Farrokh Ayazi

List of Publications by Year
in descending order

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105 papers	3,771 citations	147801 31 h-index	144013 57 g-index
106 all docs	106 docs citations	106 times ranked	2202 citing authors

#	Article	IF	Citations
1	An analytical model for support loss in micromachined beam resonators with in-plane flexural vibrations. Sensors and Actuators A: Physical, 2003, 109, 156-164.	4.1	328
2	Piezoelectric-on-Silicon Lateral Bulk Acoustic Wave Micromechanical Resonators. Journal of Microelectromechanical Systems, 2008, 17, 512-520.	2.5	261
3	A Mode-Matched Silicon-Yaw Tuning-Fork Gyroscope With Subdegree-Per-Hour Allan Deviation Bias Instability. Journal of Microelectromechanical Systems, 2008, 17, 1526-1536.	2.5	148
4	Low-Impedance VHF and UHF Capacitive Silicon Bulk Acoustic Wave Resonatorsâ€”Part I: Concept and Fabrication. IEEE Transactions on Electron Devices, 2007, 54, 2017-2023.	3.0	138
5	A Sub-0.2$^{circ}/$hr Bias Drift Micromechanical Silicon Gyroscope With Automatic CMOS Mode-Matching. IEEE Journal of Solid-State Circuits, 2009, 44, 1593-1608.	5.4	130
6	An advanced reactive ion etching process for very high aspect-ratio sub-micron wide trenches in silicon. Sensors and Actuators A: Physical, 2008, 144, 109-116.	4.1	118
7	Sub-Micro-Gravity In-Plane Accelerometers With Reduced Capacitive Gaps and Extra Seismic Mass. Journal of Microelectromechanical Systems, 2007, 16, 1036-1043.	2.5	114
8	Temperature-Stable Silicon Oxide (SilOx) Micromechanical Resonators. IEEE Transactions on Electron Devices, 2013, 60, 2656-2663.	3.0	113
9	Electronically Temperature Compensated Silicon Bulk Acoustic Resonator Reference Oscillators. IEEE Journal of Solid-State Circuits, 2007, 42, 1425-1434.	5.4	102
10	Voltage-tunable piezoelectrically-transduced single-crystal silicon micromechanical resonators. Sensors and Actuators A: Physical, 2004, 111, 71-78.	4.1	95
11	A 104-dB Dynamic Range Transimpedance-Based CMOS ASIC for Tuning Fork Microgyroscopes. IEEE Journal of Solid-State Circuits, 2007, 42, 1790-1802.	5.4	95
12	A 4.5-mW Closed-Loop $DeltaSigma$ Micro-Gravity CMOS SOI Accelerometer. IEEE Journal of Solid-State Circuits, 2006, 41, 2983-2991.	5.4	93
13	A Film Bulk Acoustic Resonator Based on Ferroelectric Aluminum Scandium Nitride Films. Journal of Microelectromechanical Systems, 2020, 29, 741-747.	2.5	84
14	Micro-gravity capacitive silicon-on-insulator accelerometers. Journal of Micromechanics and Microengineering, 2005, 15, 2113-2120.	2.6	77
15	Substrate-decoupled, bulk-acoustic wave gyroscopes: Design and evaluation of next-generation environmentally robust devices. Microsystems and Nanoengineering, 2016, 2, 16015.	7.0	67
16	A 76 dB$Omega $ 1.7 GHz 0.18 mum CMOS Tunable TIA Using Broadband Current Pre-Amplifier for High Frequency Lateral MEMS Oscillators. IEEE Journal of Solid-State Circuits, 2011, 46, 224-235.	5.4	66
17	High-frequency monolithic thin-film piezoelectric-on-substrate filters. International Journal of Microwave and Wireless Technologies, 2009, 1, 29-35.	1.9	65
18	Support loss in the radial bulk-mode vibrations of center-supported micromechanical disk resonators. Sensors and Actuators A: Physical, 2007, 134, 582-593.	4.1	64

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19	Micromechanical IBARs: Tunable High-Q Resonators for Temperature-Compensated Reference Oscillators. Journal of Microelectromechanical Systems, 2010, 19, 503-515.	2.5	62
20	Temperature compensation of silicon micromechanical resonators via degenerate doping. , 2009, , .		60
21	Electrically coupled MEMS bandpass filters. Sensors and Actuators A: Physical, 2005, 122, 307-316.	4.1	59
22	Wafer-level MEMS packaging via thermally released metal-organic membranes. Journal of Micromechanics and Microengineering, 2006, 16, 742-750.	2.6	54
23	Low-Impedance VHF and UHF Capacitive Silicon Bulk Acoustic-Wave Resonatorsâ€"Part II: Measurement and Characterization. IEEE Transactions on Electron Devices, 2007, 54, 2024-2030.	3.0	51
24	A 0.1°/HR bias drift electronically matched tuning fork microgyroscope. Proceedings of the IEEE International Conference on Micro Electro Mechanical Systems (MEMS), 2008, , .	0.0	48
25	A Polysilicon Microhemispherical Resonating Gyroscope. Journal of Microelectromechanical Systems, 2014, 23, 762-764.	2.5	47
26	Performance Analysis of Gyroscope and Accelerometer Sensors for Seismocardiography-Based Wearable Pre-Ejection Period Estimation. IEEE Journal of Biomedical and Health Informatics, 2019, 23, 2365-2374.	6.3	44
27	MEMS Switched Tunable Inductors. Journal of Microelectromechanical Systems, 2008, 17, 78-84.	2.5	43
28	Dual-Mode AlN-on-Silicon Micromechanical Resonators for Temperature Sensing. IEEE Transactions on Electron Devices, 2014, 61, 591-597.	3.0	42
29	Capacitive Bulk Acoustic Wave Silicon Disk Gyroscopes. , 2006, , .		40
30	High-Density Embedded Deep Trench Capacitors in Silicon With Enhanced Breakdown Voltage. IEEE Transactions on Components and Packaging Technologies, 2009, 32, 808-815.	1.3	39
31	High aspect-ratio polysilicon micromachining technology. Sensors and Actuators A: Physical, 2000, 87, 46-51.	4.1	38
32	High-Frequency AlN-on-Silicon Resonant Square Gyroscopes. Journal of Microelectromechanical Systems, 2013, 22, 1007-1009.	2.5	36
33	A Low Phase Noise 100MHz Silicon BAW Reference Oscillator. , 2006, , .		34
34	Wafer-Level Packaging of Micromechanical Resonators. IEEE Transactions on Advanced Packaging, 2007, 30, 19-26.	1.6	34
35	High-frequency capacitive disk gyroscopes in (100) and (111) silicon. , 2007, , .		33
36	The Resonating Star Gyroscope: A Novel Multiple-Shell Silicon Gyroscope With Sub-5 deg/hr Allan Deviation Bias Instability. IEEE Sensors Journal, 2009, 9, 616-624.	4.7	32

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37	High-order composite bulk acoustic resonators. , 2007, , .		31
38	A Dual-Mode Actuation and Sensing Scheme for In-Run Calibration of Bias and Scale Factor Errors in Axisymmetric Resonant Gyroscopes. IEEE Sensors Journal, 2018, 18, 1993-2005.	4.7	31
39	Resonant pitch and roll silicon gyroscopes with sub-micron-gap slanted electrodes: Breaking the barrier toward high-performance monolithic inertial measurement units. Microsystems and Nanoengineering, 2017, 3, 16092.	7.0	30
40	Electronic Temperature Compensation of Lateral Bulk Acoustic Resonator Reference Oscillators Using Enhanced Series Tuning Technique. IEEE Journal of Solid-State Circuits, 2012, 47, 1381-1393.	5.4	29
41	An Empirical Phase-Noise Model for MEMS Oscillators Operating in Nonlinear Regime. IEEE Transactions on Circuits and Systems I: Regular Papers, 2012, 59, 979-988.	5.4	28
42	Bulk and Surface Thermoelastic Dissipation in Micro-Hemispherical Shell Resonators. Journal of Microelectromechanical Systems, 2015, 24, 486-502.	2.5	28
43	An FPGA-Based Interface System for High-Frequency Bulk-Acoustic-Wave Microgyroscopes With In-Run Automatic Mode-Matching. IEEE Transactions on Instrumentation and Measurement, 2020, 69, 1783-1793.	4.7	28
44	Monocrystalline Silicon Carbide Disk Resonators on Phononic Crystals with Ultra-Low Dissipation Bulk Acoustic Wave Modes. Scientific Reports, 2019, 9, 18698.	3.3	27
45	A 3D-HARPSS Polysilicon Microhemispherical Shell Resonating Gyroscope: Design, Fabrication, and Characterization. IEEE Sensors Journal, 2015, 15, 4974-4985.	4.7	26
46	A Digital Phase Demodulation Technique for Resonant MEMS Gyroscopes. IEEE Sensors Journal, 2014, 14, 3260-3266.	4.7	24
47	Energy dissipation in micromechanical resonators. Proceedings of SPIE, 2011, , .	0.8	21
48	Postfabrication Electrical Trimming of Silicon Micromechanical Resonators via Joule Heating. Journal of Microelectromechanical Systems, 2011, 20, 1081-1088.	2.5	20
49	Characterization of high-Qspiral inductors on thick insulator-on-silicon. Journal of Micromechanics and Microengineering, 2005, 15, 2105-2112.	2.6	19
50	Localized Eutectic Trimming of Polysilicon Microhemispherical Resonating Gyroscopes. IEEE Sensors Journal, 2014, 14, 3498-3505.	4.7	19
51	Low-Pressure Wafer-Level-Packaged Capacitive Accelerometers With High Dynamic Range and Wide Bandwidth Using Nano-Gap Sloped Electrode Design. Journal of Microelectromechanical Systems, 2017, 26, 1335-1344.	2.5	19
52	Eigenmode operation of piezoelectric resonant gyroscopes. Microsystems and Nanoengineering, 2020, 6, 108.	7.0	19
53	A High-Frequency Resonant Framed-Annulus Pitch or Roll Gyroscope for Robust High-Performance Single-Chip Inertial Measurement Units. Journal of Microelectromechanical Systems, 2018, 27, 995-1008.	2.5	18
54	A 145MHz low phase-noise capacitive silicon micromechanical oscillator. , 2008, , .		17

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55	Cascaded collimator for atomic beams traveling in planar silicon devices. Nature Communications, 2019, 10, 1831.	12.8	17
56	High Performance Inductors on CMOS-Grade Trenched Silicon Substrate. IEEE Transactions on Components and Packaging Technologies, 2008, 31, 126-134.	1.3	16
57	High-Q Micromachined Silver Passives and Filters. , 2006, , .		15
58	Micromechanical IBARs: Modeling and Process Compensation. Journal of Microelectromechanical Systems, 2010, 19, 516-525.	2.5	15
59	A Low-Voltage Temperature-Stable Micromechanical Piezoelectric Oscillator. , 2007, , .		14
60	Lamb Waves and Resonant Modes in Rectangular-Bar Silicon Resonators. Journal of Microelectromechanical Systems, 2010, 19, 827-839.	2.5	14
61	Process compensated CMOS temperature sensor for microprocessor application. , 2012, , .		14
62	Low motional impedance distributed LamÃ© mode resonators for high frequency timing applications. Microsystems and Nanoengineering, 2020, 6, 53.	7.0	14
63	Monolithic Thin-Film Piezoelectric-on-Substrate Filters. IEEE MTT-S International Microwave Symposium Digest IEEE MTT-S International Microwave Symposium, 2007, , .	0.0	13
64	Single-Resonator Dual-Frequency Thin-Film Piezoelectric-on-Substrate Oscillator. , 2007, , .		12
65	Acoustically-engineered multi-port AlN-on-silicon resonators for accurate temperature sensing. , 2013, , .		12
66	An Integrated 800-MHz Coupled-Resonator Tunable Bandpass Filter in Silver With a Constant Bandwidth. Journal of Microelectromechanical Systems, 2009, 18, 942-949.	2.5	11
67	High-<inline-formula> <tex-math notation="LaTeX">Q </tex-math></inline-formula> AlN-on-Silicon Resonators With Annexed Platforms for Portable Integrated VOC Sensing. Journal of Microelectromechanical Systems, 2015, 24, 503-509.	2.5	11
68	Wafer-Level Encapsulation and Sealing of Electrostatic HARPSS Transducers. , 2007, , .		10
69	Dual-mode piezo-on-silicon resonant temperature and humidity sensor for portable air quality monitoring systems. , 2010, , .		10
70	Gyroscope sensing and self-calibration architecture based on signal phase shift. Sensors and Actuators A: Physical, 2016, 241, 1-11.	4.1	10
71	High-Q monocrystalline silicon carbide disk resonators fabricated using drie of thick SiC-on-insulator substrates. , 2018, , .		10
72	The HARPSS process for fabrication of precision MEMS inertial sensors. Mechatronics, 2002, 12, 1185-1199.	3.3	9

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73	A Temperature-Compensated ZnO-on-Diamond Resonant Mass Sensor. , 2006, , .		9
74	Investigating Elastic Anisotropy of 4H-SiC Using Ultra-High Q Bulk Acoustic Wave Resonators. Journal of Microelectromechanical Systems, 2020, 29, 1473-1482.	2.5	9
75	Self-polarized capacitive silicon micromechanical resonators via charge trapping. , 2010, , .		8
76	Intrinsic temperature compensation of highly resistive high-Q silicon microresonators via charge carrier depletion. , 2010, , .		8
77	A High-$k_{t}{}^{2}$ Switchable Ferroelectric Al_{0.7}Sc_{0.3}N Film Bulk Acoustic Resonator. , 2020, , .		8
78	A digital force-to-rebalance scheme for high-frequency bulk-acoustic-wave micro-gyroscopes. Sensors and Actuators A: Physical, 2020, 313, 112181.	4.1	8
79	A 104dB SNDR Transimpedance-based CMOS ASIC for Tuning Fork Microgyroscopes. , 2006, , .		7
80	Microscale pierced shallow shell resonators: A test vehicle to study surface loss. , 2017, , .		7
81	Monocrystalline 4H Silicon Carbide-on-Insulator Substrates for Nav-Grade Planar BAW Gyroscopes. , 2021, , .		7
82	High frequency XYZ-axis single-disk silicon gyroscope. Proceedings of the IEEE International Conference on Micro Electro Mechanical Systems (MEMS), 2008, , .	0.0	6
83	Highly-symmetric silicon dioxide shallow shell resonators with angstrom-level roughness. , 2015, , .		6
84	A temperature compensated biaxial eFM accelerometer in Epi-seal process. Sensors and Actuators A: Physical, 2021, 330, 112860.	4.1	6
85	High-Q Tunable Silver Capacitors for RFIC's. , 2007, , .		5
86	Process compensated micromechanical resonators. , 2007, , .		5
87	A Smart Angular Rate Sensor System. , 2007, , .		5
88	Low-loss MEMS band-pass filters with improved out-of-band rejection by exploiting inductive parasitics. , 2009, , .		5
89	Eutectic trimming of polysilicon micro hemispherical resonating Gyroscope. , 2013, , .		5
90	Finite Ground Coplanar Lines on CMOS Grade Silicon with a Thick Embedded Silicon Oxide Layer Using Micromachining Techniques. , 2003, , .		4

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91	An electronically temperature-compensated 427MHz low phase-noise AlN-on-Si micromechanical reference oscillator. , 2010, , .		4
92	Linear acoustic bandgap arrays for spurious mode suppression in piezoelectric MEMS resonators. , 2011, , .		4
93	Tunable silicon bulk acoustic resonators with multi-face AlN transduction. , 2011, , .		4
94	(Invited) Nano-Precision Deep Reactive Ion Etching of Monocrystalline 4H-SiCOI for Bulk Acoustic Wave Resonators with Ultra-Low Dissipation. ECS Transactions, 2020, 97, 3-13.	0.5	4
95	Robust characterization of microfabricated atomic beams on a six-month time scale. Physical Review Research, 2020, 2, .	3.6	4
96	CMOS-Compatible Encapsulated Silver Bandpass Filters. IEEE MTT-S International Microwave Symposium Digest IEEE MTT-S International Microwave Symposium, 2007, , .	0.0	3
97	SiGe digital frequency dividers with reduced residual phase noise. , 2009, , .		3
98	A Band-Reject Nested-PLL Clock Cleaner Using a Tunable MEMS Oscillator. IEEE Transactions on Circuits and Systems I: Regular Papers, 2014, 61, 653-662.	5.4	3
99	Threeâ€dimensional, ultraâ€wideband micromachined millimetreâ€wave hemispherical shell antenna: theoretical concept and calibration. IET Microwaves, Antennas and Propagation, 2016, 10, 525-535.	1.4	3
100	Multiple-frequency thickness-mode thin-film piezoelectric-on-substrate filter array. , 2008, , .		2
101	Compensation, Tuning, and Trimming of MEMS Resonators. Advanced Micro & Nanosystems, 0, , 305-325.	0.2	2
102	Compact parametric model of capacitive BAW resonators. , 2011, , .		0
103	A 100 MHz MEMS SiBAR phase modulator for quadrature phase shift keying. , 2012, , .		0
104	Temperature compensated MEMS oscillator using structural resistance based temperature sensing. , 2015, , .		0
105	(Invited) Nano-Precision Deep Reactive Ion Etching of Monocrystalline 4H-SiCOI for Bulk Acoustic Wave Resonators with Ultra-Low Dissipation. ECS Meeting Abstracts, 2020, MA2020-01, 1333-1333.	0.0	0