

Scott X Mao

List of Publications by Year in descending order

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128
papers

14,933
citations

26610

56
h-index

17580

121
g-index

130
all docs

130
docs citations

130
times ranked

16019
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	In Situ Observation of the Electrochemical Lithiation of a Single SnO ₂ Nanowire Electrode. Science, 2010, 330, 1515-1520.	6.0	1,430
3	Anisotropic Swelling and Fracture of Silicon Nanowires during Lithiation. Nano Letters, 2011, 11, 3312-3318.	4.5	691
4	Piezoelectric Characterization of Individual Zinc Oxide Nanobelt Probed by Piezoresponse Force Microscope. Nano Letters, 2004, 4, 587-590.	4.5	649
5	Nanoscale origins of the damage tolerance of the high-entropy alloy CrMnFeCoNi. Nature Communications, 2015, 6, 10143.	5.8	608
6	In situ atomic-scale imaging of electrochemical lithiation in silicon. Nature Nanotechnology, 2012, 7, 749-756.	15.6	533
7	Microstructural Evolution of Tin Nanoparticles during In Situ Sodium Insertion and Extraction. Nano Letters, 2012, 12, 5897-5902.	4.5	491
8	Ultrafast Electrochemical Lithiation of Individual Si Nanowire Anodes. Nano Letters, 2011, 11, 2251-2258.	4.5	379
9	Two-Phase Electrochemical Lithiation in Amorphous Silicon. Nano Letters, 2013, 13, 709-715.	4.5	377
10	Formation of monatomic metallic glasses through ultrafast liquid quenching. Nature, 2014, 512, 177-180.	13.7	365
11	Dislocation mechanisms and 3D twin architectures generate exceptional strength-ductility-toughness combination in CrCoNi medium-entropy alloy. Nature Communications, 2017, 8, 14390.	5.8	344
12	High-Performance Rh ₂ P Electrocatalyst for Efficient Water Splitting. Journal of the American Chemical Society, 2017, 139, 5494-5502.	6.6	343
13	Discrete plasticity in sub-10-nm-sized gold crystals. Nature Communications, 2010, 1, 144.	5.8	289
14	Tailoring Pore Size of Nitrogen-Doped Hollow Carbon Nanospheres for Confining Sulfur in Lithium-Sulfur Batteries. Advanced Energy Materials, 2015, 5, 1401752.	10.2	273
15	Highly Reversible Zinc-Ion Intercalation into Chevrel Phase Mo ₆ S ₈ Nanocubes and Applications for Advanced Zinc-Ion Batteries. ACS Applied Materials & Interfaces, 2016, 8, 13673-13677.	4.0	256
16	Liquid-like pseudoelasticity of sub-10-nm crystalline silver particles. Nature Materials, 2014, 13, 1007-1012.	13.3	255
17	In situ atomic-scale observation of twinning-dominated deformation in nanoscale body-centred cubic tungsten. Nature Materials, 2015, 14, 594-600.	13.3	250
18	Near-ideal theoretical strength in gold nanowires containing angstrom scale twins. Nature Communications, 2013, 4, 1742.	5.8	226

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19	In Situ Transmission Electron Microscopy Observations of Electrochemical Oxidation of Li_2O . Nano Letters, 2013, 13, 2209-2214.	4.5	214
20	Size-dependent dynamic structures of supported gold nanoparticles in CO oxidation reaction condition. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 7700-7705.	3.3	183
21	Deformation mechanisms of face-centered-cubic metal nanowires with twin boundaries. Applied Physics Letters, 2007, 90, 151909.	1.5	150
22	Reaction and Capacity-Fading Mechanisms of Tin Nanoparticles in Potassium-Ion Batteries. Journal of Physical Chemistry C, 2017, 121, 12652-12657.	1.5	150
23	Controlling the Lithiation-Induced Strain and Charging Rate in Nanowire Electrodes by Coating. ACS Nano, 2011, 5, 4800-4809.	7.3	135
24	Germanium as a Sodium Ion Battery Material: <i>In Situ</i> TEM Reveals Fast Sodiation Kinetics with High Capacity. Chemistry of Materials, 2016, 28, 1236-1242.	3.2	134
25	Ni_2P /Graphene Sheets as Anode Materials with Enhanced Electrochemical Properties versus Lithium. Journal of Physical Chemistry C, 2012, 116, 22217-22225.	1.5	132
26	Probing the Degradation Mechanism of Li_2MnO_3 Cathode for Li-Ion Batteries. Chemistry of Materials, 2015, 27, 975-982.	3.2	130
27	Controllable Synthesis of a Monophase Nickel Phosphide/Carbon ($\text{Ni}_5\text{P}_4/\text{C}$) Composite Electrode via Wet-Chemistry and a Solid-State Reaction for the Anode in Lithium Secondary Batteries. Advanced Functional Materials, 2012, 22, 3927-3935.	7.8	125
28	Lithiation-Induced Embrittlement of Multiwalled Carbon Nanotubes. ACS Nano, 2011, 5, 7245-7253.	7.3	122
29	Size-Dependent Brittle-to-Ductile Transition in Silica Glass Nanofibers. Nano Letters, 2016, 16, 105-113.	4.5	120
30	In Situ Atomic-Scale Imaging of Phase Boundary Migration in FePO_4 Microparticles During Electrochemical Lithiation. Advanced Materials, 2013, 25, 5461-5466.	11.1	119
31	Zinc oxide nanotetrapods. Nanotechnology, 2004, 15, 365-369.	1.3	111
32	Facile synthesis of Ni-coated Ni ₂ P for supercapacitor applications. CrystEngComm, 2013, 15, 7071.	1.3	106
33	Atomic-scale dynamic process of deformation-induced stacking fault tetrahedra in gold nanocrystals. Nature Communications, 2013, 4, 2340.	5.8	104
34	Material-length-scale-controlled nanoindentation size effects due to strain-gradient plasticity. Acta Materialia, 2003, 51, 4461-4469.	3.8	103
35	Direction-specific van der Waals attraction between rutile TiO_2 nanocrystals. Science, 2017, 356, 434-437.	6.0	103
36	<i>In Situ</i> Transmission Electron Microscopy Probing of Native Oxide and Artificial Layers on Silicon Nanoparticles for Lithium Ion Batteries. ACS Nano, 2014, 8, 11816-11823.	7.3	99

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37	In situ transmission electron microscopy of electrochemical lithiation, delithiation and deformation of individual graphene nanoribbons. Carbon, 2012, 50, 3836-3844.	5.4	98
38	In situ atomistic observation of disconnection-mediated grain boundary migration. Nature Communications, 2019, 10, 156.	5.8	98
39	Nanowire liquid pumps. Nature Nanotechnology, 2013, 8, 277-281.	15.6	96
40	Structural Evolution and Pulverization of Tin Nanoparticles during Lithiation-Delithiation Cycling. Journal of the Electrochemical Society, 2014, 161, F3019-F3024.	1.3	96
41	High damage tolerance of electrochemically lithiated silicon. Nature Communications, 2015, 6, 8417.	5.8	96
42	Electronegative guests in CoSb ₃ . Energy and Environmental Science, 2016, 9, 2090-2098.	15.6	93
43	Atomistic Conversion Reaction Mechanism of WO ₃ in Secondary Ion Batteries of Li, Na, and Ca. Angewandte Chemie - International Edition, 2016, 55, 6244-6247.	7.2	86
44	Slip-activated surface creep with room-temperature super-elongation in metallic nanocrystals. Nature Materials, 2017, 16, 439-445.	13.3	82
45	Lithium fiber growth on the anode in a nanowire lithium ion battery during charging. Applied Physics Letters, 2011, 98, .	1.5	80
46	Porous CuO@ZnO nanocomposite for sensing electrode of high-temperature CO solid-state electrochemical sensor. Nanotechnology, 2005, 16, 2878-2881.	1.3	79
47	<i>In Situ</i> TEM on the Reversibility of Nanosized Sn Anodes during the Electrochemical Reaction. Chemistry of Materials, 2014, 26, 4102-4108.	3.2	79
48	Nanoscale mechanical behavior of individual semiconducting nanobelts. Applied Physics Letters, 2003, 83, 993-995.	1.5	78
49	In situ observation of shear-driven amorphization in silicon crystals. Nature Nanotechnology, 2016, 11, 866-871.	15.6	74
50	Sandwich-Lithiation and Longitudinal Crack in Amorphous Silicon Coated on Carbon Nanofibers. ACS Nano, 2012, 6, 9158-9167.	7.3	72
51	In situ growth and electrochemical characterization versus lithium of a core/shell-structured Ni ₂ P@C nanocomposite synthesized by a facile organic-phase strategy. Journal of Materials Chemistry, 2011, 21, 17988.	6.7	65
52	Dynamic Process of Phase Transition from Wurtzite to Zinc Blende Structure in InAs Nanowires. Nano Letters, 2013, 13, 6023-6027.	4.5	63
53	Multiple-Stripe Lithiation Mechanism of Individual SnO_2 Nanowires in a Flooding Geometry. Physical Review Letters, 2011, 106, 248302.	2.9	62
54	Mechanics and thermodynamics on the stress and hydrogen interaction in crack tip stress corrosion: experiment and theory. Journal of the Mechanics and Physics of Solids, 1998, 46, 1125-1137.	2.3	61

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55	Carbon-Decorated Single-Crystalline Ni ₂ P Nanotubes Derived from Ni Nanowire Templates: A High-Performance Material for Li-Ion Batteries. Chemistry - A European Journal, 2012, 18, 6031-6038.	1.7	59
56	Direct observation of dual-step twinning nucleation in hexagonal close-packed crystals. Nature Communications, 2020, 11, 2483.	5.8	59
57	Impedance-metric Pt/YSZ/Au-Ga ₂ O ₃ sensor for CO detection at high temperature. Sensors and Actuators B: Chemical, 2005, 110, 49-53.	4.0	55
58	Temperature-dependent growth of zinc-blende-structured ZnTe nanostructures. Journal of Crystal Growth, 2008, 310, 4481-4486.	0.7	55
59	Metallic nanocrystals with low angle grain boundary for controllable plastic reversibility. Nature Communications, 2020, 11, 3100.	5.8	53
60	Large-scale synthesis of porous Ni ₂ P nanosheets for lithium secondary batteries. CrystEngComm, 2012, 14, 8633.	1.3	51
61	Synthesis of dinickel phosphide (Ni ₂ P) for fast lithium-ion transportation: a new class of nanowires with exceptionally improved electrochemical performance as a negative electrode. RSC Advances, 2012, 2, 3430.	1.7	49
62	Anti-twinning in nanoscale tungsten. Science Advances, 2020, 6, eaay2792.	4.7	49
63	Consecutive crystallographic reorientations and superplasticity in body-centered cubic niobium nanowires. Science Advances, 2018, 4, eaas8850.	4.7	46
64	Tuning the Outward to Inward Swelling in Lithiated Silicon Nanotubes via Surface Oxide Coating. Nano Letters, 2016, 16, 5815-5822.	4.5	45
65	<i>In Situ</i> Visualization of Birth and Annihilation of Grain Boundaries in an Au Nanocrystal. Physical Review Letters, 2012, 109, 225501.	2.9	44
66	Hot Corrosion Mechanism of Composite Alumina/Yttria-Stabilized Zirconia Coating in Molten Sulfate-Vanadate Salt. Journal of the American Ceramic Society, 2005, 88, 675-682.	1.9	42
67	Strong Hall-Petch Type Behavior in the Elastic Strain Limit of Nanotwinned Gold Nanowires. Nano Letters, 2015, 15, 3865-3870.	4.5	41
68	Unstable twin in body-centered cubic tungsten nanocrystals. Nature Communications, 2020, 11, 2497.	5.8	40
69	Length scale effect on mechanical behavior due to strain gradient plasticity. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2001, 303, 241-249.	2.6	39
70	Growth of and methanol electro-oxidation by gold nanowires with high density stacking faults. Journal of Materials Chemistry, 2011, 21, 4843.	6.7	39
71	Failure detection of thermal barrier coatings using impedance spectroscopy. Thin Solid Films, 2004, 457, 301-306.	0.8	31
72	A novel and simple growth route towards ultra-fine ZnO nanowires. Journal of Crystal Growth, 2004, 265, 482-486.	0.7	31

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73	Superplastic Nanowires Pulled from the Surface of Common Salt. <i>Nano Letters</i> , 2009, 9, 2295-2299.	4.5	30
74	Atomistic perspective on in situ nanomechanics. <i>Extreme Mechanics Letters</i> , 2016, 8, 127-139.	2.0	29
75	Void-assisted plasticity in Ag nanowires with a single twin structure. <i>Nanoscale</i> , 2014, 6, 9574.	2.8	28
76	Alternating starvation of dislocations during plastic yielding in metallic nanowires. <i>Scripta Materialia</i> , 2008, 59, 219-222.	2.6	27
77	Highly-efficient MnO ₂ /carbon array-type catalytic cathode enabling confined Li ₂ O ₂ growth for long-life Li-O ₂ batteries. <i>Energy Storage Materials</i> , 2017, 6, 164-170.	9.5	27
78	Atomistic processes of surface-diffusion-induced abnormal softening in nanoscale metallic crystals. <i>Nature Communications</i> , 2021, 12, 5237.	5.8	27
79	Electron Transfer Governed Crystal Transformation of Tungsten Trioxide upon Li Ions Intercalation. <i>ACS Applied Materials & Interfaces</i> , 2016, 8, 24567-24572.	4.0	26
80	In Situ Observation on Dislocation-Controlled Sublimation of Mg Nanoparticles. <i>Nano Letters</i> , 2016, 16, 1156-1160.	4.5	26
81	Processing and mechanical behaviour of TiAl/NiAl intermetallic composites produced by cryogenic mechanical alloying. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2003, 363, 275-289.	2.6	25
82	Nanomechanical characterization of ZnS nanobelts. <i>Nanotechnology</i> , 2005, 16, 1073-1077.	1.3	25
83	Direct observation of Pt nanocrystal coalescence induced by electron-excitation-enhanced van der Waals interactions. <i>Nano Research</i> , 2014, 7, 308-314.	5.8	22
84	Discrete shear band plasticity through dislocation activities in body-centered cubic tungsten nanowires. <i>Scientific Reports</i> , 2018, 8, 4574.	1.6	22
85	Interfacial Structure and Micro and Nano-Mechanical Behavior of Laser-Welded 6061 Aluminum Alloy Blank. <i>Journal of Engineering Materials and Technology, Transactions of the ASME</i> , 2004, 126, 8-13.	0.8	21
86	Atomistic Conversion Reaction Mechanism of WO ₃ in Secondary Ion Batteries of Li, Na, and Ca. <i>Angewandte Chemie</i> , 2016, 128, 6352-6355.	1.6	21
87	Superplasticity in Gold Nanowires through the Operation of Multiple Slip Systems. <i>Advanced Functional Materials</i> , 2018, 28, 1805258.	7.8	21
88	Discrete twinning dynamics and size-dependent dislocation-to twin transition in body-centred cubic tungsten. <i>Journal of Materials Science and Technology</i> , 2022, 106, 33-40.	5.6	19
89	In situ atomistic observation of the deformation mechanism of Au nanowires with twin-twin intersection. <i>Journal of Materials Science and Technology</i> , 2020, 53, 118-125.	5.6	19
90	Toughening of ferroelectric ceramics under polarization switching. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2000, 292, 66-73.	2.6	17

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91	Impedance Characterization of ZnO Nanobelt/Pd Schottky Contacts in Ammonia. <i>Small</i> , 2006, 2, 1458-1461.	5.2	17
92	Superior flexibility of a wrinkled carbon shell under electrochemical cycling. <i>Journal of Materials Chemistry A</i> , 2014, 2, 4192.	5.2	17
93	In Situ Observation of Single-Phase Lithium Intercalation in Sub-25-nm Nanoparticles. <i>Advanced Materials</i> , 2017, 29, 1700236.	11.1	16
94	Insights into fundamental deformation processes from advanced in situ transmission electron microscopy. <i>MRS Bulletin</i> , 2019, 44, 443-449.	1.7	16
95	Experimental molecular dynamics for individual atomic-scale plastic events in nanoscale crystals. <i>Journal of the Mechanics and Physics of Solids</i> , 2022, 158, 104687.	2.3	16
96	Atomistic observation on diffusion-mediated friction between single-asperity contacts. <i>Nature Materials</i> , 2022, 21, 173-180.	13.3	16
97	The Effect of Stress Relaxation on the Microstructure and Hardness Evolution of Pure Amorphous-Carbon and C/Ti Multilayer Films. <i>Advanced Engineering Materials</i> , 2010, 12, 920-925.	1.6	14
98	Atomic resolution observation of conversion-type anode RuO ₂ during the first electrochemical lithiation. <i>Nanotechnology</i> , 2015, 26, 125404.	1.3	14
99	In situ observation of sublimation-enhanced magnesium oxidation at elevated temperature. <i>Nano Research</i> , 2016, 9, 2796-2802.	5.8	14
100	Advances in experimental mechanics at atomic scale. <i>Extreme Mechanics Letters</i> , 2021, 45, 101284.	2.0	14
101	In situ nanomechanical testing of twinned metals in a transmission electron microscope. <i>MRS Bulletin</i> , 2016, 41, 305-313.	1.7	13
102	Fine carbide-strengthened 3Cr-2WVTa bainitic steel. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2004, 35, 1281-1288.	1.1	12
103	Radial moduli of individual single-walled carbon nanotubes with and without electric current flow. <i>Applied Physics Letters</i> , 2006, 89, 211906.	1.5	12
104	Accessing crystal-crystal interaction forces with oriented nanocrystal atomic force microscopy probes. <i>Nature Protocols</i> , 2018, 13, 2005-2030.	5.5	12
105	Characterization of electrical properties in axial Si-Ge nanowire heterojunctions using off-axis electron holography and atom-probe tomography. <i>Journal of Applied Physics</i> , 2016, 120, .	1.1	10
106	Advances in understanding atomic-scale deformation of small-sized face-centered cubic metals with in situ transmission electron microscopy. <i>Materials Today Nano</i> , 2018, 2, 58-69.	2.3	10
107	Toughening and weakening in ferroelectric ceramics by domain-switching process under mixed electric and mechanical loading. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2002, 33, 2835-2845.	1.1	9
108	Size Dependent Pore Formation in Germanium Nanowires Undergoing Reversible Delithiation Observed by In Situ TEM. <i>Journal of Physical Chemistry C</i> , 2016, 120, 28825-28831.	1.5	9

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109	Atomic-scale friction between single-asperity contacts unveiled through in situ transmission electron microscopy. <i>Nature Nanotechnology</i> , 2022, 17, 737-745.	15.6	9
110	Defect-driven room-temperature coalescence of double-walled carbon nanotubes. <i>Nanotechnology</i> , 2010, 21, 245302.	1.3	8
111	Effect of Strain Gradients and Heterogeneity on Flow Strength of Particle Reinforced Metal-Matrix Composites. <i>Journal of Engineering Materials and Technology, Transactions of the ASME</i> , 2002, 124, 167-173.	0.8	6
112	Nucleation of nanocracks by a quasicleavage process in a dislocation-free zone. <i>Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties</i> , 1999, 79, 1817-1837.	0.7	5
113	Strengthening mechanisms and dislocation dynamics in twinned metal nanowires. <i>Jom</i> , 2008, 60, 85-88.	0.9	5
114	Conducting oxide formation and mechanical endurance of potential solid-oxide fuel cell interconnects in coal syngas environment. <i>Journal of Power Sources</i> , 2008, 183, 247-252.	4.0	5
115	Transgranular cleavage fracture of Fe3Al intermetallics induced by moisture and aqueous environments. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 1998, 258, 187-195.	2.6	4
116	LiMnPO4-Li3V2(PO4)3 composite cathode material derived from Mn(VO3)2 nanosheet precursor. <i>Journal of Alloys and Compounds</i> , 2017, 695, 1813-1820.	2.8	4
117	Nanoindentation-Induced Disappearance of a Room-Temperature Coulomb Blockade in Single-Walled Carbon Nanotubes. <i>Small</i> , 2006, 2, 59-61.	5.2	3
118	Three-dimensional dendrite-like nanostructures of gallium nitride. <i>Journal of Crystal Growth</i> , 2007, 308, 166-169.	0.7	3
119	Effect of microcracking on electric-field-induced stress intensity factors in dielectric ceramics. <i>Philosophical Magazine</i> , 2003, 83, 277-294.	0.7	2
120	Length-scale-controlled interfacial toughening and weakening in metal/ceramic layered materials. <i>Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties</i> , 2002, 82, 1049-1071.	0.7	1
121	Nanomechanical Characterization on Zinc and Tin Oxides Nanobelts. <i>Materials Research Society Symposia Proceedings</i> , 2002, 740, 1.	0.1	1
122	Fracture and cavitation in a constrained thin metal layer under a scale effect in layered materials. <i>Philosophical Magazine</i> , 2003, 83, 1807-1826.	0.7	1
123	In-situ TEM on Formation of Monatomic Metallic Glasses Through Ultrafast Liquid Quenching. <i>Microscopy and Microanalysis</i> , 2019, 25, 1828-1829.	0.2	1
124	Length-scale-controlled interfacial toughening and weakening in metal/ceramic layered materials. <i>Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties</i> , 2002, 82, 1049-1071.	0.7	0
125	Response to "Comment on "Deformation mechanisms of face-centered-cubic metal nanowires with twin boundaries" [Appl. Phys. Lett. 93, 086101 (2008)]. <i>Applied Physics Letters</i> , 2008, 93, .	1.5	0
126	Tuning the Outward to Inward Swelling in Lithiated Silicon Nanotubes via Surface Oxide Coating. <i>Microscopy and Microanalysis</i> , 2017, 23, 2018-2019.	0.2	0

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127	In situ atomic-scale observation of dislocation-mediated discrete plasticity in nanoscale crystals. Material Science & Engineering International Journal, 2021, 5, .	0.0	0
128	In-situ TEM on interfacial phase transition during shear-mediated grain boundary migration. Microscopy and Microanalysis, 2021, 27, 2402-2403.	0.2	0