Scott X Mao

List of Publications by Year
in descending order

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	Discrete twinning dynamics and size-dependent dislocation-to twin transition in body-centred cubic tungsten. Journal of Materials Science and Technology, 2022, 106, 33-40.	5.6	19
2	Experimental molecular dynamics for individual atomic-scale plastic events in nanoscale crystals. Journal of the Mechanics and Physics of Solids, 2022, 158, 104687.	2.3	16
3	Atomistic observation on diffusion-mediated friction between single-asperity contacts. Nature Materials, 2022, 21, 173-180.	13.3	16
4	Atomic-scale friction between single-asperity contacts unveiled through in situ transmission electron microscopy. Nature Nanotechnology, 2022, 17, 737-745.	15.6	9
5	In situ atomic-scale observation of dislocation-mediated discrete plasticity in nanoscale crystals. Material Science & Engineering International Journal, 2021, 5, .	0.0	0
6	Advances in experimental mechanics at atomic scale. Extreme Mechanics Letters, 2021, 45, 101284.	2.0	14
7	In-situ TEM on interfacial phase transition during shear-mediated grain boundary migration. Microscopy and Microanalysis, 2021, 27, 2402-2403.	0.2	0
8	Atomistic processes of surface-diffusion-induced abnormal softening in nanoscale metallic crystals. Nature Communications, 2021, 12, 5237.	5.8	27
9	Direct observation of dual-step twinning nucleation in hexagonal close-packed crystals. Nature Communications, 2020, 11, 2483.	5.8	59
10	Unstable twin in body-centered cubic tungsten nanocrystals. Nature Communications, 2020, 11, 2497.	5.8	40
11	Anti-twinning in nanoscale tungsten. Science Advances, 2020, 6, eaay2792.	4.7	49
12	Metallic nanocrystals with low angle grain boundary for controllable plastic reversibility. Nature Communications, 2020, 11, 3100.	5.8	53
13	In situ atomistic observation of the deformation mechanism of Au nanowires with twinâ€“twin intersection. Journal of Materials Science and Technology, 2020, 53, 118-125.	5.6	19
14	In-situ TEM on Formation of Monatomic Metallic Glasses Through Ultrafast Liquid Quenching. Microscopy and Microanalysis, 2019, 25, 1828-1829.	0.2	1
15	Insights into fundamental deformation processes from advanced in situ transmission electron microscopy. MRS Bulletin, 2019, 44, 443-449.	1.7	16
16	In situ atomistic observation of disconnection-mediated grain boundary migration. Nature Communications, 2019, 10, 156.	5.8	98
17	Discrete shear band plasticity through dislocation activities in body-centered cubic tungsten nanowires. Scientific Reports, 2018, 8, 4574.	1.6	22
18	Advances in understanding atomic-scale deformation of small-sized face-centered cubic metals with in situ transmission electron microscopy. Materials Today Nano, 2018, 2, 58-69.	2.3	10

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19	Superplasticity in Gold Nanowires through the Operation of Multiple Slip Systems. Advanced Functional Materials, 2018, 28, 1805258.	7.8	21
20	Accessing crystalâ€“crystal interaction forces with oriented nanocrystal atomic force microscopy probes. Nature Protocols, 2018, 13, 2005-2030.	5.5	12
21	Consecutive crystallographic reorientations and superplasticity in body-centered cubic niobium nanowires. Science Advances, 2018, 4, eaas8850.	4.7	46
22	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
23	LiMnPO4Â·Li3V2(PO4)3 composite cathode material derived from Mn(VO3)2 nanosheet precursor. Journal of Alloys and Compounds, 2017, 695, 1813-1820.	2.8	4
24	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
25	In Situ Observation of Singleâ€Phase Lithium Intercalation in Subâ€25â€nm Nanoparticles. Advanced Materials, 2017, 29, 1700236.	11.1	16
26	Direction-specific van der Waals attraction between rutile TiO ₂ nanocrystals. Science, 2017, 356, 434-437.	6.0	103
27	Reaction and Capacity-Fading Mechanisms of Tin Nanoparticles in Potassium-Ion Batteries. Journal of Physical Chemistry C, 2017, 121, 12652-12657.	1.5	150
28	High-Performance Rh₂P Electrocatalyst for Efficient Water Splitting. Journal of the American Chemical Society, 2017, 139, 5494-5502.	6.6	343
29	Tuning the Outward to Inward Swelling in Lithiated Silicon Nanotubes via Surface Oxide Coating. Microscopy and Microanalysis, 2017, 23, 2018-2019.	0.2	0
30	Highly-efficient MnO2/carbon array-type catalytic cathode enabling confined Li2O2 growth for long-life Liâ€“O2 batteries. Energy Storage Materials, 2017, 6, 164-170.	9.5	27
31	Slip-activated surface creep with room-temperature super-elongation in metallicÂnanocrystals. Nature Materials, 2017, 16, 439-445.	13.3	82
32	Atomistic Conversion Reaction Mechanism of WO₃ in Secondary Ion Batteries of Li, Na, and Ca. Angewandte Chemie - International Edition, 2016, 55, 6244-6247.	7.2	86
33	Characterization of electrical properties in axial Si-Ge nanowire heterojunctions using off-axis electron holography and atom-probe tomography. Journal of Applied Physics, 2016, 120, .	1.1	10
34	Size Dependent Pore Formation in Germanium Nanowires Undergoing Reversible Delithiation Observed by In Situ TEM. Journal of Physical Chemistry C, 2016, 120, 28825-28831.	1.5	9
35	Highly Reversible Zinc-Ion Intercalation into Chevrel Phase Mo₆S₈ Nanocubes and Applications for Advanced Zinc-Ion Batteries. ACS Applied Materials & Interfaces, 2016, 8, 13673-13677.	4.0	256
36	In situ nanomechanical testing of twinned metals in a transmission electron microscope. MRS Bulletin, 2016, 41, 305-313.	1.7	13

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37	Electronegative guests in CoSb₃. Energy and Environmental Science, 2016, 9, 2090-2098.	15.6	93
38	Electron Transfer Governed Crystal Transformation of Tungsten Trioxide upon Li Ions Intercalation. ACS Applied Materials & Interfaces, 2016, 8, 24567-24572.	4.0	26
39	Tuning the Outward to Inward Swelling in Lithiated Silicon Nanotubes via Surface Oxide Coating. Nano Letters, 2016, 16, 5815-5822.	4.5	45
40	In situ observation of shear-driven amorphization in silicon crystals. Nature Nanotechnology, 2016, 11, 866-871.	15.6	74
41	In situ observation of sublimation-enhanced magnesium oxidation at elevated temperature. Nano Research, 2016, 9, 2796-2802.	5.8	14
42	Atomistic Conversion Reaction Mechanism of WO₃ in Secondary Ion Batteries of Li, Na, and Ca. Angewandte Chemie, 2016, 128, 6352-6355.	1.6	21
43	In Situ Observation on Dislocation-Controlled Sublimation of Mg Nanoparticles. Nano Letters, 2016, 16, 1156-1160.	4.5	26
44	Atomistic perspective on in situ nanomechanics. Extreme Mechanics Letters, 2016, 8, 127-139.	2.0	29
45	Germanium as a Sodium Ion Battery Material: In Situ TEM Reveals Fast Sodiation Kinetics with High Capacity. Chemistry of Materials, 2016, 28, 1236-1242.	3.2	134
46	Size-Dependent Brittle-to-Ductile Transition in Silica Glass Nanofibers. Nano Letters, 2016, 16, 105-113.	4.5	120
47	In situ atomic-scale observation of twinning-dominated deformation in nanoscale body-centred cubic tungsten. Nature Materials, 2015, 14, 594-600.	13.3	250
48	Nanoscale origins of the damage tolerance of the high-entropy alloy CrMnFeCoNi. Nature Communications, 2015, 6, 10143.	5.8	608
49	Tailoring Pore Size of Nitrogenâ€Doped Hollow Carbon Nanospheres for Confining Sulfur in Lithiumâ€“Sulfur Batteries. Advanced Energy Materials, 2015, 5, 1401752.	10.2	273
50	Probing the Degradation Mechanism of Li₂MnO₃ Cathode for Li-Ion Batteries. Chemistry of Materials, 2015, 27, 975-982.	3.2	130
51	Atomic resolution observation of conversion-type anode RuO₂during the first electrochemical lithiation. Nanotechnology, 2015, 26, 125404.	1.3	14
52	Strong Hallâ€“Petch Type Behavior in the Elastic Strain Limit of Nanotwinned Gold Nanowires. Nano Letters, 2015, 15, 3865-3870.	4.5	41
53	High damage tolerance of electrochemically lithiated silicon. Nature Communications, 2015, 6, 8417.	5.8	96
54	Structural Evolution and Pulverization of Tin Nanoparticles during Lithiation-Delithiation Cycling. Journal of the Electrochemical Society, 2014, 161, F3019-F3024.	1.3	96

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55	In Situ 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
56	Direct observation of Pt nanocrystal coalescence induced by electron-excitation-enhanced van der Waals interactions. Nano Research, 2014, 7, 308-314.	5.8	22
57	Superior flexibility of a wrinkled carbon shell under electrochemical cycling. Journal of Materials Chemistry A, 2014, 2, 4192.	5.2	17
58	Void-assisted plasticity in Ag nanowires with a single twin structure. Nanoscale, 2014, 6, 9574.	2.8	28
59	Formation of monatomic metallic glasses through ultrafast liquid quenching. Nature, 2014, 512, 177-180.	13.7	365
60	Liquid-like pseudoelasticity of sub-10-nm crystalline silver particles. Nature Materials, 2014, 13, 1007-1012.	13.3	255
61	In Situ TEM on the Reversibility of Nanosized Sn Anodes during the Electrochemical Reaction. Chemistry of Materials, 2014, 26, 4102-4108.	3.2	79
62	Atomic-scale dynamic process of deformation-induced stacking fault tetrahedra in gold nanocrystals. Nature Communications, 2013, 4, 2340.	5.8	104
63	In Situ Atomicâ€Scale Imaging of Phase Boundary Migration in FePO₄ Microparticles During Electrochemical Lithiation. Advanced Materials, 2013, 25, 5461-5466.	11.1	119
64	Facile synthesis of Ni-coated Ni2P for supercapacitor applications. CrystEngComm, 2013, 15, 7071.	1.3	106
65	Nanowire liquid pumps. Nature Nanotechnology, 2013, 8, 277-281.	15.6	96
66	Near-ideal theoretical strength in gold nanowires containing angstrom scale twins. Nature Communications, 2013, 4, 1742.	5.8	226
67	Two-Phase Electrochemical Lithiation in Amorphous Silicon. Nano Letters, 2013, 13, 709-715.	4.5	377
68	In Situ Transmission Electron Microscopy Observations of Electrochemical Oxidation of Li₂O₂. Nano Letters, 2013, 13, 2209-2214.	4.5	214
69	Dynamic Process of Phase Transition from Wurtzite to Zinc Blende Structure in InAs Nanowires. Nano Letters, 2013, 13, 6023-6027.	4.5	63
70	In situ atomic-scale imaging of electrochemical lithiation in silicon. Nature Nanotechnology, 2012, 7, 749-756.	15.6	533
71	InÂSituVisualization of Birth and Annihilation of Grain Boundaries in an Au Nanocrystal. Physical Review Letters, 2012, 109, 225501.	2.9	44
72	Large-scale synthesis of porous Ni2P nanosheets for lithium secondary batteries. CrystEngComm, 2012, 14, 8633.	1.3	51

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73	Synthesis of dinickel phosphide (Ni2P) 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
74	Microstructural Evolution of Tin Nanoparticles during In Situ Sodium Insertion and Extraction. Nano Letters, 2012, 12, 5897-5902.	4.5	491
75	Ni₂P/Graphene Sheets as Anode Materials with Enhanced Electrochemical Properties versus Lithium. Journal of Physical Chemistry C, 2012, 116, 22217-22225.	1.5	132
76	Sandwich-Lithiation and Longitudinal Crack in Amorphous Silicon Coated on Carbon Nanofibers. ACS Nano, 2012, 6, 9158-9167.	7.3	72
77	Size-Dependent Fracture of Silicon Nanoparticles During Lithiation. ACS Nano, 2012, 6, 1522-1531.	7.3	1,816
78	Controllable Synthesis of a Monophase Nickel Phosphide/Carbon (Ni₅P₄/C) Composite Electrode via Wetâ€Chemistry and a Solidâ€State Reaction for the Anode in Lithium Secondary Batteries. Advanced Functional Materials, 2012, 22, 3927-3935.	7.8	125
79	Carbonâ€Decorated Singleâ€Crystalline Ni₂P Nanotubes Derived from Ni Nanowire Templates: A Highâ€Performance Material for Liâ€Ion Batteries. Chemistry - A European Journal, 2012, 18, 6031-6038.	1.7	59
80	In situ transmission electron microscopy of electrochemical lithiation, delithiation and deformation of individual graphene nanoribbons. Carbon, 2012, 50, 3836-3844.	5.4	98
81	In situ growth and electrochemical characterization versus lithium of a core/shell-structured Ni2P@C nanocomposite synthesized by a facile organic-phase strategy. Journal of Materials Chemistry, 2011, 21, 17988.	6.7	65
82	Growth of and methanol electro-oxidation by gold nanowires with high density stacking faults. Journal of Materials Chemistry, 2011, 21, 4843.	6.7	39
83	Controlling the Lithiation-Induced Strain and Charging Rate in Nanowire Electrodes by Coating. ACS Nano, 2011, 5, 4800-4809.	7.3	135
84	Lithium fiber growth on the anode in a nanowire lithium ion battery during charging. Applied Physics Letters, 2011, 98, .	1.5	80
85	Anisotropic Swelling and Fracture of Silicon Nanowires during Lithiation. Nano Letters, 2011, 11, 3312-3318.	4.5	691
86	Ultrafast Electrochemical Lithiation of Individual Si Nanowire Anodes. Nano Letters, 2011, 11, 2251-2258.	4.5	379
87	Lithiation-Induced Embrittlement of Multiwalled Carbon Nanotubes. ACS Nano, 2011, 5, 7245-7253.	7.3	122
88	Multiple-Stripe Lithiation Mechanism of Individual<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mi>SnO</mml:mi><mml:mn>2</mml:mn></mml:msub></mml:math>Nanowires in a Flooding Geometry. Physical Review Letters, 2011, 106, 248302.	2.9	62
89	In Situ Observation of the Electrochemical Lithiation of a Single SnO ₂ Nanowire Electrode. Science, 2010, 330, 1515-1520.	6.0	1,430
90	The Effect of Stress Relaxation on the Microstructure and Hardness Evolution of Pure Amorphousâ€Carbon and C/Ti Multilayer Films. Advanced Engineering Materials, 2010, 12, 920-925.	1.6	14

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91	Defect-driven room-temperature coalescence of double-walled carbon nanotubes. Nanotechnology, 2010, 21, 245302.	1.3	8
92	Discrete plasticity in sub-10-nm-sized gold crystals. Nature Communications, 2010, 1, 144.	5.8	289
93	Superplastic Nanowires Pulled from the Surface of Common Salt. Nano Letters, 2009, 9, 2295-2299.	4.5	30
94	Strengthening mechanisms and dislocation dynamics in twinned metal nanowires. Jom, 2008, 60, 85-88.	0.9	5
95	Temperature-dependent growth of zinc-blende-structured ZnTe nanostructures. Journal of Crystal Growth, 2008, 310, 4481-4486.	0.7	55
96	Conducting oxide formation and mechanical endurance of potential solid-oxide fuel cell interconnects in coal syngas environment. Journal of Power Sources, 2008, 183, 247-252.	4.0	5
97	Alternating starvation of dislocations during plastic yielding in metallic nanowires. Scripta Materialia, 2008, 59, 219-222.	2.6	27
98	Response to â€œComment on â€˜Deformation mechanisms of face-centered-cubic metal nanowires with twin boundariesâ€™â€‰â€•[Appl. Phys. Lett. 93, 086101 (2008)]. Applied Physics Letters, 2008, 93, .	1.5	0
99	Deformation mechanisms of face-centered-cubic metal nanowires with twin boundaries. Applied Physics Letters, 2007, 90, 151909.	1.5	150
100	Three-dimensional dendrite-like nanostructures of gallium nitride. Journal of Crystal Growth, 2007, 308, 166-169.	0.7	3
101	Nanoindentation-Induced Disappearance of a Room-Temperature Coulomb Blockade in Single-Walled Carbon Nanotubes. Small, 2006, 2, 59-61.	5.2	3
102	Impedance Characterization of ZnO Nanobelt/Pd Schottky Contacts in Ammonia. Small, 2006, 2, 1458-1461.	5.2	17
103	Radial moduli of individual single-walled carbon nanotubes with and without electric current flow. Applied Physics Letters, 2006, 89, 211906.	1.5	12
104	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
105	Impedance-metric Pt/YSZ/Auâ€“Ga2O3 sensor for CO detection at high temperature. Sensors and Actuators B: Chemical, 2005, 110, 49-53.	4.0	55
106	Nanomechanical characterization of ZnS nanobelts. Nanotechnology, 2005, 16, 1073-1077.	1.3	25
107	Porous CuOâ€“ZnO nanocomposite for sensing electrode of high-temperature CO solid-state electrochemical sensor. Nanotechnology, 2005, 16, 2878-2881.	1.3	79
108	Interfacial Structure and Micro and Nano-Mechanical Behavior of Laser-Welded 6061 Aluminum Alloy Blank. Journal of Engineering Materials and Technology, Transactions of the ASME, 2004, 126, 8-13.	0.8	21

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109	Fine carbide-strengthened 3Cr-2WVTa bainitic steel. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2004, 35, 1281-1288.	1.1	12
110	Failure detection of thermal barrier coatings using impedance spectroscopy. Thin Solid Films, 2004, 457, 301-306.	0.8	31
111	A novel and simple growth route towards ultra-fine ZnO nanowires. Journal of Crystal Growth, 2004, 265, 482-486.	0.7	31
112	Zinc oxide nanotetrapods. Nanotechnology, 2004, 15, 365-369.	1.3	111
113	Piezoelectric Characterization of Individual Zinc Oxide Nanobelt Probed by Piezoresponse Force Microscope. Nano Letters, 2004, 4, 587-590.	4.5	649
114	Processing and mechanical behaviour of TiAl/NiAl intermetallic composites produced by cryogenic mechanical alloying. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2003, 363, 275-289.	2.6	25
115	Material-length-scale-controlled nanoindentation size effects due to strain-gradient plasticity. Acta Materialia, 2003, 51, 4461-4469.	3.8	103
116	Effect of microcracking on electric-field-induced stress intensity factors in dielectric ceramics. Philosophical Magazine, 2003, 83, 277-294.	0.7	2
117	Nanoscale mechanical behavior of individual semiconducting nanobelts. Applied Physics Letters, 2003, 83, 993-995.	1.5	78
118	Fracture and cavitation in a constrained thin metal layer under a scale effect in layered materials. Philosophical Magazine, 2003, 83, 1807-1826.	0.7	1
119	Length-scale-controlled interfacial toughening and weakening in metal/ceramic layered materials. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 2002, 82, 1049-1071.	0.7	1
120	Length-scale-controlled interfacial toughening and weakening in metal/ceramic layered materials. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 2002, 82, 1049-1071.	0.7	0
121	Nanomechanical Characterization on Zinc and Tin Oxides Nanobelts. Materials Research Society Symposia Proceedings, 2002, 740, 1.	0.1	1
122	Effect of Strain Gradients and Heterogeneity on Flow Strength of Particle Reinforced Metal-Matrix Composites. Journal of Engineering Materials and Technology, Transactions of the ASME, 2002, 124, 167-173.	0.8	6
123	Toughening and weakening in ferroelectric ceramics by domain-switching process under mixed electric and mechanical loading. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2002, 33, 2835-2845.	1.1	9
124	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
125	Toughening of ferroelectric ceramics under polarization switching. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2000, 292, 66-73.	2.6	17
126	Nucleation of nanocracks by a quasicleavage process in a dislocation-free zone. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 1999, 79, 1817-1837.	0.7	5

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127	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
128	Transgranular cleavage fracture of Fe3Al intermetallics induced by moisture and aqueous environments. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 1998, 258, 187-195.	2.6	4