

Alan T Zehnder

List of Publications by Year in descending order

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141
papers

3,092
citations

147801

31
h-index

197818

49
g-index

152
all docs

152
docs citations

152
times ranked

2068
citing authors

#	ARTICLE	IF	CITATIONS
1	On the temperature distribution at the vicinity of dynamically propagating cracks in 4340 steel. Journal of the Mechanics and Physics of Solids, 1991, 39, 385-415.	4.8	159
2	Velocity field for the trishear model. Journal of Structural Geology, 2000, 22, 1009-1014.	2.3	129
3	Optically pumped parametric amplification for micromechanical oscillators. Applied Physics Letters, 2001, 78, 3142-3144.	3.3	115
4	Dynamic fracture initiation and propagation in 4340 steel under impact loading. International Journal of Fracture, 1990, 43, 271-285.	2.2	103
5	Autoparametric optical drive for micromechanical oscillators. Applied Physics Letters, 2001, 79, 695-697.	3.3	92
6	Limit Cycle Oscillations in CW Laser-Driven NEMS. Journal of Microelectromechanical Systems, 2004, 13, 1018-1026.	2.5	84
7	A model for the heating due to plastic work. Mechanics Research Communications, 1991, 18, 23-28.	1.8	79
8	A theory for the fracture of thin plates subjected to bending and twisting moments. International Journal of Fracture, 1993, 61, 211-229.	2.2	76
9	Frequency entrainment for micromechanical oscillator. Applied Physics Letters, 2003, 83, 3281-3283.	3.3	73
10	Mechanical models of fault propagation folds and comparison to the trishear kinematic model. Journal of Structural Geology, 2003, 25, 1-18.	2.3	68
11	Fracture Mechanics of Thin Plates and Shells Under Combined Membrane, Bending, and Twisting Loads. Applied Mechanics Reviews, 2005, 58, 37-48.	10.1	68
12	Interface shear stresses induced by non-uniform heating of a film on a substrate. Thin Solid Films, 1993, 224, 159-167.	1.8	66
13	Normal modes of a Si(100) double-paddle oscillator. Review of Scientific Instruments, 2001, 72, 1482.	1.3	56
14	On the dynamic fracture of structural metals. International Journal of Fracture, 1985, 27, 169-186.	2.2	55
15	Dynamic full field measurements of crack tip temperatures. Engineering Fracture Mechanics, 2001, 68, 1535-1556.	4.3	54
16	On the method of caustics: An exact analysis based on geometrical optics. Journal of Elasticity, 1985, 15, 347-367.	1.9	49
17	Title is missing!. International Journal of Fracture, 2002, 115, 101-123.	2.2	49
18	Fracture mechanics approach to facesheet delamination in honeycomb: measurement of energy release rate of the adhesive bond. Engineering Fracture Mechanics, 2003, 70, 93-103.	4.3	49

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19	Frequency locking in a forced Mathieu–van der Pol–Duffing system. <i>Nonlinear Dynamics</i> , 2008, 54, 3-12.	5.2	49
20	Surface Chemical Control of Mechanical Energy Losses in Micromachined Silicon Structures. <i>Journal of Physical Chemistry B</i> , 2003, 107, 14270-14277.	2.6	47
21	Hybrid method for determining the fraction of plastic work converted to heat. <i>Experimental Mechanics</i> , 1998, 38, 295-302.	2.0	46
22	Measurements and Simulations of Temperature and Deformation Fields in Transient Metal Cutting. <i>Journal of Manufacturing Science and Engineering, Transactions of the ASME</i> , 2003, 125, 645-655.	2.2	44
23	Fracture mechanics of a self-healing hydrogel with covalent and physical crosslinks: A numerical study. <i>Journal of the Mechanics and Physics of Solids</i> , 2018, 120, 79-95.	4.8	41
24	Shell-type micromechanical actuator and resonator. <i>Applied Physics Letters</i> , 2003, 83, 3815-3817.	3.3	40
25	A Micromechanical Flow Sensor for Microfluidic Applications. <i>Journal of Microelectromechanical Systems</i> , 2004, 13, 576-585.	2.5	40
26	Web-based virtual torsion laboratory. <i>Computer Applications in Engineering Education</i> , 2006, 14, 1-8.	3.4	37
27	Million frames per second infrared imaging system. <i>Review of Scientific Instruments</i> , 2000, 71, 3762.	1.3	36
28	Reducing Anchor Loss in MEMS Resonators Using Mesa Isolation. <i>Journal of Microelectromechanical Systems</i> , 2009, 18, 836-844.	2.5	36
29	Operation of nanomechanical resonant structures in air. <i>Applied Physics Letters</i> , 2002, 81, 2641-2643.	3.3	35
30	Computation of membrane and bending stress intensity factors for thin, cracked plates. <i>International Journal of Fracture</i> , 1995, 72, 21-38.	2.2	33
31	Measurement of the temperature field induced by dynamic crack growth in Beta-C titanium. <i>International Journal of Fracture</i> , 1994, 66, 99-120.	2.2	32
32	Effect of surface morphology on the fracture strength of silicon nanobeams. <i>Applied Physics Letters</i> , 2006, 89, 091901.	3.3	32
33	Perturbation analysis of entrainment in a micromechanical limit cycle oscillator. <i>Communications in Nonlinear Science and Numerical Simulation</i> , 2007, 12, 1291-1301.	3.3	32
34	Acoustic Properties of Amorphous Silica between 1 and 500 ÅmK. <i>Physical Review Letters</i> , 2008, 100, 195501.	7.8	32
35	Temperature and deformation measurements in transient metal cutting. <i>Experimental Mechanics</i> , 2004, 44, 1-9.	2.0	30
36	Analysis of Frequency Locking in Optically Driven MEMS Resonators. <i>Journal of Microelectromechanical Systems</i> , 2006, 15, 1546-1554.	2.5	30

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37	Thermomechanical transitions in doubly-clamped micro-oscillators. International Journal of Non-Linear Mechanics, 2007, 42, 596-607.	2.6	30
38	Nanomechanical resonant structures as tunable passive modulators of light. Applied Physics Letters, 2002, 80, 3617-3619.	3.3	28
39	Methyl monolayers improve the fracture strength and durability of silicon nanobeams. Applied Physics Letters, 2006, 89, 231905.	3.3	28
40	Thermomechanics of slow stable crack growth: closing the loop between experiments and computational modeling. Engineering Fracture Mechanics, 2003, 70, 2439-2458.	4.3	27
41	Title is missing!. International Journal of Fracture, 2000, 104, 387-407.	2.2	26
42	Time-temperature equivalence in a PVA dual cross-link self-healing hydrogel. Journal of Rheology, 2018, 62, 991-1000.	2.6	25
43	Dynamic measurement of the J integral in ductile metals: Comparison of experimental and numerical techniques. International Journal of Fracture, 1990, 42, 209-230.	2.2	24
44	Experimental determination of silica/copper interfacial toughness. Acta Metallurgica Et Materialia, 1993, 41, 2985-2992.	1.8	24
45	Time dependent fracture of soft materials: linear <i>versus</i> nonlinear viscoelasticity. Soft Matter, 2020, 16, 6163-6179.	2.7	24
46	Three-Dimensional Effects Near a Crack Tip in a Ductile Three-Point Bend Specimen: Part II—An Experimental Investigation Using Interferometry and Caustics. Journal of Applied Mechanics, Transactions ASME, 1990, 57, 618-626.	2.2	23
47	Linear viscoelastic properties of HFPE-II-52 polyimide. Journal of Applied Polymer Science, 2006, 100, 3255-3263.	2.6	23
48	Stone impact damage to automotive paint finishes: Measurement of temperature rise due to impact. International Journal of Impact Engineering, 1993, 13, 133-143.	5.0	22
49	Caustics By Reflection And Their Application To Elastic-Plastic And Dynamic Fracture Mechanics. Optical Engineering, 1988, 27, .	1.0	21
50	Nickel-alumina interfacial fracture toughness: experiments and analysis of residual stress effects. International Journal of Fracture, 1996, 76, 221-241.	2.2	21
51	Locking of electrostatically coupled thermo-optically driven MEMS limit cycle oscillators. International Journal of Non-Linear Mechanics, 2018, 102, 92-100.	2.6	21
52	Nickel—alumina interfacial fracture toughness using the thick foil technique. Engineering Fracture Mechanics, 2002, 69, 701-715.	4.3	20
53	Application of Digital Image Correlation (DIC) to the Measurement of Strain Concentration of a PVA Dual-Crosslink Hydrogel Under Large Deformation. Experimental Mechanics, 2019, 59, 1021-1032.	2.0	19
54	Crack tip stress based kinetic fracture model of a PVA dual-crosslink hydrogel. Extreme Mechanics Letters, 2019, 29, 100457.	4.1	19

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55	A note on the measurement of K and J under small scale yielding conditions using the method of caustics. International Journal of Fracture, 1986, 30, R43-R48.	2.2	18
56	Stress Intensity Factors for Plate Bending and Shearing Problems. Journal of Applied Mechanics, Transactions ASME, 1994, 61, 719-722.	2.2	18
57	Williams meets von Karman: Mode coupling and nonlinearity in the fracture of thin plates. International Journal of Fracture, 1998, 93, 409-429.	2.2	18
58	Moisture diffusion properties of HFPE-II-52 polyimide. Journal of Applied Polymer Science, 2006, 102, 3471-3479.	2.6	17
59	Delamination of moisture saturated graphite/polyimide composites due to rapid heating. Composites Part B: Engineering, 2010, 41, 568-577.	12.0	17
60	Anchor deformations drive limit cycle oscillations in interferometrically transduced MEMS beams. Finite Elements in Analysis and Design, 2012, 49, 52-57.	3.2	17
61	Metamodeling of constitutive model using Gaussian process machine learning. Journal of the Mechanics and Physics of Solids, 2021, 154, 104532.	4.8	17
62	Inverse thermographic characterization of optically unresolvable through cracks in thin metal plates. Mechanical Systems and Signal Processing, 2012, 27, 634-650.	8.0	16
63	Cohesive properties of nickel-alumina interfaces determined via simulation of ductile bridging experiments. International Journal of Solids and Structures, 1999, 36, 5573-5595.	2.7	15
64	Laser annealing for high-Q MEMS resonators. , 2003, , .		15
65	Crack propagation in a PVA dual-crosslink hydrogel: Crack tip fields measured using digital image correlation. Mechanics of Materials, 2019, 138, 103158.	3.2	15
66	Effects of finite notch width on the fracture of chevron “notched specimens. International Journal of Fracture, 1998, 94, 189-198.	2.2	14
67	Blistering of Moisture Saturated Graphite/Polyimide Composites Due to Rapid Heating. Journal of Composite Materials, 2009, 43, 153-174.	2.4	13
68	Entrainment of Micromechanical Limit Cycle Oscillators in the Presence of Frequency Instability. Journal of Microelectromechanical Systems, 2013, 22, 835-845.	2.5	13
69	Time and temperature dependent mechanical behavior of HFPE-II-52 polyimide at high temperature. Mechanics of Materials, 2016, 100, 86-95.	3.2	13
70	Micro-CT Imaging of Fibers in Composite Laminates under High Strain Bending. Experimental Techniques, 2020, 44, 531-540.	1.5	13
71	Accurate spring constant calibration for very stiff atomic force microscopy cantilevers. Review of Scientific Instruments, 2013, 84, 113706.	1.3	12
72	Constitutive modeling of bond breaking and healing kinetics of physical Polyampholyte (PA) gel. Extreme Mechanics Letters, 2021, 43, 101184.	4.1	12

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73	Effect of Low-Level Radiation on the Low Temperature Acoustic Behavior of α -SiO ₂ . Physical Review Letters, 2004, 92, 245502.	7.8	11
74	Multiple limit cycles in laser interference transduced resonators. International Journal of Non-Linear Mechanics, 2013, 52, 119-126.	2.6	10
75	Damage resistance of aluminum core honeycomb sandwich panels with carbon/epoxy face sheets. Journal of Composite Materials, 2015, 49, 2859-2876.	2.4	10
76	Actuation of Higher Harmonics in Large Arrays of Micromechanical Cantilevers for Expanded Resonant Peak Separation. Journal of Vibration and Acoustics, Transactions of the ASME, 2018, 140, .	1.6	10
77	Experimental Measurement of the Temperature Rise Generated During Dynamic Crack Growth in Metals. Applied Mechanics Reviews, 1990, 43, S260-S265.	10.1	9
78	Fatigue fracture in plates in tension and out-of-plane shear. Fatigue and Fracture of Engineering Materials and Structures, 2000, 23, 403-415.	3.4	9
79	A simple model relating crack growth resistance to fracture process parameters in elastic-plastic solids. Scripta Materialia, 2000, 42, 1001-1005.	5.2	9
80	Shell-type micromechanical oscillator. , 2003, , .		9
81	Modeling of Coupled Dome-Shaped Microoscillators. Journal of Microelectromechanical Systems, 2008, 17, 777-786.	2.5	9
82	Effect of Hydration on Tensile Response of a Dual Cross-linked PVA Hydrogel. Experimental Mechanics, 2020, 60, 1161-1165.	2.0	9
83	Synchronization characteristics of an array of coupled MEMS limit cycle oscillators. International Journal of Non-Linear Mechanics, 2021, 128, 103634.	2.6	9
84	A Monte-Carlo simulation of the effect of surface morphology on the fracture of nanobeams. International Journal of Fracture, 2007, 148, 129-138.	2.2	8
85	Damage characterization of quasi-statically indented composite sandwich structures. Journal of Composite Materials, 2013, 47, 1211-1229.	2.4	8
86	Compressive strength of honeycomb-stiffened graphite/epoxy sandwich panels with barely-visible indentation damage. Journal of Composite Materials, 2014, 48, 2455-2471.	2.4	8
87	Compressive strength of aluminum honeycomb core sandwich panels with thick carbon/epoxy facesheets subjected to barely visible indentation damage. Journal of Composite Materials, 2016, 50, 387-402.	2.4	8
88	Nondegenerate Parametric Resonance in Large Ensembles of Coupled Micromechanical Cantilevers with Varying Natural Frequencies. Physical Review Letters, 2018, 121, 264301.	7.8	8
89	Energy release rate of a single edge cracked specimen subjected to large deformation. International Journal of Fracture, 2020, 226, 71-79.	2.2	8
90	Chevron-Notched Toughness of Materials with Rising Fracture Resistance Curves. Journal of the American Ceramic Society, 1997, 80, 1319-1322.	3.8	7

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91	Linear Elastic Stress Analysis of 2D Cracks. Lecture Notes in Applied and Computational Mechanics, 2012, , 7-32.	2.2	7
92	Analysis of laser power threshold for self oscillation in thermo-optically excited doubly supported MEMS beams. International Journal of Non-Linear Mechanics, 2013, 57, 10-15.	2.6	7
93	Finite strain theory of a Mode III crack in a rate dependent gel consisting of chemical and physical cross-links. International Journal of Fracture, 2019, 215, 77-89.	2.2	7
94	Hopf Bifurcation in a Disk-Shaped NEMS. , 2003, , 1759.		6
95	Compression After Impact of Sandwich Composite Structures: Experiments and Modeling. , 2010, , .		6
96	Moisture Degradation Effects on the Mechanical Properties of HFPE-II-52 Polyimide: Experiments and Modeling. Experimental Mechanics, 2017, 57, 857-869.	2.0	6
97	Constitutive modeling of strain-dependent bond breaking and healing kinetics of chemical polyampholyte (PA) gel. Soft Matter, 2021, 17, 4161-4169.	2.7	6
98	Physically motivated models of polymer networks with dynamic cross-links: comparative study and future outlook. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2021, 477, .	2.1	6
99	High Temperature Shear Strength of T650-35/HFPE-II-52 Polyimide Matrix Unidirectional Composite. Experimental Mechanics, 2006, 46, 245-255.	2.0	5
100	Dependence of Micro-Mechanical Properties on Lithofacies: Indentation Experiments on Marcellus Shale. , 2014, , .		5
101	Oxide driven strength evolution of silicon surfaces. Journal of Applied Physics, 2015, 118, .	2.5	5
102	Simplified model and analysis of a pair of coupled thermo-optical MEMS oscillators. Nonlinear Dynamics, 2020, 99, 73-83.	5.2	5
103	Effect of drying on the viscoelastic response of a dual-crosslinked PVA hydrogel. Mechanics of Materials, 2021, 160, 103984.	3.2	5
104	Frequency Locking in a Forced Mathieu-van der Pol-Duffing System. , 2007, , 893.		4
105	Barely Visible Impact Damage Evaluation of Composite Sandwich Structures. , 2010, , .		4
106	Spiral to flat fracture transition for notched rods under torsional loading. International Journal of Fracture, 2015, 195, 87-92.	2.2	4
107	Pressure, hydrolytic degradation and plasticization drive high temperature blistering failure in moisture saturated polyimides. Extreme Mechanics Letters, 2017, 16, 49-55.	4.1	4
108	The stress field near the tip of a plane stress crack in a gel consisting of chemical and physical cross-links. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2019, 475, 20180863.	2.1	4

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109	Energy Flows in Elastic Fracture. Lecture Notes in Applied and Computational Mechanics, 2012, , 33-54.	2.2	4
110	A Note on the Use of High-Speed Infrared Detectors for the Measurement of Temperature Fields at the Vicinity of Dynamically Growing Cracks in 4340 Steel. Journal of Applied Mechanics, Transactions ASME, 1992, 59, 450-452.	2.2	3
111	Reinforcing effect of coverlayers on the fatigue life of copper-Kapton flex cables. IEEE Transactions on Advanced Packaging, 1995, 18, 704-708.	0.6	3
112	Curved Silicon Electronics. Materials Research Society Symposia Proceedings, 2003, 769, 281.	0.1	3
113	Development of micromagnetostrictive wireless controllable actuator. Journal of Applied Physics, 2011, 109, 07E501.	2.5	3
114	An analytical model for the response of carbon/epoxy-aluminum honeycomb core sandwich structures under quasi-static indentation loading. Journal of Sandwich Structures and Materials, 2019, 21, 1930-1952.	3.5	3
115	<title>Light-activated self-generation and parametric amplification for MEMS oscillators</title>. , 2001, , .		2
116	Anchor Loss Reduction in Resonant MEMS using MESA Structures. , 2007, , .		2
117	Coexisting modes and bifurcation structure in a pair of coupled detuned third order oscillators. International Journal of Non-Linear Mechanics, 2020, 122, 103464.	2.6	2
118	A Case Study on Educating Engineers for Geographically-Dispersed Design Teams. , 2003, , .		2
119	Nickel-Alumina Composites: In Situ Synthesis by a Displacement Reaction, and Mechanical Properties. Materials Research Society Symposia Proceedings, 1994, 365, 53.	0.1	1
120	A method for thermo-mechanical analysis of steady state dynamic crack growth. International Journal of Solids and Structures, 1996, 33, 1867-1889.	2.7	1
121	Polymer reinforcements for retarding fatigue crack growth in metals. International Journal of Fracture, 1997, 84, 307-323.	2.2	1
122	Facilitating effective, geographically distributed engineering design teams. , 0, , .		1
123	Frequency Locking in a Forced Mathieu-van der Pol System. , 2005, , 1367.		1
124	Fracture Toughness Tests. Lecture Notes in Applied and Computational Mechanics, 2012, , 109-136.	2.2	1
125	Elastic Plastic Fracture: Crack Tip Fields. Lecture Notes in Applied and Computational Mechanics, 2012, , 137-183.	2.2	1
126	Compression After Impact of Thick Sandwich Composite Structures. , 2013, , .		1

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127	Combined Experimental/Numerical Assessment of Compression After Impact of Sandwich Composite Structures. Conference Proceedings of the Society for Experimental Mechanics, 2011, , 793-800.	0.5	1
128	Williams meets von Karman: Mode coupling and nonlinearity in the fracture of thin plates. , 1998, , 409-429.		1
129	Delamination and Blistering Due to Rapid Heating of Moist Composites. , 2006, , .		1
130	Bistability in Coupled Opto-Thermal Micro-Oscillators. Journal of Microelectromechanical Systems, 2022, 31, 580-588.	2.5	1
131	<title>Light-induced parametric amplification in MEMS oscillators</title>. , 2001, 4408, 301.		0
132	In-channel micromechanical plate interacting with fluid flow. , 0, , .		0
133	Multiple Limit Cycles in Laser Interference Transduced Resonators. , 2011, , .		0
134	Elastic Plastic Fracture: Energy and Applications. Lecture Notes in Applied and Computational Mechanics, 2012, , 185-219.	2.2	0
135	Determining K and G. Lecture Notes in Applied and Computational Mechanics, 2012, , 77-107.	2.2	0
136	Tunability and Sub- and Superharmonic Entrainment of Limit Cycles in CW Laser Driven MEMS. , 2012, , .		0
137	Effect of Organic SAMs on the Evolution of Strength of Silicon Nanostructures. Conference Proceedings of the Society for Experimental Mechanics, 2014, , 59-64.	0.5	0
138	Dynamic measurement of the J integral in ductile metals: Comparison of experimental and numerical techniques. , 1990, , 209-230.		0
139	Fracture Surface Transition for Notched Bars in Torsion. Conference Proceedings of the Society for Experimental Mechanics, 2015, , 35-39.	0.5	0
140	Hydrolytic Degradation and Its Effect on Mechanical Properties of HFPE-II-52 Polyimide: Preliminary Results. Conference Proceedings of the Society for Experimental Mechanics, 2017, , 57-61.	0.5	0
141	Effects of Hydration on the Mechanical Response of a PVA Hydrogel. Conference Proceedings of the Society for Experimental Mechanics, 2022, , 73-78.	0.5	0