

Alan T Zehnder

List of Publications by Year in descending order

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141
papers

3,092
citations

147726

31
h-index

197736

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.	2.3	159
2	Velocity field for the trishear model. Journal of Structural Geology, 2000, 22, 1009-1014.	1.0	129
3	Optically pumped parametric amplification for micromechanical oscillators. Applied Physics Letters, 2001, 78, 3142-3144.	1.5	115
4	Dynamic fracture initiation and propagation in 4340 steel under impact loading. International Journal of Fracture, 1990, 43, 271-285.	1.1	103
5	Autoparametric optical drive for micromechanical oscillators. Applied Physics Letters, 2001, 79, 695-697.	1.5	92
6	Limit Cycle Oscillations in CW Laser-Driven NEMS. Journal of Microelectromechanical Systems, 2004, 13, 1018-1026.	1.7	84
7	A model for the heating due to plastic work. Mechanics Research Communications, 1991, 18, 23-28.	1.0	79
8	A theory for the fracture of thin plates subjected to bending and twisting moments. International Journal of Fracture, 1993, 61, 211-229.	1.1	76
9	Frequency entrainment for micromechanical oscillator. Applied Physics Letters, 2003, 83, 3281-3283.	1.5	73
10	Mechanical models of fault propagation folds and comparison to the trishear kinematic model. Journal of Structural Geology, 2003, 25, 1-18.	1.0	68
11	Fracture Mechanics of Thin Plates and Shells Under Combined Membrane, Bending, and Twisting Loads. Applied Mechanics Reviews, 2005, 58, 37-48.	4.5	68
12	Interface shear stresses induced by non-uniform heating of a film on a substrate. Thin Solid Films, 1993, 224, 159-167.	0.8	66
13	Normal modes of a Si(100) double-paddle oscillator. Review of Scientific Instruments, 2001, 72, 1482.	0.6	56
14	On the dynamic fracture of structural metals. International Journal of Fracture, 1985, 27, 169-186.	1.1	55
15	Dynamic full field measurements of crack tip temperatures. Engineering Fracture Mechanics, 2001, 68, 1535-1556.	2.0	54
16	On the method of caustics: An exact analysis based on geometrical optics. Journal of Elasticity, 1985, 15, 347-367.	0.9	49
17	Title is missing!. International Journal of Fracture, 2002, 115, 101-123.	1.1	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.	2.0	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.	2.7	49
20	Surface Chemical Control of Mechanical Energy Losses in Micromachined Silicon Structures. <i>Journal of Physical Chemistry B</i> , 2003, 107, 14270-14277.	1.2	47
21	Hybrid method for determining the fraction of plastic work converted to heat. <i>Experimental Mechanics</i> , 1998, 38, 295-302.	1.1	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.	1.3	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.	2.3	41
24	Shell-type micromechanical actuator and resonator. <i>Applied Physics Letters</i> , 2003, 83, 3815-3817.	1.5	40
25	A Micromechanical Flow Sensor for Microfluidic Applications. <i>Journal of Microelectromechanical Systems</i> , 2004, 13, 576-585.	1.7	40
26	Web-based virtual torsion laboratory. <i>Computer Applications in Engineering Education</i> , 2006, 14, 1-8.	2.2	37
27	Million frames per second infrared imaging system. <i>Review of Scientific Instruments</i> , 2000, 71, 3762.	0.6	36
28	Reducing Anchor Loss in MEMS Resonators Using Mesa Isolation. <i>Journal of Microelectromechanical Systems</i> , 2009, 18, 836-844.	1.7	36
29	Operation of nanomechanical resonant structures in air. <i>Applied Physics Letters</i> , 2002, 81, 2641-2643.	1.5	35
30	Computation of membrane and bending stress intensity factors for thin, cracked plates. <i>International Journal of Fracture</i> , 1995, 72, 21-38.	1.1	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.	1.1	32
32	Effect of surface morphology on the fracture strength of silicon nanobeams. <i>Applied Physics Letters</i> , 2006, 89, 091901.	1.5	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.	1.7	32
34	Acoustic Properties of Amorphous Silica between 1 and 500 ÅmK. <i>Physical Review Letters</i> , 2008, 100, 195501.	2.9	32
35	Temperature and deformation measurements in transient metal cutting. <i>Experimental Mechanics</i> , 2004, 44, 1-9.	1.1	30
36	Analysis of Frequency Locking in Optically Driven MEMS Resonators. <i>Journal of Microelectromechanical Systems</i> , 2006, 15, 1546-1554.	1.7	30

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37	Thermomechanical transitions in doubly-clamped micro-oscillators. <i>International Journal of Non-Linear Mechanics</i> , 2007, 42, 596-607.	1.4	30
38	Nanomechanical resonant structures as tunable passive modulators of light. <i>Applied Physics Letters</i> , 2002, 80, 3617-3619.	1.5	28
39	Methyl monolayers improve the fracture strength and durability of silicon nanobeams. <i>Applied Physics Letters</i> , 2006, 89, 231905.	1.5	28
40	Thermomechanics of slow stable crack growth: closing the loop between experiments and computational modeling. <i>Engineering Fracture Mechanics</i> , 2003, 70, 2439-2458.	2.0	27
41	Title is missing!. <i>International Journal of Fracture</i> , 2000, 104, 387-407.	1.1	26
42	Time-temperature equivalence in a PVA dual cross-link self-healing hydrogel. <i>Journal of Rheology</i> , 2018, 62, 991-1000.	1.3	25
43	Dynamic measurement of the J integral in ductile metals: Comparison of experimental and numerical techniques. <i>International Journal of Fracture</i> , 1990, 42, 209-230.	1.1	24
44	Experimental determination of silica/copper interfacial toughness. <i>Acta Metallurgica Et Materialia</i> , 1993, 41, 2985-2992.	1.9	24
45	Time dependent fracture of soft materials: linear versus nonlinear viscoelasticity. <i>Soft Matter</i> , 2020, 16, 6163-6179.	1.2	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. <i>Journal of Applied Mechanics, Transactions ASME</i> , 1990, 57, 618-626.	1.1	23
47	Linear viscoelastic properties of HFPE-II-52 polyimide. <i>Journal of Applied Polymer Science</i> , 2006, 100, 3255-3263.	1.3	23
48	Stone impact damage to automotive paint finishes: Measurement of temperature rise due to impact. <i>International Journal of Impact Engineering</i> , 1993, 13, 133-143.	2.4	22
49	Caustics By Reflection And Their Application To Elastic-Plastic And Dynamic Fracture Mechanics. <i>Optical Engineering</i> , 1988, 27, .	0.5	21
50	Nickel-alumina interfacial fracture toughness: experiments and analysis of residual stress effects. <i>International Journal of Fracture</i> , 1996, 76, 221-241.	1.1	21
51	Locking of electrostatically coupled thermo-optically driven MEMS limit cycle oscillators. <i>International Journal of Non-Linear Mechanics</i> , 2018, 102, 92-100.	1.4	21
52	Nickel-alumina interfacial fracture toughness using the thick foil technique. <i>Engineering Fracture Mechanics</i> , 2002, 69, 701-715.	2.0	20
53	Application of Digital Image Correlation (DIC) to the Measurement of Strain Concentration of a PVA Dual-Crosslink Hydrogel Under Large Deformation. <i>Experimental Mechanics</i> , 2019, 59, 1021-1032.	1.1	19
54	Crack tip stress based kinetic fracture model of a PVA dual-crosslink hydrogel. <i>Extreme Mechanics Letters</i> , 2019, 29, 100457.	2.0	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. <i>International Journal of Fracture</i> , 1986, 30, R43-R48.	1.1	18
56	Stress Intensity Factors for Plate Bending and Shearing Problems. <i>Journal of Applied Mechanics, Transactions ASME</i> , 1994, 61, 719-722.	1.1	18
57	Williams meets von Karman: Mode coupling and nonlinearity in the fracture of thin plates. <i>International Journal of Fracture</i> , 1998, 93, 409-429.	1.1	18
58	Moisture diffusion properties of HFPE-II-52 polyimide. <i>Journal of Applied Polymer Science</i> , 2006, 102, 3471-3479.	1.3	17
59	Delamination of moisture saturated graphite/polyimide composites due to rapid heating. <i>Composites Part B: Engineering</i> , 2010, 41, 568-577.	5.9	17
60	Anchor deformations drive limit cycle oscillations in interferometrically transduced MEMS beams. <i>Finite Elements in Analysis and Design</i> , 2012, 49, 52-57.	1.7	17
61	Metamodeling of constitutive model using Gaussian process machine learning. <i>Journal of the Mechanics and Physics of Solids</i> , 2021, 154, 104532.	2.3	17
62	Inverse thermographic characterization of optically unresolvable through cracks in thin metal plates. <i>Mechanical Systems and Signal Processing</i> , 2012, 27, 634-650.	4.4	16
63	Cohesive properties of nickel-alumina interfaces determined via simulation of ductile bridging experiments. <i>International Journal of Solids and Structures</i> , 1999, 36, 5573-5595.	1.3	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. <i>Mechanics of Materials</i> , 2019, 138, 103158.	1.7	15
66	Effects of finite notch width on the fracture of chevron “notched specimens. <i>International Journal of Fracture</i> , 1998, 94, 189-198.	1.1	14
67	Blistering of Moisture Saturated Graphite/Polyimide Composites Due to Rapid Heating. <i>Journal of Composite Materials</i> , 2009, 43, 153-174.	1.2	13
68	Entrainment of Micromechanical Limit Cycle Oscillators in the Presence of Frequency Instability. <i>Journal of Microelectromechanical Systems</i> , 2013, 22, 835-845.	1.7	13
69	Time and temperature dependent mechanical behavior of HFPE-II-52 polyimide at high temperature. <i>Mechanics of Materials</i> , 2016, 100, 86-95.	1.7	13
70	Micro-CT Imaging of Fibers in Composite Laminates under High Strain Bending. <i>Experimental Techniques</i> , 2020, 44, 531-540.	0.9	13
71	Accurate spring constant calibration for very stiff atomic force microscopy cantilevers. <i>Review of Scientific Instruments</i> , 2013, 84, 113706.	0.6	12
72	Constitutive modeling of bond breaking and healing kinetics of physical Polyampholyte (PA) gel. <i>Extreme Mechanics Letters</i> , 2021, 43, 101184.	2.0	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.	2.9	11
74	Multiple limit cycles in laser interference transduced resonators. International Journal of Non-Linear Mechanics, 2013, 52, 119-126.	1.4	10
75	Damage resistance of aluminum core honeycomb sandwich panels with carbon/epoxy face sheets. Journal of Composite Materials, 2015, 49, 2859-2876.	1.2	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, .	1.0	10
77	Experimental Measurement of the Temperature Rise Generated During Dynamic Crack Growth in Metals. Applied Mechanics Reviews, 1990, 43, S260-S265.	4.5	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.	1.7	9
79	A simple model relating crack growth resistance to fracture process parameters in elastic-plastic solids. Scripta Materialia, 2000, 42, 1001-1005.	2.6	9
80	Shell-type micromechanical oscillator. , 2003, , .		9
81	Modeling of Coupled Dome-Shaped Microoscillators. Journal of Microelectromechanical Systems, 2008, 17, 777-786.	1.7	9
82	Effect of Hydration on Tensile Response of a Dual Cross-linked PVA Hydrogel. Experimental Mechanics, 2020, 60, 1161-1165.	1.1	9
83	Synchronization characteristics of an array of coupled MEMS limit cycle oscillators. International Journal of Non-Linear Mechanics, 2021, 128, 103634.	1.4	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.	1.1	8
85	Damage characterization of quasi-statically indented composite sandwich structures. Journal of Composite Materials, 2013, 47, 1211-1229.	1.2	8
86	Compressive strength of honeycomb-stiffened graphite/epoxy sandwich panels with barely-visible indentation damage. Journal of Composite Materials, 2014, 48, 2455-2471.	1.2	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.	1.2	8
88	Nondegenerate Parametric Resonance in Large Ensembles of Coupled Micromechanical Cantilevers with Varying Natural Frequencies. Physical Review Letters, 2018, 121, 264301.	2.9	8
89	Energy release rate of a single edge cracked specimen subjected to large deformation. International Journal of Fracture, 2020, 226, 71-79.	1.1	8
90	Chevron-Notched Toughness of Materials with Rising Fracture Resistance Curves. Journal of the American Ceramic Society, 1997, 80, 1319-1322.	1.9	7

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91	Linear Elastic Stress Analysis of 2D Cracks. Lecture Notes in Applied and Computational Mechanics, 2012, , 7-32.	2.0	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.	1.4	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.	1.1	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.	1.1	6
97	Constitutive modeling of strain-dependent bond breaking and healing kinetics of chemical polyampholyte (PA) gel. Soft Matter, 2021, 17, 4161-4169.	1.2	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, .	1.0	6
99	High Temperature Shear Strength of T650-35/HFPE-II-52 Polyimide Matrix Unidirectional Composite. Experimental Mechanics, 2006, 46, 245-255.	1.1	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, .	1.1	5
102	Simplified model and analysis of a pair of coupled thermo-optical MEMS oscillators. Nonlinear Dynamics, 2020, 99, 73-83.	2.7	5
103	Effect of drying on the viscoelastic response of a dual-crosslinked PVA hydrogel. Mechanics of Materials, 2021, 160, 103984.	1.7	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.	1.1	4
107	Pressure, hydrolytic degradation and plasticization drive high temperature blistering failure in moisture saturated polyimides. Extreme Mechanics Letters, 2017, 16, 49-55.	2.0	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.	1.0	4

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109	Energy Flows in Elastic Fracture. Lecture Notes in Applied and Computational Mechanics, 2012, , 33-54.	2.0	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.	1.1	3
111	Reinforcing effect of coverlayers on the fatigue life of copper-Kapton flex cables. IEEE Transactions on Advanced Packaging, 1995, 18, 704-708.	0.7	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.	1.1	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.	2.0	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.	1.4	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.	1.3	1
121	Polymer reinforcements for retarding fatigue crack growth in metals. International Journal of Fracture, 1997, 84, 307-323.	1.1	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.	2.0	1
125	Elastic Plastic Fracture: Crack Tip Fields. Lecture Notes in Applied and Computational Mechanics, 2012, , 137-183.	2.0	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.	0.3	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.	1.7	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.	2.0	0
135	Determining K and G. Lecture Notes in Applied and Computational Mechanics, 2012, , 77-107.	2.0	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.	0.3	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.	0.3	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.	0.3	0
141	Effects of Hydration on the Mechanical Response of a PVA Hydrogel. Conference Proceedings of the Society for Experimental Mechanics, 2022, , 73-78.	0.3	0