89, 073509.	3.3	38
39	Manufacturable plastic microfluidic valves using thermal actuation. Lab on A Chip, 2009, 9, 3082.	6.0	38
40	Characterization of a Compliant-Backplate Helmholtz Resonator for An Electromechanical Acoustic Liner. International Journal of Aeroacoustics, 2002, 1, 183-205.	1.3	37
41	A directional acoustic array using silicon micromachined piezoresistive microphones. Journal of the Acoustical Society of America, 2003, 113, 289-298.	1.1	37
42	Structural modifications in chronic microwire electrodes for cortical neuroprosthetics: a case study. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2006, 14, 217-221.	4.9	37
43	Technology and Signal Processing for Brain-Machine Interfaces. IEEE Signal Processing Magazine, 2008, 25, 29-40.	5.6	37
44	Tunneling and thermal emission of electrons from a distribution of shallow traps in SiO ₂ . Applied Physics Letters, 1991, 58, 1262-1264.	3.3	36
45	Positive charge generation in SiO ₂ by electron impact emission of trapped electrons. Journal of Applied Physics, 1992, 72, 4683-4695.	2.5	36
46	Comparison between high-field piezoresistance coefficients of Si metal-oxide-semiconductor field-effect transistors and bulk Si under uniaxial and biaxial stress. Journal of Applied Physics, 2008, 103, 113704.	2.5	36
47	Dynamic calibration technique for thermal shear-stress sensors with mean flow. Experiments in Fluids, 2005, 39, 56-65.	2.4	35
48	Sources of excess noise in silicon piezoresistive microphones. Journal of the Acoustical Society of America, 2006, 119, 2710-2720.	1.1	35
49	Strain-induced changes in the gate tunneling currents in p-channel metal oxide semiconductor field-effect transistors. Applied Physics Letters, 2006, 88, 052108.	3.3	35
50	Mixed Al and Si doping in ferroelectric HfO ₂ thin films. Applied Physics Letters, 2015, 107, .	3.3	34
51	Oxide field and thickness dependence of trap generation in 9-30 nm dry and dry/wet/dry oxides. Journal of Applied Physics, 1991, 69, 3986-3994.	2.5	33
52	Data retention and low voltage operation of Al ₂ O ₃ /Hf _{0.5} Zr _{0.5} O ₂ based ferroelectric tunnel junctions. Nanotechnology, 2020, 31, 39LT01.	2.6	31
53	Tiered deposition of sub-5%nm ferroelectric Hf _{1-x} Zr _x O ₂ films on metal and semiconductor substrates. Applied Physics Letters, 2018, 112, .	3.3	30
54	Observation of threshold oxide electric field for trap generation in oxide films on silicon. Journal of Applied Physics, 1988, 63, 5882-5884.	2.5	29

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55	Impact of mechanical stress on direct and trap-assisted gate leakage currents in p-type silicon metal-oxide-semiconductor capacitors. Applied Physics Letters, 2008, 92, 173507.	3.3	29
56	Impact of mechanical stress on gate tunneling currents of germanium and silicon p-type metal-oxide-semiconductor field-effect transistors and metal gate work function. Journal of Applied Physics, 2008, 103, .	2.5	28
57	A new measurement method for trap properties in insulators and semiconductors: Using electric field stimulated trap-to-band tunneling transitions in SiO ₂ . Journal of Applied Physics, 1991, 70, 6864-6876.	2.5	25
58	Electrode Failure: Tissue, Electrical, and Material Responses. IEEE Pulse, 2012, 3, 30-33.	0.3	23
59	The use of polyurethane as an elastomer in thermoplastic microfluidic devices and the study of its creep properties. Electrophoresis, 2014, 35, 289-297.	2.4	23
60	Design and Fabrication of a Flexible Substrate Microelectrode Array for Brain Machine Interfaces. , 2006, 2006, 2966-9.		21
61	Strain additivity in III-V channels for CMOSFETs beyond 22nm technology node. , 2008, , .		21
62	Demonstration of a wireless, self-powered, electroacoustic liner system. Journal of the Acoustical Society of America, 2009, 125, 873-881.	1.1	21
63	Extraction of AlGaIn/GaN HEMT Gauge Factor in the Presence of Traps. IEEE Electron Device Letters, 2010, 31, 665-667.	3.9	21
64	High-resolution stereolithography using a static liquid constrained interface. Communications Materials, 2021, 2, .	6.9	21
65	A Micromachined Geometric Moiré Interferometric Floating-Element Shear Stress Sensor. , 2004, , .		20
66	Florida Wireless Implantable Recording Electrodes (FWIRE) for Brain Machine Interfaces. , 2007, , .		19
67	Crystal structure of Si-doped HfO ₂ . Journal of Applied Physics, 2014, 115, .	2.5	18
68	A 30-nm thick integrated hafnium zirconium oxide nano-electro-mechanical membrane resonator. Applied Physics Letters, 2020, 116, .	3.3	17
69	A hydrogen leakage detection system using self-powered wireless hydrogen sensor nodes. Solid-State Electronics, 2007, 51, 1018-1022.	1.4	16
70	Harmonic Balance Nonlinear Identification of a Capacitive Dual-Backplate MEMS Microphone. Journal of Microelectromechanical Systems, 2008, 17, 698-708.	2.5	16
71	System Modeling of Piezoelectric Energy Harvesters. IEEE Transactions on Power Electronics, 2012, 27, 790-802.	7.9	16
72	A Highly Compliant Serpentine Shaped Polyimide Interconnect for Front-End Strain Relief in Chronic Neural Implants. Frontiers in Neurology, 2013, 4, 124.	2.4	16

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73	Flexible screen-printed coils for wireless power transfer using low-frequency magnetic fields. Journal of Micromechanics and Microengineering, 2019, 29, 084006.	2.6	15
74	Effect of in situ hydrogen plasma on the ferroelectricity of hafnium zirconium oxide films. Applied Physics Letters, 2020, 116, 032901.	3.3	15
75	Airbrushing and surface modification for fabricating flexible electronics on polydimethylsiloxane. Journal of Micromechanics and Microengineering, 2018, 28, 125014.	2.6	14
76	Effect of Forming Gas Furnace Annealing on the Ferroelectricity and Wake-Up Effect of $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$ Thin Films. ECS Journal of Solid State Science and Technology, 2020, 9, 024011.	1.8	14
77	Mechanical stress altered electron gate tunneling current and extraction of conduction band deformation potentials for germanium. Journal of Applied Physics, 2007, 102, 104507.	2.5	13
78	Effect of furnace annealing on the ferroelectricity of $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$ thin films. Thin Solid Films, 2019, 677, 142-149.	1.8	12
79	Surface and bulk micromachined dual back-plate condenser microphone. , 0, , .		11
80	Total Ionizing Dose Effects on Strained HfO_2 -Based nMOSFETs. IEEE Transactions on Nuclear Science, 2008, 55, 2981-2985.	2.0	11
81	Strain induced changes in gate leakage current and dielectric constant of nitrated Hf-silicate metal oxide semiconductor capacitors. Applied Physics Letters, 2008, 93, 153505.	3.3	11
82	Laser-Induced Current Transients in Strained-Si Diodes. IEEE Transactions on Nuclear Science, 2009, 56, 3203-3209.	2.0	10
83	A Non-Reciprocal Filter Using Asymmetrically Transduced Micro-Acoustic Resonators. IEEE Electron Device Letters, 2019, 40, 800-803.	3.9	10
84	Dynamic calibration technique for thermal shear stress sensors with variable mean flow. , 2000, , .		9
85	Modeling and optimization of a side-implanted piezoresistive shear stress sensor. , 2006, , .		9
86	Coupling biotic and abiotic metrics to create a testbed for predicting neural electrode performance. , 2011, 2011, 3020-3.		9
87	Low-power electrically controlled thermoelastic microvalves integrated in thermoplastic microfluidic devices. Microfluidics and Nanofluidics, 2015, 19, 1385-1394.	2.2	9
88	A Nano-Mechanical Resonator with 10nm Hafnium-Zirconium Oxide Ferroelectric Transducer. , 2018, , .		9
89	Microfluidic Paper-Based Analytical Device for Histidine Determination. Applied Biochemistry and Biotechnology, 2020, 192, 812-821.	2.9	9
90	AlGaIn/GaN high electron mobility transistor structures for pressure and pH sensing. Physica Status Solidi C: Current Topics in Solid State Physics, 2005, 2, 2684-2687.	0.8	8

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91	Converter and controller for micro-power energy harvesting. , 0, , .		8
92	Power Converters for Piezoelectric Energy Extraction. , 2006, , 597.		8
93	Structure of 3Åat.% and 9Åat.% Si-doped HfO ₂ from combined refinement of X-ray and neutron diffraction patterns. Journal of Alloys and Compounds, 2015, 646, 655-661.	5.5	8
94	Thermal emission and capture rates of holes at the gold donor level in silicon. Journal of Applied Physics, 1987, 62, 4773-4780.	2.5	7
95	A method for screening potential antioxidant activity. Journal of Biotechnology, 1996, 51, 149-155.	3.8	7
96	Design and Characterization of a Micromachined Piezoelectric Microphone. , 2005, , .		7
97	A MEMS Shear Stress Sensor for Turbulence Measurements. , 2008, , .		7
98	Flexible polymer substrate and tungsten microelectrode array for an implantable neural recording system. , 2008, 2008, 3158-61.		7
99	Airbrushed Dipole RF Strain Sensor Antenna on a Stretchable Polyurethane Substrate. , 2018, , .		7
100	BiMOS and SMOSC structures for MOS parameter measurement. Solid-State Electronics, 1992, 35, 357-369.	1.4	6
101	Nonlinear Identification of a Capacitive Dual-Backplate MEMS Microphone. , 2005, , 441.		6
102	Temperature dependence of enhanced hole mobility in uniaxial strained p-channel metal-oxide-semiconductor field-effect transistors and insight into the physical mechanisms. Applied Physics Letters, 2008, 93, 243503.	3.3	6
103	High-Q UHF and SHF Bulk Acoustic Wave Resonators with Ten-Nanometer Hf _{0.5} Zr _{0.5} O ₂ Ferroelectric Transducer. , 2019, , .		6
104	Thermal retention of atomic layer deposited Hf _{0.5} Zr _{0.5} films using H ₂ O and O ₂ plasma oxidation methods. Applied Physics Letters, 2021, 118, .	3.3	6
105	Physical insights on comparable electron transport in (100) and (110) double-gate fin field-effect transistors. Applied Physics Letters, 2012, 100, .	3.3	5
106	Strain Effects in AlGaIn/GaN HEMTs. , 2013, , 381-429.		5
107	Reliability of Passive Printed Dipole Antennas Under Extreme Environments. , 2018, , .		5
108	AlN Powder Synthesis via Nitriding Reaction of Aluminum Sub-Chloride. Materials Transactions, JIM, 1993, 34, 541-547.	0.9	4

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109	Sequential substrate and channel hot electron injection to separate oxide and interface traps in n-MOSTs. Solid-State Electronics, 1995, 38, 105-113.	1.4	4
110	Gate Direct Tunneling Currents in Uniaxial Stressed MOSFETs. , 2007, , .		4
111	Reliability of HfSiON gate dielectric silicon MOS devices under [110] mechanical stress: Time dependent dielectric breakdown. Journal of Applied Physics, 2009, 105, 044503.	2.5	4
112	An implantable integrated low-power amplifier-microelectrode array for Brain-Machine Interfaces. , 2010, 2010, 1816-9.		4
113	Comprehensive characterization of tungsten microwires in chronic neurocortical implants. , 2012, 2012, 755-8.		4
114	Depth profile of thermal donor in boron-doped Czochralski-grown silicon. Journal of Applied Physics, 1994, 75, 7931-7934.	2.5	3
115	Development of a MEMS Dual Backplate Capacitive Microphone for Aeroacoustic Measurements. , 2006, , .		3
116	A Self-Powered Wireless Active Acoustic Liner. , 2006, , .		3
117	Microfabrication of a wall shear stress sensor using side-implanted piezoresistive tethers. , 2007, , .		3
118	Effect of mechanical strain on 1/f noise in metal-oxide semiconductor field-effect transistors. Journal of Applied Physics, 2009, 105, 054504.	2.5	3
119	Mechanical stress effects on Pb(Zr,Ti)O ₃ thin-film ferroelectric capacitors embedded in a standard complementary metal-oxide-semiconductor process. Applied Physics Letters, 2014, 104, 222908.	3.3	3
120	Characterization of Bending, Crease, Aging, and Immersion Effects on Flexible Screen-Printed Silver Traces. IEEE Transactions on Components, Packaging and Manufacturing Technology, 2020, 10, 444-456.	2.5	3
121	Hydrogenation of boron in silicon during low temperature gas and liquid phase processing. Journal of Applied Physics, 1994, 76, 332-335.	2.5	2
122	An analytical model for the thermoelastic actuation of composite diaphragms. , 0, , .		2
123	Nonlinear System Identification of a MEMS Dual-Backplate Capacitance Microphone by Harmonic Balance Method. , 2005, , 269.		2
124	An Endoscopic Nonlinear Optical Imaging Probe Based on 2-D Micromirror. , 2007, , .		2
125	Strain induced changes in the gate leakage current of n-channel metal-oxide-semiconductor field-effect transistors. Journal of Applied Physics, 2011, 110, 014511.	2.5	2
126	Effect of Mechanical Cycling on the Magnetic Properties of Permalloy Films Electroplated on Stretchable Substrates. , 2019, , .		2

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127	Screen-Printed Inductive Silver Ink Strain Sensor on Stretchable TPU Substrate. , 2020, , .		2
128	Preisach modeling of imprint on hafnium zirconium oxide ferroelectric capacitors. Journal of Applied Physics, 2021, 130, .	2.5	2
129	Development of a Wafer-Bonded, Silicon-Nitride Membrane Thermal Shear-Stress Sensor with Platinum Sensing Element. , 2000, , .		2
130	Characterization of a silicon-micromachined thermal shear-stress sensor. AIAA Journal, 2002, 40, 1099-1104.	2.6	2
131	Piezoresistive Microphone Design Pareto Optimization: Tradeoff Between Sensitivity and Noise Floor. , 2003, , .		1
132	Design, Modeling and Simulation of a Closed-Loop Controller for a Dual Backplate MEMS Capacitive Microphone. , 2007, , .		1
133	An Instrumentation Grade MEMS Condenser Microphone for Aeroacoustic Measurements. , 2008, , .		1
134	Design of an implantable intracortical microelectrode system for brain-machine interfaces. , 2009, , .		1
135	Microfluidic Valve Arrays in Thermoplastic Devices. , 2012, , .		1
136	Size- and Orientation-Dependent Strain Effects on Ballistic Si p-Type Nanowire Field-Effect Transistors. IEEE Nanotechnology Magazine, 2012, 11, 1231-1238.	2.0	1
137	Phononic detection of morphological phase transition in atomic-layered Hafnium-Zirconium-Oxide. , 2017, , .		1
138	High-temperature and high-field cycling reliability of PZT films embedded within 130 nm CMOS. , 2018, , .		1
139	Screen-printable and stretchable hard magnetic ink formulated from barium hexaferrite nanoparticles. Journal of Materials Chemistry C, 2020, 8, 12133-12139.	5.5	1
140	A High-\$Q\$ 30nm-Thick MFM Resonator Using Ferroelectric Hafnium Zirconium Oxide. , 2020, , .		1
141	Fabrication and non-destructive characterization of through-plastic-via (TPV) in flexible hybrid electronics. Flexible and Printed Electronics, 2021, 6, 025001.	2.7	1
142	Overview: The Age of Strained Devices. , 2010, , 1-6.		1
143	Characterization of Failure Mechanisms and Failure Rate of Oxide Wearout by Hot Electron Using D.C. and A.C. Substrate Electron Injection. Materials Research Society Symposia Proceedings, 1991, 225, 271.	0.1	0
144	A MEMS-Based Sound Intensity Probe. , 2003, , .		0

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145	Optical Flow Sensor Using Geometric Moiré Interferometry. , 0, , .		0
146	LVD micromirror for rapid reference scanning in optical coherence tomography. , 2007, , .		0
147	Thermally Actuated Plastic Microfluidic Valves. , 2010, , .		0
148	Process dependence of 1/f noise and defects in ion implanted p-type piezoresistors. Journal of Applied Physics, 2012, 112, 033702.	2.5	0
149	Development of All-Plastic Microvalve Array for Multiplexed Immunoassay. , 2014, , .		0
150	A 10nm-Thick Hafnium Zirconium Oxide Piezoelectric Transducer for Extreme Miniaturization of Integrated Sensors and Actuators. , 2019, , .		0
151	Effect of a Backing Material on the Bendability of Flexible Substrates with Passive SMD components. , 2020, , .		0
152	Noise Modeling and Characterization of Piezoresistive Transducers. , 2006, , .		0
153	Estimation of through-Plastic Via (TPV) Filling through Computed Tomography for Dielectrics and Conductive Inks in Flexible Printed Electronics. ECS Meeting Abstracts, 2019, , .	0.0	0
154	10.1063/1.5134856.1. , 2020, , .		0
155	Design and Fabrication of a Flexible Substrate Microelectrode Array for Brain Machine Interfaces. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0