

Ting Zhu

List of Publications by Year in descending order

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126
papers

19,580
citations

19608

61
h-index

17546

121
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134
all docs

134
docs citations

134
times ranked

16018
citing authors

#	ARTICLE	IF	CITATIONS
1	Size-Dependent Fracture of Silicon Nanoparticles During Lithiation. ACS Nano, 2012, 6, 1522-1531.	7.3	1,816
2	Additively manufactured hierarchical stainless steels with high strength and ductility. Nature Materials, 2018, 17, 63-71.	13.3	1,517
3	Bright, multicoloured light-emitting diodes based on quantum dots. Nature Photonics, 2007, 1, 717-722.	15.6	1,042
4	Tuning element distribution, structure and properties by composition in high-entropy alloys. Nature, 2019, 574, 223-227.	13.7	874
5	Ultra-strength materials. Progress in Materials Science, 2010, 55, 710-757.	16.0	696
6	Anisotropic Swelling and Fracture of Silicon Nanowires during Lithiation. Nano Letters, 2011, 11, 3312-3318.	4.5	691
7	Towards strength–ductility synergy through the design of heterogeneous nanostructures in metals. Materials Today, 2017, 20, 323-331.	8.3	687
8	Atomistic mechanisms governing elastic limit and incipient plasticity in crystals. Nature, 2002, 418, 307-310.	13.7	621
9	Temperature and Strain-Rate Dependence of Surface Dislocation Nucleation. Physical Review Letters, 2008, 100, 025502.	2.9	587
10	Fracture toughness of graphene. Nature Communications, 2014, 5, 3782.	5.8	567
11	In situ atomic-scale imaging of electrochemical lithiation in silicon. Nature Nanotechnology, 2012, 7, 749-756.	15.6	533
12	Interfacial plasticity governs strain rate sensitivity and ductility in nanostructured metals. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 3031-3036.	3.3	522
13	Two-Phase Electrochemical Lithiation in Amorphous Silicon. Nano Letters, 2013, 13, 709-715.	4.5	377
14	Quantifying the early stages of plasticity through nanoscale experiments and simulations. Physical Review B, 2003, 67, .	1.1	361
15	Reversible Nanopore Formation in Ge Nanowires during Lithiation–Delithiation Cycling: An In Situ Transmission Electron Microscopy Study. Nano Letters, 2011, 11, 3991-3997.	4.5	356
16	In Situ TEM Experiments of Electrochemical Lithiation and Delithiation of Individual Nanostructures. Advanced Energy Materials, 2012, 2, 722-741.	10.2	341
17	Harnessing the concurrent reaction dynamics in active Si and Ge to achieve high performance lithium-ion batteries. Energy and Environmental Science, 2018, 11, 669-681.	15.6	329
18	Plastic anisotropy and associated deformation mechanisms in nanotwinned metals. Acta Materialia, 2013, 61, 217-227.	3.8	272

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19	In situ atomic-scale observation of twinning-dominated deformation in nanoscale body-centred cubic tungsten. <i>Nature Materials</i> , 2015, 14, 594-600.	13.3	250
20	Predictive modeling of nanoindentation-induced homogeneous dislocation nucleation in copper. <i>Journal of the Mechanics and Physics of Solids</i> , 2004, 52, 691-724.	2.3	227
21	Lithium whisker growth and stress generation in an in situ atomic force microscopeâ€“environmental transmission electron microscope set-up. <i>Nature Nanotechnology</i> , 2020, 15, 94-98.	15.6	217
22	Mechanistic Origin of the High Performance of Yolk@Shell Bi ₂ S ₃ @N-Doped Carbon Nanowire Electrodes. <i>ACS Nano</i> , 2018, 12, 12597-12611.	7.3	213
23	Orientation-Dependent Interfacial Mobility Governs the Anisotropic Swelling in Lithiated Silicon Nanowires. <i>Nano Letters</i> , 2012, 12, 1953-1958.	4.5	212
24	Self-Limiting Lithiation in Silicon Nanowires. <i>ACS Nano</i> , 2013, 7, 1495-1503.	7.3	212
25	Plastic deformation mechanism in nanotwinned metals: An insight from molecular dynamics and mechanistic modeling. <i>Scripta Materialia</i> , 2012, 66, 843-848.	2.6	205
26	Atomistic Study of Dislocation Loop Emission from a Crack Tip. <i>Physical Review Letters</i> , 2004, 93, 025503.	2.9	192
27	Controlling Surface Oxides in Si/C Nanocomposite Anodes for High-Performance Li-Ion Batteries. <i>Advanced Energy Materials</i> , 2018, 8, 1801718.	10.2	190
28	Tough Germanium Nanoparticles under Electrochemical Cycling. <i>ACS Nano</i> , 2013, 7, 3427-3433.	7.3	184
29	A chemo-mechanical model of lithiation in silicon. <i>Journal of the Mechanics and Physics of Solids</i> , 2014, 70, 349-361.	2.3	181
30	Griffith Criterion for Brittle Fracture in Graphene. <i>Nano Letters</i> , 2015, 15, 1918-1924.	4.5	180
31	Gradient plasticity in gradient nano-grained metals. <i>Extreme Mechanics Letters</i> , 2016, 8, 213-219.	2.0	176
32	Real-time nanoscale observation of deformation mechanisms in CrCoNi-based medium- to high-entropy alloys at cryogenic temperatures. <i>Materials Today</i> , 2019, 25, 21-27.	8.3	167
33	Stress relaxation and the structure size-dependence of plastic deformation in nanotwinned copper. <i>Acta Materialia</i> , 2009, 57, 5165-5173.	3.8	156
34	Electrochemomechanical degradation of high-capacity battery electrode materials. <i>Progress in Materials Science</i> , 2017, 89, 479-521.	16.0	144
35	Brittle Fracture of 2D MoSe ₂ . <i>Advanced Materials</i> , 2017, 29, 1604201.	11.1	138
36	Controlling the Lithiation-Induced Strain and Charging Rate in Nanowire Electrodes by Coating. <i>ACS Nano</i> , 2011, 5, 4800-4809.	7.3	135

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37	Lithiation-Induced Embrittlement of Multiwalled Carbon Nanotubes. <i>ACS Nano</i> , 2011, 5, 7245-7253.	7.3	122
38	Strain Hardening and Size Effect in Five-fold Twinned Ag Nanowires. <i>Nano Letters</i> , 2015, 15, 4037-4044.	4.5	122
39	Microscale residual stresses in additively manufactured stainless steel. <i>Nature Communications</i> , 2019, 10, 4338.	5.8	120
40	Tracking the sliding of grain boundaries at the atomic scale. <i>Science</i> , 2022, 375, 1261-1265.	6.0	115
41	Stress-dependent molecular pathways of silica-water reaction. <i>Journal of the Mechanics and Physics of Solids</i> , 2005, 53, 1597-1623.	2.3	114
42	Nanoscale fracture in graphene. <i>Chemical Physics Letters</i> , 2010, 494, 218-222.	1.2	111
43	A Hierarchical Particle-Shell Architecture for Long-Term Cycle Stability of Li_2S Cathodes. <i>Advanced Materials</i> , 2015, 27, 5579-5586.	11.1	111
44	New twinning route in face-centered cubic nanocrystalline metals. <i>Nature Communications</i> , 2017, 8, 2142.	5.8	110
45	Atomistic mechanisms of lithium insertion in amorphous silicon. <i>Journal of Power Sources</i> , 2011, 196, 3664-3668.	4.0	108
46	Mechanics of Ultra-Strength Materials. <i>MRS Bulletin</i> , 2009, 34, 167-172.	1.7	105
47	Atomic-scale dynamic process of deformation-induced stacking fault tetrahedra in gold nanocrystals. <i>Nature Communications</i> , 2013, 4, 2340.	5.8	104
48	Mechanical properties of amorphous Li_xSi alloys: a reactive force field study. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2013, 21, 074002.	0.8	103
49	The mechanics of large-volume-change transformations in high-capacity battery materials. <i>Extreme Mechanics Letters</i> , 2016, 9, 480-494.	2.0	101
50	Structural Evolution and Pulverization of Tin Nanoparticles during Lithiation-Delithiation Cycling. <i>Journal of the Electrochemical Society</i> , 2014, 161, F3019-F3024.	1.3	96
51	High damage tolerance of electrochemically lithiated silicon. <i>Nature Communications</i> , 2015, 6, 8417.	5.8	96
52	Electro-chemo-mechanics of lithium in solid state lithium metal batteries. <i>Energy and Environmental Science</i> , 2021, 14, 602-642.	15.6	95
53	Atomistic study of nanotwins in NiTi shape memory alloys. <i>Journal of Applied Physics</i> , 2011, 110, .	1.1	90
54	Deformation-induced crystalline-to-amorphous phase transformation in a CrMnFeCoNi high-entropy alloy. <i>Science Advances</i> , 2021, 7, .	4.7	89

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55	Size dependence of rate-controlling deformation mechanisms in nanotwinned copper. <i>Scripta Materialia</i> , 2009, 60, 1062-1066.	2.6	88
56	Constitutive equations for modeling non-Schmid effects in single crystal bcc-Fe at low and ambient temperatures. <i>International Journal of Plasticity</i> , 2014, 59, 1-14.	4.1	85
57	Chemomechanical Origin of Hydrogen Trapping at Grain Boundaries in fcc Metals. <i>Physical Review Letters</i> , 2016, 116, 075502.	2.9	81
58	Mechanics of nanocrack: Fracture, dislocation emission, and amorphization. <i>Journal of the Mechanics and Physics of Solids</i> , 2009, 57, 840-850.	2.3	76
59	In situ observation of shear-driven amorphization in silicon crystals. <i>Nature Nanotechnology</i> , 2016, 11, 866-871.	15.6	74
60	Crystal plasticity model for BCC iron atomistically informed by kinetics of correlated kinkpair nucleation on screw dislocation. <i>Journal of the Mechanics and Physics of Solids</i> , 2014, 65, 54-68.	2.3	68
61	Avoiding Fracture in a Conversion Battery Material through Reaction with Larger Ions. <i>Joule</i> , 2018, 2, 1783-1799.	11.7	65
62	Understanding all solid-state lithium batteries through in situ transmission electron microscopy. <i>Materials Today</i> , 2021, 42, 137-161.	8.3	64
63	Germanium-Based Electrode Materials for Lithium-Ion Batteries. <i>ChemElectroChem</i> , 2014, 1, 706-713.	1.7	59
64	Atomistic Configurations and Energetics of Crack Extension in Silicon. <i>Physical Review Letters</i> , 2004, 93, 205504.	2.9	58
65	Atomistic and multiscale analyses of brittle fracture in crystal lattices. <i>Physical Review B</i> , 2007, 76, .	1.1	55
66	Structural transformations in NiTi shape memory alloy nanowires. <i>Journal of Applied Physics</i> , 2014, 115, .	1.1	54
67	Fracture in a thin film of nanotwinned copper. <i>Acta Materialia</i> , 2015, 98, 313-317.	3.8	54
68	Computer Modeling Study of the Effect of Hydration on the Stability of a Silica Nanotube. <i>Nano Letters</i> , 2003, 3, 1347-1352.	4.5	53
69	Unraveling submicron-scale mechanical heterogeneity by three-dimensional X-ray microdiffraction. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2018, 115, 483-488.	3.3	52
70	Anti-twinning in nanoscale tungsten. <i>Science Advances</i> , 2020, 6, eaay2792.	4.7	49
71	Tuning the Outward to Inward Swelling in Lithiated Silicon Nanotubes via Surface Oxide Coating. <i>Nano Letters</i> , 2016, 16, 5815-5822.	4.5	45
72	Hydrogen embrittlement of grain boundaries in nickel: an atomistic study. <i>Npj Computational Materials</i> , 2017, 3, .	3.5	45

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73	Colloidal nanocrystal-based light-emitting diodes fabricated on plastic toward flexible quantum dot optoelectronics. <i>Journal of Applied Physics</i> , 2009, 105, .	1.1	43
74	Unraveling dual phase transformations in a CrCoNi medium-entropy alloy. <i>Acta Materialia</i> , 2021, 215, 117112.	3.8	43
75	Strain rate dependent mechanical properties in single crystal nickel nanowires. <i>Applied Physics Letters</i> , 2013, 102, .	1.5	42
76	Strain gradient plasticity in gradient structured metals. <i>Journal of the Mechanics and Physics of Solids</i> , 2020, 140, 103946.	2.3	41
77	Cycling of a Lithium-Ion Battery with a Silicon Anode Drives Large Mechanical Actuation. <i>Advanced Materials</i> , 2016, 28, 10236-10243.	11.1	40
78	Deformation and Fracture of a SiO ₂ Nanorod. <i>Molecular Simulation</i> , 2003, 29, 671-676.	0.9	36
79	Atomistic characterization of three-dimensional lattice trapping barriers to brittle fracture. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 2006, 462, 1741-1761.	1.0	36
80	Atomistic modeling of dislocation cross-slip in nickel using free-end nudged elastic band method. <i>Acta Materialia</i> , 2019, 168, 436-447.	3.8	36
81	In situ Observation of Li Deposition-Induced Cracking in Garnet Solid Electrolytes. <i>Energy and Environmental Materials</i> , 2022, 5, 524-532.	7.3	36
82	Unraveling the origin of extra strengthening in gradient nanotwinned metals. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2022, 119, .	3.3	36
83	Integration of planar and bulk heterojunctions in polymer/nanocrystal hybrid photovoltaic cells. <i>Applied Physics Letters</i> , 2009, 95, 063510.	1.5	35
84	<i>In Situ</i> Observation of Sodium Dendrite Growth and Concurrent Mechanical Property Measurements Using an Environmental Transmission Electron Microscopy-Atomic Force Microscopy (ETEM-AFM) Platform. <i>ACS Energy Letters</i> , 2020, 5, 2546-2559.	8.8	35
85	In Situ Nano-thermomechanical Experiment Reveals Brittle to Ductile Transition in Silicon Nanowires. <i>Nano Letters</i> , 2019, 19, 5327-5334.	4.5	34
86	Degradation by Kinking in Layered Cathode Materials. <i>ACS Energy Letters</i> , 2021, 6, 3960-3969.	8.8	33
87	Size effects and strength fluctuation in nanoscale plasticity. <i>Acta Materialia</i> , 2012, 60, 3302-3309.	3.8	32
88	Simulating nanoindentation and predicting dislocation nucleation using interatomic potential finite element method. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2008, 197, 3174-3181.	3.4	28
89	Mechanically Driven Grain Boundary Formation in Nickel Nanowires. <i>ACS Nano</i> , 2017, 11, 12500-12508.	7.3	28
90	Nanoscale Deformation Analysis With High-Resolution Transmission Electron Microscopy and Digital Image Correlation. <i>Journal of Applied Mechanics, Transactions ASME</i> , 2015, 82, .	1.1	26

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91	Environmentally Assisted Cracking in Silicon Nitride Barrier Films on Poly(ethylene terephthalate) Substrates. ACS Applied Materials & Interfaces, 2016, 8, 27169-27178.	4.0	25
92	Fog spontaneously folds mosquito wings. Physics of Fluids, 2015, 27, .	1.6	23
93	Temperature and composition dependent screw dislocation mobility in austenitic stainless steels from large-scale molecular dynamics. Npj Computational Materials, 2020, 6, .	3.5	23
94	In situ atomic-scale observation of dislocation climb and grain boundary evolution in nanostructured metal. Nature Communications, 2022, 13, .	5.8	22
95	Composition-limited spectral response of hybrid photovoltaic cells containing infrared PbSe nanocrystals. Journal of Applied Physics, 2008, 104, 044306.	1.1	19
96	Integrating in situ TEM experiments and atomistic simulations for defect mechanics. Current Opinion in Solid State and Materials Science, 2019, 23, 117-128.	5.6	16
97	Lattice strains and diffraction elastic constants of cubic polycrystals. Journal of the Mechanics and Physics of Solids, 2020, 138, 103899.	2.3	16
98	In situ observation of cracking and self-healing of solid electrolyte interphases during lithium deposition. Science Bulletin, 2021, 66, 1754-1763.	4.3	16
99	Mechanisms of Transformation of Bulk Aluminum-Lithium Alloys to Aluminum Metal-Organic Nanowires. Journal of the American Chemical Society, 2018, 140, 12493-12500.	6.6	15
100	Free-Standing Two-Dimensional Gold Membranes Produced by Extreme Mechanical Thinning. ACS Nano, 2020, 14, 17091-17099.	7.3	15
101	Circular polarization emission from an external cavity diode laser. Applied Physics Letters, 2008, 92, 111109.	1.5	14
102	Atomistic modeling of surface and grain boundary dislocation nucleation in FCC metals. Acta Materialia, 2022, 237, 118155.	3.8	13
103	<i>In situ</i> TEM measurement of activation volume in ultrafine grained gold. Nanoscale, 2020, 12, 7146-7158.	2.8	11
104	Understanding and quantifying electron beam effects during in situ TEM nanomechanical tensile testing on metal thin films. Acta Materialia, 2022, 222, 117441.	3.8	11
105	Mechanics of high-capacity electrodes in lithium-ion batteries. Chinese Physics B, 2016, 25, 014601.	0.7	10
106	Influence of Polymer Substrate Damage on the Time Dependent Cracking of SiNx Barrier Films. Scientific Reports, 2018, 8, 4560.	1.6	10
107	Grain growth of nanocrystalline aluminum under tensile deformation: A combined in situ TEM and atomistic study. Materialia, 2021, 16, 101068.	1.3	10
108	Abnormal grain growth in ultrafine grained Ni under high-cycle loading. Scripta Materialia, 2022, 209, 114372.	2.6	9

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109	Challenges and opportunities in chemomechanics of materials: A perspective. Science China Technological Sciences, 2019, 62, 1385-1387.	2.0	8
110	In situ full-field measurement of surface oxidation on Ni-based alloy using high temperature scanning probe microscopy. Scientific Reports, 2018, 8, 6684.	1.6	6
111	Multiscale Concurrent Atomistic-Continuum (CAC) modeling of multicomponent alloys. Computational Materials Science, 2022, 201, 110873.	1.4	6
112	Tuning the near room temperature oxidation behavior of high-entropy alloy nanoparticles. Nano Research, 2022, 15, 3569-3574.	5.8	6
113	Modeling Dislocation-Mediated Hydrogen Transport and Trapping in Face-Centered Cubic Metals. Journal of Engineering Materials and Technology, Transactions of the ASME, 2022, 144, .	0.8	5
114	Kinetics of environmentally assisted cracking in SiNx barrier films. Applied Physics Letters, 2019, 115, 051901.	1.5	4
115	Nanomechanics of Crack Front Mobility. Journal of Applied Mechanics, Transactions ASME, 2005, 72, 932-935.	1.1	3
116	Strain gradient plasticity modeling of nanoindentation of additively manufactured stainless steel. Extreme Mechanics Letters, 2021, 49, 101503.	2.0	2
117	Learning constitutive relations of plasticity using neural networks and full-field data. Extreme Mechanics Letters, 2022, 52, 101645.	2.0	2
118	Lithium Sulfide Cathodes: A Hierarchical Particle-Shell Architecture for Long-Term Cycle Stability of Li ₂ S Cathodes (Adv. Mater. 37/2015). Advanced Materials, 2015, 27, 5578-5578.	11.1	1
119	Microcavity Light Emitting Devices Based on Colloidal Semiconductor Nanocrystal Quantum Dots. , 2006, , .		0
120	Efficient harvest of near infrared light in nanocrystal-polymer hybrid photovoltaic composites. , 2006, , .		0
121	Developing bright and color-saturated quantum dot light emitting diodes towards next generation displays and solid state lighting. , 2008, , .		0
122	Modeling of Lithiation in Silicon Electrodes. Springer Series in Materials Science, 2016, , 489-506.	0.4	0
123	In situ S/TEM Observation of Hydrogen Bubbles Formation and Evolution in Aluminium Nanoparticles. Microscopy and Microanalysis, 2017, 23, 924-925.	0.2	0
124	Tuning the Outward to Inward Swelling in Lithiated Silicon Nanotubes via Surface Oxide Coating. Microscopy and Microanalysis, 2017, 23, 2018-2019.	0.2	0
125	Nanomechanics of Materials: Overview. , 2019, , 1-12.		0
126	Nanomechanics of Materials: Overview. , 2020, , 1815-1826.		0