Joshua E-Y Lee

List of Publications by Year
in descending order

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143 papers	1,953 citations	279701 23 h-index	315616 38 g-index
144 all docs	144 docs citations	144 times ranked	1100 citing authors

#	Article	IF	Citations
1	Acoustic Centrifugation Facilitating Particle Sensing in Liquid on a Piezoelectric Resonator. IEEE Electron Device Letters, 2022, 43, 801-804.	2.2	6
2	Effect of crystal orientation on liquid phase performance of piezoelectric-on-silicon elliptical plate resonators. Sensors and Actuators A: Physical, 2022, 340, 113548.	2.0	1
3	Acoustically Driven Manipulation of Microparticles and Cells on a Detachable Surface Micromachined Silicon Chip. IEEE Sensors Journal, 2021, 21, 11999-12008.	2.4	7
4	Acoustically Driven Droplet Centrifugation Enabled by Frequency Operations Beyond Phononic Bandgaps. , 2021, , .		0
5	Piezoelectric Elliptical Plate Micromechanical Resonator With Low Motional Resistance for Resonant Sensing in Liquid. IEEE Sensors Journal, 2021, 21, 7339-7347.	2.4	3
6	Plug-and-play acoustic tweezer enables droplet centrifugation on silicon superstrate with surface multi-layered microstructures. Sensors and Actuators A: Physical, 2021, 321, 112432.	2.0	8
7	Reconfigurable Acoustofluidic Manipulation of Particles in Ring-Like Rich Patterns Enabled on a Bulk Micromachined Silicon Chip. , 2021, , .		0
8	A Millimeter Scale Piezoelectric Receiver with Sub-Milliwatt Output for Ultrasonic Wireless Power Transfer in Water. , 2021, , .		0
9	Boosting Q of <100> Aligned ALN-on-Silicon Laterally Vibrating Resonators by Wide Acoustic Bandgap Phononic Crystal Anchors. , 2021, , .		1
10	Acoustofluidic localization of sparse particles on a piezoelectric resonant sensor for nanogram-scale mass measurements. Microsystems and Nanoengineering, 2021, 7, 61.	3.4	11
11	Fully differential higher order transverse mode piezoelectric membrane resonators for enhanced liquid-phase quality factors. Journal of Micromechanics and Microengineering, 2021, 31, 104004.	1.5	3
12	Low-cost laser-cut patterned chips for acoustic concentration of micro- to nanoparticles and cells by operating over a wide frequency range. Analyst, The, 2021, 146, 3280-3288.	1.7	5
13	A two-chip acoustofluidic particle manipulation platform with a detachable and reusable surface acoustic wave device. Analyst, The, 2020, 145, 7752-7758.	1.7	15
14	Dissipation Analysis Methods and Q-Enhancement Strategies in Piezoelectric MEMS Laterally Vibrating Resonators: A Review. Sensors, 2020, 20, 4978.	2.1	24
15	Technique and Circuit for Contactless Readout of Piezoelectric MEMS Resonator Sensors. Sensors, 2020, 20, 3483.	2.1	4
16	Centrifugation of Microparticles Inside a Sessile Droplet on a Micromachined Silicon Chip Using Acoustic Tweezers. , 2020, , .		1
17	Micro Electrometers Based on Micromachined Time-Modulated Variable Capacitors. , 2020, , 129-153.		0
18	Reusable acoustic tweezers enable 2D patterning of microparticles in microchamber on a disposable silicon chip superstrate. , 2020, , .		2

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19	Numerical analysis of anchor loss and thermoelastic damping in piezoelectric AlN-on-Si Lamb wave resonators. Journal of Micromechanics and Microengineering, 2019, 29, 105013.	1.5	14
20	Quality factor improvement of piezoelectric MEMS resonator by the conjunction of frame structure and phononic crystals. Sensors and Actuators A: Physical, 2019, 297, 111541.	2.0	20
21	Eleventh Order Lamb Wave Mode Biconvex Piezoelectric Lorentz Force Magnetometer for Scaling Up Responsivity and Bandwidth. , 2019, , .		1
22	Mass Sensitivity Measurements of a Novel High Q-Factor Disk Resonator for Liquid-Phase Sensing Applications. , 2019, , .		3
23	Quality Factor Enhancement of AlN-on-Si Lamb Wave Resonators Using a Hybrid of Phononic Crystal Shapes in Anchoring Boundaries. , 2019, , .		3
24	Piezoelectric-on-Silicon MEMS Lorentz Force Lateral Field Magnetometers. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2019, 66, 965-974.	1.7	6
25	Air-coupled Ultrasonic Rangefinder with Meter-long Detection Range Based on a Dual-electrode PMUT Fabricated Using a Multi-user MEMS Process. , 2019, , .		4
26	Fully Differential Piezoelectric Button-Like Mode Disk Resonator for Liquid Phase Sensing. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2019, 66, 600-608.	1.7	16
27	Piezoelectric-on-Silicon Square Wine-Glass Mode Resonator for Enhanced Electrical Characterization in Water. IEEE Transactions on Electron Devices, 2018, 65, 1925-1931.	1.6	10
28	Self-Sustaining Square-Extensional Mode Resonator Oscillator for Mass Sensing in Liquid. Proceedings (mdpi), 2018, 2, 976.	0.2	1
29	Lorentz Force Magnetic Sensors Based on Piezoelectric Aluminum Nitride on Silicon Micromechanical Resonators. , 2018, , .		1
30	AlN-on-Si Square Diaphragm Piezoelectric Micromachined Ultrasonic Transducer with Extended Range of Detection. Proceedings (mdpi), 2018, 2, 913.	0.2	10
31	Wide Acoustic Bandgap Solid Disk-Shaped Phononic Crystal Anchoring Boundaries for Enhancing Quality Factor in AlN-on-Si MEMS Resonators. Micromachines, 2018, 9, 413.	1.4	30
32	Thermal-Piezoresistive Tuning of the Effective Quality Factor of a Micromechanical Resonator. Physical Review Applied, 2018, 10, .	1.5	14
33	Piezoelectric-on-silicon Lorentz force magnetometers based on radial contour mode disk resonators. Sensors and Actuators A: Physical, 2018, 281, 185-195.	2.0	9
34	Effect of mode order, resonator length, curvature, and electrode coverage on enhancing the performance of biconvex resonators. Journal of Micromechanics and Microengineering, 2018, 28, 094002.	1.5	12
35	AlN-on-Si MEMS resonator bounded by wide acoustic bandgap two-dimensional phononic crystal anchors. , 2018, , .		7
36	Extended Bandwidth Piezoelectric Lorentz Force Magnetometer Based on a Mechanically Coupled Beam Resonator Array. IEEE Transactions on Magnetics, 2018, 54, 1-7.	1.2	0

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37	Enhancing quality factor by etch holes in piezoelectric-on-silicon lateral mode resonators. Sensors and Actuators A: Physical, 2017, 259, 144-151.	2.0	19
38	A piezoelectric-on-silicon width-extensional mode Lorentz force resonant MEMS magnetometer. Sensors and Actuators A: Physical, 2017, 260, 169-177.	2.0	13
39	Single device on-chip feedthrough cancellation for enhanced electrical characterization of piezoelectric-on-silicon resonators in liquid. Sensors and Actuators A: Physical, 2017, 260, 131-138.	2.0	9
40	A Lorentz force magnetometer based on a piezoelectric-on-silicon square-extensional mode micromechanical resonator. Applied Physics Letters, 2017, 110, 253507.	1.5	12
41	Effect of curvature and electrode coverage on the quality factor of biconvex ALN-on-Si MEMS resonators. , 2017, , .		3
42	An Aluminum Nitride on Silicon resonant MEMS accelerometer operating in ambient pressure. , 2017, , .		12
43	Very-low phase noise RF-MEMS reference oscillator using AlN-on-Si resonators achieved by accurate co-simulation. , 2017, , .		9
44	Applying laser Doppler vibrometry to probe anchor losses in MEMS AlN-on-Si contour mode resonators. Sensors and Actuators A: Physical, 2017, 263, 188-197.	2.0	7
45	Engineering high Q-factor MEMS resonators and probing losses. , 2017, , .		1
46	An ultra-sensitive piezoelectric-on-silicon flapping mode MEMS lateral field magnetometer. , 2017, , .		6
47	A lorentz force magnetometer based on a piezoelectric-on-silicon radial-contour mode disk. , 2017, , .		3
48	Piezoelectric transduction of a button-like mode disk resonator for enhanced quality factor in water. , 2017, , .		2
49	Higher-order wine glass mode piezoelectric square resonator with improved quality factor in water. , 2017, , .		0
50	Resonant tuning fork strain gauge operating in air with decoupled piezoelectric transducers. , 2017, , .		3
51	Micromachined Resonators: A Review. Micromachines, 2016, 7, 160.	1.4	155
52	Lorentz Force Magnetic Sensor based on a Thin-Film Piezoelectric-on-Silicon Laterally Vibrating Micromechanical Resonator. Procedia Engineering, 2016, 168, 654-657.	1.2	2
53	Boosting the Quality Factor of Low Impedance VHF Piezoelectric-on-Silicon Lateral Mode Resonators Using Etch Holes. Procedia Engineering, 2016, 168, 1261-1264.	1.2	3
54	On-chip Feedthrough Cancellation Technique for Enhanced Electrical Characterization of a Piezoelectric MEMS Resonator in Water. Procedia Engineering, 2016, 168, 1573-1576.	1.2	3

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55	Square-extensional mode piezoelectric-on-silicon resonator for physical measurements of liquids. , 2016, , .		3
56	Planar ring-shaped phononic crystal anchoring boundaries for enhancing the quality factor of Lamb mode resonators. Applied Physics Letters, 2016, 109, .	1.5	35
57	Probing anchor losses in AlN-on-Si contour mode MEMS resonators through laser Doppler vibrometry. , 2016, , .		2
58	Fully-differential AlN-on-Si wine glass mode resonator for enhanced characterization in water. , 2016, , .		8
59	Effects of cryogenic cooling on the quality factor of lamb wave mode aluminium nitride piezoelectric-on-silicon MEMS resonators. Sensors and Actuators A: Physical, 2016, 244, 15-23.	2.0	11
60	Electrical characterization of piezoelectric-on-silicon contour mode resonators fully immersed in liquid. Sensors and Actuators A: Physical, 2016, 241, 216-223.	2.0	30
61	VHF-band biconvex AlN-on-silicon micromechanical resonators with enhanced quality factor and suppressed spurious modes. Journal of Micromechanics and Microengineering, 2016, 26, 065012.	1.5	34
62	Phase Noise Reduction in a VHF MEMS-CMOS Oscillator Using Phononic Crystals. IEEE Journal of the Electron Devices Society, 2016, 4, 149-154.	1.2	11
63	High-Q low impedance UHF-band ALN-ON-SI mems resonators using quasi-symmetrical Lamb wave modes. , 2016, , .		8
64	LamÃ© Mode MEMS Resonators. , 2016, , 1731-1739.		1
65	Design of Phononic Crystal Tethers for Frequency-selective Quality Factor Enhancement in AlN Piezoelectric-on-silicon Resonators. Procedia Engineering, 2015, 120, 516-519.	1.2	25
66	Novel Platform for Resonant Sensing in Liquid with Fully-Electrical Interface Based on an In-Plane-Mode Piezoelectric-on-Silicon Resonator. Procedia Engineering, 2015, 120, 1217-1220.	1.2	6
67	Low Temperature Quality Factor Scaling of Laterally-vibrating AlN Piezoelectric-on-silicon Resonators. Procedia Engineering, 2015, 120, 7-10.	1.2	4
68	Modal analysis of out-of-plane vibrations in switchable piezoelectric Gallium Nitride micromechanical resonators. , 2015, , .		1
69	Reducing anchor loss in piezoelectric-on-silicon laterally vibrating resonators by combination of etched-slots and convex edges. , 2015, , .		5
70	A semi-analytical modeling approach for laterally-vibrating thin-film piezoelectric-on-silicon micromechanical resonators. Journal of Micromechanics and Microengineering, 2015, 25, 115020.	1.5	19
71	Piezoresistive Transduction in a Double-Ended Tuning Fork SOI MEMS Resonator for Enhanced Linear Electrical Performance. IEEE Transactions on Electron Devices, 2015, 62, 1596-1602.	1.6	11
72	AlN piezoelectric on silicon MEMS resonator with boosted Q using planar patterned phononic crystals on anchors. , 2015, , .		36

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73	Piezoresistive Readout Mechanically Coupled LamÃ© Mode SOI Resonator With Q of a Million. Journal of Microelectromechanical Systems, 2015, 24, 771-780.	1.7	22
74	LamÃ© Mode MEMS Resonators. , 2015, , 1-9.		1
75	Etch-hole-assisted energy dispersion for enhancing quality factor in silicon bulk acoustic resonators. , 2014, , .		1
76	Dependence of temperature coefficient of frequency (TCf) on crystallography and eigenmode in N-doped silicon contour mode micromechanical resonators. Sensors and Actuators A: Physical, 2014, 215, 189-196.	2.0	17
77	Frequency-based magnetic field sensing using Lorentz force axial strain modulation in a double-ended tuning fork. Sensors and Actuators A: Physical, 2014, 211, 145-152.	2.0	36
78	Orientation dependence of nonlinearity and TCf in high-Q shear-modes of silicon MEMS resonators. , 2014, , .		8
79	Piezoresistive sensing in a strongly-coupled high Q Lamé mode silicon MEMS resonator-pair. , 2014, , .		4
80	Differential-capacitive-input and differential-piezoresistive-output enhanced transduction of a silicon bulk-mode microelectromechanical resonator. Sensors and Actuators A: Physical, 2014, 210, 41-50.	2.0	12
81	Active electronic cancellation of nonlinearity in a High-Q longitudinal-mode silicon resonator by current biasing. , 2014, , .		4
82	Electromagnetic induction readout silicon-on-insulator MEMS resonant magnetometer. , 2014, , .		1
83	Ambient temperature and bias conditions induced frequency drifts in an uncompensated SOI piezoresistive resonator. Sensors and Actuators A: Physical, 2013, 202, 140-146.	2.0	4
84	Does greater piezo-resistive transduction give rise to higher anchor loss in a square-extensional mode micromechanical resonator?. Sensors and Actuators A: Physical, 2013, 202, 111-117.	2.0	2
85	Characterization and model validation of a micromechanical resonant magnetic field sensor. , 2013, , .		1
86	A Horseshoe Micromachined Resonant Magnetic Field Sensor With High Quality Factor. IEEE Electron Device Letters, 2013, 34, 1310-1312.	2.2	22
87	Crystallographic and eigenmode dependence of TCf for single crystal silicon contour mode resonators. , 2013, , .		3
88	Electronic tuning of Q and apparent TCf in a piezoresistive micromechanical resonator. , 2013, , .		3
89	Diameter dependence of electron mobility in InGaAs nanowires. Applied Physics Letters, 2013, 102, .	1.5	31
90	Crystallographic Effects on Energy Dissipation in High- Q Silicon Bulk-Mode Resonators. Journal of Microelectromechanical Systems, 2013, 22, 262-264.	1.7	52

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91	Characterization and modeling of electro-thermal frequency tuning in a mechanical resonator with integral crossbar heaters. Sensors and Actuators A: Physical, 2013, 202, 69-74.	2.0	7
92	Mechanically coupled SOI Lamé-mode resonator-arrays: Synchronized oscillations with high quality factors of 1 million. , 2013, , .		5
93	Anomalous DC-current-induced attenuation of Q factor in a silicon contour mode micromechanical resonator. , 2013, , .		3
94	The effects of tight capacitive coupling on phase noise performance: A Lamé-mode MEMS oscillator study. , 2013, , .		0
95	Enhanced piezoresistive sensing via synchronized oscillations in a mechanically coupled disk array. , 2013, , .		2
96	A parallel-class thermally-actuated micromechanical filter with tunable center frequency and bandwidth. , 2013, , .		0
97	Shear dependent nonlinear vibration in a high quality factor single crystal silicon micromechanical resonator. Applied Physics Letters, 2012, 101, 034102.	1.5	9
98	Characterization and modeling of a contour mode mechanical resonator using piezoresistive sensing with quasi-differential inputs. Journal of Micromechanics and Microengineering, 2012, 22, 125018.	1.5	8
99	Material nonlinearity limits on a Lamé-mode single crystal bulk resonator. , 2012, , .		2
100	Piezoresistive Sensing in a SOI Mechanically Coupled Micromechanical Multiple-Resonator Array. IEEE Transactions on Electron Devices, 2012, 59, 3091-3096.	1.6	11
101	Single-Device and On-Chip Feedthrough Cancellation for Hybrid MEMS Resonators. IEEE Transactions on Industrial Electronics, 2012, 59, 4930-4937.	5.2	48
102	Observations on Stability in a Carrier Injected SOI Piezoresistive Resonator. Procedia Engineering, 2012, 47, 969-972.	1.2	1
103	Benchmarking the passive differential input technique to shielded GSG probes. , 2012, , .		0
104	In situ study of thermal deformation of metal resistive heater on silicon nitride membrane by digital holographic microscopy. , 2012, , .		2
105	Study on thermoelastic dissipation in bulk mode resonators with etch holes. , 2012, , .		7
106	Reversed Nonlinear Oscillations in LamÃ©-Mode Single-Crystal-Silicon Microresonators. IEEE Electron Device Letters, 2012, 33, 1492-1494.	2.2	10
107	Frequency Tuning in a MEMS Resonator via an Integral Crossbar Heater. Procedia Engineering, 2012, 47, 949-952.	1.2	2
108	System-level circuit simulation of nonlinearity in micromechanical resonators. Sensors and Actuators A: Physical, 2012, 186, 15-20.	2.0	15

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109	Direct inference of parameters for piezoresistive micromechanical resonators embedded in feedthrough. Sensors and Actuators A: Physical, 2012, 186, 257-263.	2.0	11
110	Empirical Correlations between Quality Factor and Piezoresistive Gain with T-shaped Tether Variations in Bulk Mode Microresonators. Procedia Engineering, 2012, 47, 1001-1004.	1.2	0
111	Increased dissipation from distributed etch holes in a lateral breathing mode silicon micromechanical resonator. Applied Physics Letters, 2012, 101, .	1.5	14
112	Evidence on the impact of T-shaped tether variations on Q factor of bulk-mode square-plate resonators. , 2012, , .		4
113	Thermoelastic Dissipation in Etch-Hole Filled LamÃ© Bulk-Mode Silicon Microresonators. IEEE Electron Device Letters, 2012, 33, 450-452.	2.2	17
114	MEMS resonators in health monitoring prognostics. , 2011, , .		0
115	Study of lateral mode SOI-MEMS resonators for reduced anchor loss. Journal of Micromechanics and Microengineering, 2011, 21, 045010.	1.5	72
116	Simulating Nonlinearity in MEMS Resonators by a Charge Controlled Capacitor. Procedia Engineering, 2011, 25, 403-406.	1.2	3
117	Direct Parameter Extraction for Piezoresistively-sensed MEMS Resonators Embedded in Parasitic Capacitive Feedthrough. Procedia Engineering, 2011, 25, 515-518.	1.2	0
118	Differential-input piezoresistively-sensed square-extensional mode resonator for parasitic feedthrough cancellation. , 2011, , .		9
119	Direct parameter extraction in feedthrough-embedded capacitive MEMS resonators. Sensors and Actuators A: Physical, 2011, 167, 237-244.	2.0	47
120	Transduction Dependent Optimization of Electromechanical Parameters for Electrostatically Actuated MEMS/NEMS Resonators. Journal of Nanoscience and Nanotechnology, 2010, 10, 7533-7536.	0.9	0
121	Methods for enhanced electrical transduction and characterization of micromechanical resonators. Sensors and Actuators A: Physical, 2010, 158, 263-272.	2.0	49
122	Direct parameter extraction in capacitively transduced micromechanical resonators using the anti-resonance. , 2010, , .		3
123	Feedthrough cancellation in micromechanical square resonators via differential transduction. , 2010, , .		1
124	Design and prototyping of a MEMS-based crackmeter for structural monitoring. , 2009, , .		2
125	Enhancing parametric sensitivity using mode localization in electrically coupled MEMS resonators. , 2009, , .		9
126	Parasitic feedthrough cancellation techniques for enhanced electrical characterization of electrostatic microresonators. Sensors and Actuators A: Physical, 2009, 156, 36-42.	2.0	99

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127	5.4-MHz single-crystal silicon wine glass mode disk resonator with quality factor of 2 million. Sensors and Actuators A: Physical, 2009, 156, 28-35.	2.0	64
128	Low loss HF band SOI wine glass bulk mode capacitive square-plate resonator. Journal of Micromechanics and Microengineering, 2009, 19, 074003.	1.5	49
129	Enhanced transduction methods for electrostatically driven MEMS resonators. , 2009, , .		12
130	An axial strain modulated double-ended tuning fork electrometer. Sensors and Actuators A: Physical, 2008, 148, 395-400.	2.0	64
131	A Resonant Micromachined Electrostatic Charge Sensor. IEEE Sensors Journal, 2008, 8, 1499-1505.	2.4	26
132	A micromechanical electrometer approaching single-electron charge resolution at room temperature. Proceedings of the IEEE International Conference on Micro Electro Mechanical Systems (MEMS), 2008, , .	0.0	8
133	A Single-Crystal-Silicon Bulk-Acoustic-Mode Microresonator Oscillator. IEEE Electron Device Letters, 2008, 29, 701-703.	2.2	54
134	Square wine glass mode resonator with quality factor of 4 million. , 2008, , .		13
135	Binary Excitation of a High-Q Bulk Acoustic Microresonator by Actuation Polarity Inversion. , 2008, , .		0
136	Anchor limited Q in flexural mode resonators. , 2008, , .		8
137	Thin film monitoring with silicon bulk acoustic resonators. , 2008, , .		1
138	A bulk acoustic mode single-crystal silicon microresonator with a high-quality factor. Journal of Micromechanics and Microengineering, 2008, 18, 064001.	1.5	71
139	Room temperature electrometry with SUB-10 electron charge resolution. Journal of Micromechanics and Microengineering, 2008, 18, 025033.	1.5	36
140	System-level simulation of a micromachined electrometer using a time-domain variable capacitor circuit model. Journal of Micromechanics and Microengineering, 2007, 17, 1059-1065.	1.5	24
141	Sub-10e Charge Resolution for Room Temperature Electrometry. , 2007, , .		3
142	Ultrasensitive mass balance based on a bulk acoustic mode single-crystal silicon resonator. Applied Physics Letters, 2007, 91, .	1.5	53
143	MEMS Electrometer System Simulation using a Time-Domain Variable Capacitor Model. , 2007, , .		4