

# Sheng-Shian Li

## List of Publications by Year in descending order

Source: <https://exaly.com/author-pdf/9444852/publications.pdf>

Version: 2024-02-01

162  
papers

1,999  
citations

361413

20  
h-index

377865

34  
g-index

164  
all docs

164  
docs citations

164  
times ranked

1030  
citing authors

#	ARTICLE	IF	CITATIONS
1	Series-resonant VHF micromechanical resonator reference oscillators. IEEE Journal of Solid-State Circuits, 2004, 39, 2477-2491.	5.4	250
2	1.52-GHz micromechanical extensional wine-glass mode ring resonators. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2008, 55, 890-907.	3.0	83
3	A generalized CMOS-MEMS platform for micromechanical resonators monolithically integrated with circuits. Journal of Micromechanics and Microengineering, 2011, 21, 065012.	2.6	70
4	A Monolithic CMOS-MEMS Oscillator Based on an Ultra-Low-Power Ovenized Micromechanical Resonator. Journal of Microelectromechanical Systems, 2015, 24, 360-372.	2.5	70
5	Piezoelectric MEMS Resonators: A Review. IEEE Sensors Journal, 2021, 21, 12589-12605.	4.7	66
6	Micromechanical "hollow-disk" ring resonators. , 0, , .		58
7	An effective Pedestrian Dead Reckoning algorithm using a unified heading error model. , 2010, , .		50
8	An MSI Micromechanical Differential Disk-Array Filter. , 2007, , .		48
9	Advanced CMOS-MEMS Resonator Platform. IEEE Electron Device Letters, 2012, 33, 272-274.	3.9	43
10	Vibrating micromechanical resonators with solid dielectric capacitive transducer gaps. , 0, , .		42
11	Thermal-Piezoresistive SOI-MEMS Oscillators Based on a Fully Differential Mechanically Coupled Resonator Array for Mass Sensing Applications. Journal of Microelectromechanical Systems, 2018, 27, 59-72.	2.5	41
12	Low phase noise array-composite micromechanical wine-glass disk oscillator. , 0, , .		34
13	Mechanically coupled CMOS-MEMS free-free beam resonator arrays with enhanced power handling capability. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2012, 59, 346-357.	3.0	34
14	AlGaIn/GaN high electron mobility transistors for protein-peptide binding affinity study. Biosensors and Bioelectronics, 2013, 41, 717-722.	10.1	34
15	High-Q Integrated CMOS-MEMS Resonators With Deep-Submicrometer Gaps and Quasi-Linear Frequency Tuning. Journal of Microelectromechanical Systems, 2012, 21, 688-701.	2.5	31
16	A Sub-150- BEOL-Embedded CMOS-MEMS Oscillator With a 138-dB Ultra-Low-Noise TIA. IEEE Electron Device Letters, 2016, 37, 648-651.	3.9	29
17	A Thin-Film Piezoelectric-on-Silicon MEMS Oscillator for Mass Sensing Applications. IEEE Sensors Journal, 2020, 20, 7001-7009.	4.7	29
18	Realization of an ultra-sensitive hydrogen peroxide sensor with conductance change of horseradish peroxidase-immobilized polyaniline and investigation of the sensing mechanism. Biosensors and Bioelectronics, 2014, 55, 294-300.	10.1	28

#	ARTICLE	IF	CITATIONS
19	High-Q UHF Spoke-Supported Ring Resonators. Journal of Microelectromechanical Systems, 2016, 25, 11-29.	2.5	25
20	Design and Characterization of a Dual-Mode CMOS-MEMS Resonator for TCF Manipulation. Journal of Microelectromechanical Systems, 2015, 24, 446-457.	2.5	24
21	Design and Optimization of SHF Composite FBAR Resonators. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2017, 64, 1864-1873.	3.0	23
22	Analogy among microfluidics, micromechanics, and microelectronics. Lab on A Chip, 2013, 13, 3782.	6.0	22
23	A Fully Differential CMOS-MEMS DETF Oxide Resonator With $Q > 4800$ and Positive TCF. IEEE Electron Device Letters, 2012, 33, 721-723.	3.9	21
24	Temperature-Compensated CMOS-MEMS Oxide Resonators. Journal of Microelectromechanical Systems, 2013, 22, 1054-1065.	2.5	21
25	Foundry-CMOS integrated oscillator circuits based on ultra-low power ovenized CMOS-MEMS resonators. , 2013, , .		21
26	A CMOS-Integrated MEMS Platform for Frequency Stable Resonators-Part I: Fabrication, Implementation, and Characterization. Journal of Microelectromechanical Systems, 2019, 28, 744-754.	2.5	20
27	UHF micromechanical extensional wine-glass mode ring resonators. , 0, , .		19
28	Design and characterization of mechanically coupled CMOS-MEMS filters for channel-select applications. Sensors and Actuators A: Physical, 2014, 216, 394-404.	4.1	19
29	A Vertically Coupled MEMS Resonator Pair for Oscillator Applications. Journal of Microelectromechanical Systems, 2015, 24, 528-530.	2.5	19
30	Implementation of a CMOS-MEMS Filter Through a Mixed Electrical and Mechanical Coupling Scheme. Journal of Microelectromechanical Systems, 2016, 25, 262-274.	2.5	19
31	Differentially Piezoresistive Sensing for CMOS-MEMS Resonators. Journal of Microelectromechanical Systems, 2013, 22, 1361-1372.	2.5	18
32	A Fully Differential SOI-MEMS Thermal Piezoresistive Ring Oscillator in Liquid Environment Intended for Mass Sensing. IEEE Sensors Journal, 2019, 19, 7261-7268.	4.7	18
33	Improvement of CMOS-MEMS accelerometer using the symmetric layers stacking design. , 2011, , .		17
34	A CMOS-MEMS Thermal-Piezoresistive Oscillator for Mass Sensing Applications. IEEE Transactions on Electron Devices, 2020, 67, 1183-1191.	3.0	17
35	A Low-Voltage CMOS-Microelectromechanical Systems Thermal-Piezoresistive Resonator With $Q > 10,000$ . IEEE Electron Device Letters, 2015, 36, 192-194.	3.9	16
36	VHF CMOS-MEMS oxide resonators with $Q > 10,000$ . , 2012, , .		15

#	ARTICLE	IF	CITATIONS
37	Quality Factor Boosting via Mechanically-Coupled Arraying. , 2007, , .		14
38	A generalized foundry CMOS platform for capacitively-transduced resonators monolithically integrated with amplifiers. , 2010, , .		14
39	A PM2.5 Sensor Module Based on a TPoS MEMS Oscillator and an Aerosol Impactor. IEEE Sensors Journal, 2020, 20, 14722-14731.	4.7	14
40	Gated CMOS-MEMS thermal-piezoresistive oscillator-based PM2.5 sensor with enhanced particle collection efficiency. , 2018, , .		13
41	Piezoelectric-Based Support Transducer Design to Enable High-Performance Bulk Mode Resonators. Journal of Microelectromechanical Systems, 2019, 28, 4-13.	2.5	13
42	Bridged micromechanical filters. , 0, , .		12
43	Optimizing the close-to-carrier phase noise of monolithic CMOS-MEMS oscillators using bias-dependent nonlinearity. , 2014, , .		12
44	Real-time mass sensing and dynamic impact monitoring of printed pico-liter droplets realized by a thermal-piezoresistive self-sustained oscillator. , 2016, , .		12
45	Q-enhanced Lithium Niobate SH0 Resonators with Optimized Acoustic Boundaries. , 2019, , .		12
46	A CMOS-MEMS Resonator Integrated System for Oscillator Application. IEEE Sensors Journal, 2013, 13, 2882-2889.	4.7	11
47	A VHF temperature compensated lithium niobate-on-oxide resonator with $Q > 3900$ for low phase noise oscillators. , 2018, , .		11
48	Quality factor boosting of bulk acoustic wave resonators based on a two dimensional array of high- $Q$ resonant tanks. Applied Physics Letters, 2020, 116, .	3.3	11
49	High- $Q$ Support Transducer MEMS Resonators Enabled Low-Phase-Noise Oscillators. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2021, 68, 1387-1398.	3.0	11
50	Self-switching vibrating micromechanical filter bank. , 0, , .		10
51	Realizing Deep-Submicron Gap Spacing for CMOS-MEMS Resonators. IEEE Sensors Journal, 2012, 12, 3399-3407.	4.7	10
52	CMOS-MEMS resonators and their applications. , 2013, , .		10
53	A CMOS-MEMS arrayed resonant-gate field effect transistor (RGFET) oscillator. Journal of Micromechanics and Microengineering, 2015, 25, 115025.	2.6	10
54	Electronic hydroxyl radical microsensors based on the conductivity change of polyaniline. Sensors and Actuators B: Chemical, 2015, 208, 99-105.	7.8	10

#	ARTICLE	IF	CITATIONS
55	A CMOS-Integrated MEMS Platform for Frequency Stable Resonators Part II: Design and Analysis. Journal of Microelectromechanical Systems, 2019, 28, 755-765.	2.5	10
56	Disk-Array Design for Suppression of Unwanted Modes in Micromechanical Composite-Array Filters. , 0, , .		9
57	A reliable CMOS-MEMS platform for titanium nitride composite (TiN-C) resonant transducers with enhanced electrostatic transduction and frequency stability. , 2015, , .		9
58	A single-chip oscillator based on a deep-submicron gap CMOS-MEMS resonator array with a high-stiffness driving scheme. , 2015, , .		9
59	CMOS-MEMS thermal-piezoresistive oscillators with high transduction efficiency for mass sensing applications. , 2017, , .		9
60	A Micromechanical Parallel-Class Disk-Array Filter. Frequency Control Symposium and Exhibition, Proceedings of the IEEE International, 2007, , .	0.0	8
61	Realizing deep-submicron gap spacing for CMOS-MEMS resonators with frequency tuning capability via modulated boundary conditions. , 2010, , .		8
62	A balanced measurement and characterization technique for thermal-piezoresistive micromechanical resonators. , 2012, , .		8
63	Temperature coefficient of frequency modeling for CMOS-MEMS bulk mode composite resonators. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2015, 62, 1166-1178.	3.0	8
64	A Study on the Design Parameters for MEMS Oscillators Incorporating Nonlinearities. IEEE Transactions on Circuits and Systems I: Regular Papers, 2018, 65, 3424-3434.	5.4	8
65	A Low Impedance CMOS-MEMS Capacitive Resonator Based on Metal-Insulator-Metal (MIM) Capacitor Structure. IEEE Electron Device Letters, 2021, 42, 1045-1048.	3.9	8
66	Design of Piezoelectric MEMS Accelerometer Module and its Application in Surface Roughness Prediction of Fused Silica Substrate. IEEE Sensors Journal, 2021, 21, 21979-21988.	4.7	8
67	Third-order intermodulation distortion in capacitively-driven VHF micromechanical resonators. , 0, , .		7
68	Thermally-actuated and piezoresistively-sensed CMOS-MEMS resonator array using differential-mode operation. , 2012, , .		7
69	Enhancement of temperature stability via constant-structural-resistance control for MEMS resonators. , 2013, , .		7
70	Effects of CF <sub>4</sub> Plasma Treatment on pH and pNa Sensing Properties of Light-Addressable Potentiometric Sensor with a 2-nm-Thick Sensitive HfO <sub>2</sub> Layer Grown by Atomic Layer Deposition. Japanese Journal of Applied Physics, 2011, 50, 04DL06.	1.5	6
71	Quasi-linear frequency tuning for CMOS-MEMS resonators. , 2011, , .		6
72	Fabrication and characterization of a charge-biased CMOS-MEMS resonant gate field effect transistor. Journal of Micromechanics and Microengineering, 2014, 24, 095005.	2.6	6

#	ARTICLE	IF	CITATIONS
73	A self-sustained nanomechanical thermal-piezoresistive oscillator with ultra-low power consumption. , 2014, , .		6
74	Investigation of C-terminal domain of SARS nucleocapsid proteinâ€™Duplex DNA interaction using transistors and binding-site models. Sensors and Actuators B: Chemical, 2014, 193, 334-339.	7.8	6
75	Exploring the Q-factor limit of temperature compensated CMOS-MEMS resonators. , 2015, , .		6
76	A 1 MHz 4 ppm CMOS-MEMS oscillator with built-in self-test and sub-mW ovenization power. , 2016, , .		6
77	Copper Like Thermal Conductivity and Silicon Like Coefficient of Thermal Expansion Copper Graphene for High Power IGBT by Metal Injection Molding. Materials Transactions, 2018, 59, 1677-1683.	1.2	6
78	A chip-scale frequency down-conversion realized by MEMS-based filter and local oscillator. Sensors and Actuators A: Physical, 2020, 302, 111787.	4.1	6
79	Balanced Drive and Sense CMOS Thermal Piezoresistive Resonators and Oscillators. IEEE Electron Device Letters, 2021, 42, 232-235.	3.9	6
80	Spurious mode suppression in UHF micromechanical extensional wine-glass ring resonators. , 0, , .		5
81	CMOS-MEMS transverse-mode square plate resonator with high Q and low motional impedance. , 2011, , .		5
82	High-stiffness driven micromechanical resonators with enhanced power handling. Applied Physics Letters, 2012, 100, .	3.3	5
83	Combined electrical and mechanical coupling for mode-reconfigurable CMOS-MEMS filters. , 2014, , .		5
84	An effective temperature compensation algorithm for CMOS-MEMS thermal-piezoresistive oscillators with SUB PPM/Å°C thermal stability. , 2017, , .		5
85	A miniaturized aerosol sensor implemented by a silicon-based MEMS thermal-piezoresistive oscillator. , 2017, , .		5
86	Phase Noise Optimization of Piezoelectric Bulk Mode MEMS Oscillators Based on Phase Feedback in Secondary Loop. , 2022, , .		5
87	Charge-biased vibrating micromechanical resonators. , 0, , .		4
88	High-Q, large-stopband-rejection integrated CMOS-MEMS oxide resonators with embedded metal electrodes. , 2011, , .		4
89	A fully-differential CMOS-MEMS resonator integrated with an on-chip amplifier. , 2012, , .		4
90	Electroplated Ni-CNT Nanocomposite for Micromechanical Resonator Applications. IEEE Electron Device Letters, 2012, 33, 872-874.	3.9	4

#	ARTICLE	IF	CITATIONS
91	Capacitively-driven and piezoresistively-sensed CMOS-MEMS resonators. , 2012, , .		4
92	An ultra-low power ovenized CMOS-MEMS resonator monolithically integrated with interface circuits. , 2013, , .		4
93	Design and characterization of mechanically-coupled CMOS-MEMS filters. , 2013, , .		4
94	Multimode characteristics of high-frequency CMOS-MEMS resonators. , 2014, , .		4
95	Cost-effective and highly sensitive cholesterol microsensors with fast response based on the enzyme-induced conductivity change of polyaniline. Applied Physics Letters, 2014, 105, .	3.3	4
96	Differentially piezoresistive transduction of high-q encapsulated SOI-MEMS resonators with sub-100 nm gaps. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2015, 62, 220-229.	3.0	4
97	Performance evaluation of CMOS-MEMS thermal-piezoresistive resonators in ambient pressure for sensor applications. , 2015, , .		4
98	Fabrication and characterization of lithium-niobate thin film MEMS piezoelectric resonators. , 2016, , .		4
99	An ovenized CMOS-MEMS oscillator with isothermal resonator and sub-mW heating power. , 2016, , .		4
100	3-GHz BAW composite resonators integrated with CMOS in a single-chip configuration. , 2016, , .		4
101	A key more-than-moore technology: CMOS-MEMS resonant transducers. , 2016, , .		4
102	An innovative 3-D mechanically-coupled array design for MEMS resonator and oscillators. , 2017, , .		4
103	A novel transducer design to enable high-performance piezoelectric MEMS resonators and oscillators. , 2018, , .		4
104	Metal Injected Copper Carbon Nanotube Composite Material with High Thermal Conductivity and Low CTE for IGBT Power Modules. Materials Transactions, 2018, 59, 1251-1258.	1.2	4
105	Conceptual Design of a Resonant Pirani Gauge Toward Wide-Range Pressure Sensing. , 2019, 3, 1-4.		4
106	Piezoelectric MEMS Vibration Sensor Module for Machining Quality Prediction. , 2020, , .		4
107	Controllable multichannel acousto-optic modulator and frequency synthesizer enabled by nonlinear MEMS resonator. Scientific Reports, 2021, 11, 10898.	3.3	4
108	Detection of Polystyrene Beads Concentration Using an SOI-MEMS Differential Rotational Thermal Piezoresistive Resonator for Future Label-Free Biosensing Applications. IEEE Sensors Journal, 2021, 21, 21400-21409.	4.7	4

#	ARTICLE	IF	CITATIONS
109	A Compact Monolithic CMUT Receiver Front-End in a TiN-C CMOS-MEMS Platform. , 2020, , .		4
110	Small percent bandwidth design of a 423-MHz notch-coupled micromechanical mixer. , 0, , .		3
111	UHF Micromechanical Compound-(2,4) Mode Ring Resonators With Solid-Gap Transducers. Frequency Control Symposium and Exhibition, Proceedings of the IEEE International, 2007, , .	0.0	3
112	High-q integrated CMOS-MEMS resonators with deep-submicron gaps. , 2010, , .		3
113	A piezoresistive CMOS-MEMS resonator with high Q and low TC<math>\frac{\Delta f}{f}</math>. , 2013, , .		3
114	A CMOS-MEMS resonant gate field effect transistor. , 2013, , .		3
115	A mode-matching 130-kHz ring-coupled gyroscope with 225 ppm initial driving/sensing mode frequency splitting. , 2015, , .		3
116	Transduction comparison of a resonant transducer realized in a commercially available CMOS-MEMS platform. , 2015, , .		3
117	A ring-down technique implemented in CMOS-MEMS resonator circuits for wide-range pressure sensing applications. , 2016, , .		3
118	An innovative piezo-MEMS channel-select filter design based on non-monotonic coupled modes. , 2017, , .		3
119	Exploration and Realization of Novel High- $Q$ Bulk Modes Using Support Transducer Topology. Journal of Microelectromechanical Systems, 2021, 30, 696-702.	2.5	3
120	Post-fabrication laser trinning of nflcromechanical filters. , 0, , .		2
121	Mechanically-coupled CMOS-MEMS free-free beam resonator arrays with two-port configuration. , 2011, , .		2
122	Differential measurement of piezoresistive transduction for silicon-based MEMS resonators. , 2012, , .		2
123	High-stiffness-driven micromechanical resonator oscillator with enhanced phase noise performance. , 2012, , .		2
124	A 17.6-MHz 2.5V ultra-low polarization voltage MEMS oscillator using an innovative high gain-bandwidth fully differential trans-impedance voltage amplifier. , 2013, , .		2
125	Viscosity-dependent drain current noise of AlGaIn/GaN high electron mobility transistor in polar liquids. Journal of Applied Physics, 2013, 114, 204503.	2.5	2
126	A Novel Ultra-Low Detection Limit Hydrogen Peroxide Sensor Based on Horseradish Peroxidase Immobilized Polyaniline Film. ECS Transactions, 2014, 64, 45-50.	0.5	2



#	ARTICLE	IF	CITATIONS
127	Statistical characterizat on of a CMOS-MEMS resonator for monolithic ovenized oscillator applications. , 2015, , .		2
128	An 8V 50 <sup>1</sup> / <sub>4</sub> W 1.2MHz CMOS-MEMS oscillator. , 2016, , .		2
129	Modeling of zero TCF and maximum bandwidth orientation for Lithium Tantalate RF MEMS resonators. , 2016, , .		2
130	An apodized 3-GHz thin film piezoelectric on substrate FBAR. , 2017, , .		2
131	Interface Circuit Design to Enable Miniaturization of Thermal-Piezoresistive Oscillators for Mass Sensing Applications. , 2019, , .		2
132	Exploring the Parametric Energy Transfer in a Multi-Mode Piezoelectric Resonator with Nonlinear Harmonics. , 2020, , .		2
133	A Monolithic Tri-axis MEMS Gyroscope Operating in Air. , 2020, , .		2
134	CMOS-MEMS Resonant Transducers for Frequency Control and Sensing. , 2020, , .		2
135	Design of Piezoelectric MEMS Bulk Acoustic Wave Mode-Matched Gyroscopes Based on Support Transducer. , 2021, , .		2
136	Standard CMOS Integrated Ultra-Compact Micromechanical Oscillating Active Pixel Arrays. , 2021, , .		2
137	A Novel Thermal Piezoresistive Coupled Resonator Implementing Mode Localization for Mass Sensing. , 2020, , .		2
138	5V-Bias Cmos-Mems Capacitive Resonator with $R_{sub}M$ &lt; 5K <sup>1</sup> © Based On Metal-Insulator-Metal (Mim) Capacitor. , 2022, , .		2
139	Sensitivity Enhancement of Thermal Piezoresistive Resonant MEMS Sensors Using Mechanical Coupling and DC Tuning. Journal of Microelectromechanical Systems, 2022, 31, 760-770.	2.5	2
140	Advances of CMOS-MEMS technology for resonator applications. , 2013, , .		1
141	Enhanced temperature sensitivity of a single CMOS-MEMS resonator via resonant modes in orthogonal axes. , 2013, , .		1
142	Sensitivity improvement of a resonant 3-axis magnetometer using dual mass vibrating system. , 2014, , .		1
143	Exploring parametric resonance effects in bulk-mode CMOS-MEMS resonators. , 2014, , .		1
144	A CMOS-MEMS arrayed RGFET oscillator using a band-to-band tunneling bias scheme. , 2015, , .		1

#	ARTICLE	IF	CITATIONS
145	A Generic TiN-C Process for CMOS FEOL/BEOL-Embedded Vertically-Coupled Capacitive and Piezoresistive Resonators. , 2019, , .		1
146	A Fully Differential Thin Film Piezo on Silicon Flexural Mode Ring Resonator with Exceptional Quality Factor. , 2019, , .		1
147	A Miniaturized PM2.5 Sensor Module Based on a Thin-Film Piezoelectric-on-Silicon MEMS Oscillator. , 2021, , .		1
148	A CMOS-MEMS Thermal-Piezoresistive Oscillator Implemented for Wide-Range Pressure Sensing Applications. , 2021, , .		1
149	Nonlinearity Driven Higher Order Harmonics in CMOS-MEMS Resonators. , 2020, , .		1
150	Development of Rolling Bearing Health Diagnosis and Prediction System Using MEMS Accelerometer Vibration Sensing Module. , 2022, , .		1
151	Investigation of support transducer enabled higher-order radial bulk mode MEMS resonator and low phase noise oscillator. Journal of Micromechanics and Microengineering, 2022, 32, 084004.	2.6	1
152	A low-actuation voltage design for RF CMOS-MEMS switches. , 2012, , .		0
153	The effects of tight capacitive coupling on phase noise performance: A Lam&#x00E9;-mode MEMS oscillator study. , 2013, , .		0
154	A CMOS-MEMS arrayed RGFET. , 2014, , .		0
155	An experimental investigation on the Q-boosted CMOS-MEMS flexural-mode resonator circuits. , 2014, , .		0
156	Effects of pressure and bias voltage on the phase noise of CMOS-MEMS oscillators. , 2015, , .		0
157	Acceleration-insensitive fully-decoupled tuning fork (FDTF) MEMS vibratory gyroscope with 1Â°/HR BIAS instability. , 2016, , .		0
158	A Fully-Differential CMOS-MEMS DETF Resonator Design with Extended Mass and Electrodes to Enable High Power Handling. , 2019, , .		0
159	A Sub-mW/Pixel Zero-Bias CMUT-in-CMOS Receiver Front-End with TiN Electrode. , 2020, , .		0
160	CMOS-MEMS Resonators. , 2016, , 557-574.		0
161	Low Phase Noise Wine-Glass Oscillator Realized Using Enhanced Support Transducer Design. , 2020, , .		0
162	CMOS-MEMS Thermal-Piezoresistive Resonators and Oscillators for Sensors. Frontiers in Mechanical Engineering, 0, 8, .	1.8	0