Wei Cai

List of Publications by Year
in descending order

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		38742	8630
149	26,108	50	146
papers	citations	h-index	g-index

157	157	157	31319
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Large-Area Synthesis of High-Quality and Uniform Graphene Films on Copper Foils. Science, 2009, 324, 1312-1314.	12.6	10,000
2	Carbon-Based Supercapacitors Produced by Activation of Graphene. Science, 2011, 332, 1537-1541.	12.6	5,528
3	Synthesis and Solid-State NMR Structural Characterization of ¹³ C-Labeled Graphite Oxide. Science, 2008, 321, 1815-1817.	12.6	1,092
4	Highly stretchable polymer semiconductor films through the nanoconfinement effect. Science, 2017, 355, 59-64.	12.6	897
5	Enabling strain hardening simulations with dislocation dynamics. Modelling and Simulation in Materials Science and Engineering, 2007, 15, 553-595.	2.0	415
6	A non-singular continuum theory of dislocations. Journal of the Mechanics and Physics of Solids, 2006, 54, 561-587.	4.8	359
7	Nanohybrid Shish-Kebabs: Periodically Functionalized Carbon Nanotubes. Advanced Materials, 2005, 17, 1198-1202.	21.0	331
8	A Bamboo-Inspired Nanostructure Design for Flexible, Foldable, and Twistable Energy Storage Devices. Nano Letters, 2015, 15, 3899-3906.	9.1	296
9	Computer Simulations of Dislocations. , 2006, , .		294
10	Dislocation multi-junctions and strain hardening. Nature, 2006, 440, 1174-1178.	27.8	275
11	Dynamic transitions from smooth to rough to twinning in dislocation motion. Nature Materials, 2004, 3, 158-163.	27.5	253
12	Minimizing Boundary Reflections in Coupled-Domain Simulations. Physical Review Letters, 2000, 85, 3213-3216.	7.8	202
13	Surface-controlled dislocation multiplication in metal micropillars. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 14304-14307.	7.1	201
14	Comparing the strength of f.c.c. and b.c.c. sub-micrometer pillars: Compression experiments and dislocation dynamics simulations. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2008, 493, 21-25.	5.6	191
15	Periodic image effects in dislocation modelling. Philosophical Magazine, 2003, 83, 539-567.	1.6	185
16	Plasticity of metal nanowires. Journal of Materials Chemistry, 2012, 22, 3277.	6.7	182
17	Stretchable self-healable semiconducting polymer film for active-matrix strain-sensing array. Science Advances, 2019, 5, eaav3097.	10.3	179
18	Mechanics of Crystalline Nanowires. MRS Bulletin, 2009, 34, 178-183.	3.5	166

#	Article	IF	Citations
19	Modeling of dislocationâ€“grain boundary interactions in FCC metals. Journal of Nuclear Materials, 2003, 323, 281-289.	2.7	143
20	Brittle and ductile fracture of semiconductor nanowiresâ€‰â€“â€‰molecular dynamics simulations. Philosophical Magazine, 2007, 87, 2169-2189.	1.6	136
21	Size and temperature effects on the fracture mechanisms of silicon nanowires: Molecular dynamics simulations. International Journal of Plasticity, 2010, 26, 1387-1401.	8.8	129
22	Dislocation Core Effects on Mobility. Dislocations in Solids, 2004, 12, 1-80.	1.6	120
23	Entropic effect on the rate of dislocation nucleation. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 5174-5178.	7.1	117
24	Direct observation of mineralâ€“organic composite formation reveals occlusion mechanism. Nature Communications, 2016, 7, 10187.	12.8	110
25	Microstructural origin of resistanceâ€“strain hysteresis in carbon nanotube thin film conductors. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 1986-1991.	7.1	107
26	Core energy and Peierls stress of a screw dislocation in bcc molybdenum: A periodic-cell tight-binding study. Physical Review B, 2004, 70, .	3.2	105
27	Anisotropic Elastic Interactions of a Periodic Dislocation Array. Physical Review Letters, 2001, 86, 5727-5730.	7.8	102
28	In situ atomic-scale observation of oxygen-driven core-shell formation in Pt3Co nanoparticles. Nature Communications, 2017, 8, 204.	12.8	102
29	Nucleationâ€Controlled Distributed Plasticity in Pentaâ€twinned Silver Nanowires. Small, 2012, 8, 2986-2993.	10.0	101
30	Microparticle traction force microscopy reveals subcellular force exertion patterns in immune cellâ€“target interactions. Nature Communications, 2020, 11, 20.	12.8	101
31	Mobility laws in dislocation dynamics simulations. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2004, 387-389, 277-281.	5.6	98
32	Synthesis and Photoluminescence Properties of Truncated Octahedral Eu-Doped YF3 Submicrocrystals or Nanocrystals. Journal of Physical Chemistry C, 2007, 111, 3241-3245.	3.1	91
33	Energy barrier for homogeneous dislocation nucleation: Comparing atomistic and continuum models. Scripta Materialia, 2011, 64, 1043-1046.	5.2	86
34	Dislocation Networks and the Microstructural Origin of Strain Hardening. Physical Review Letters, 2018, 121, 085501.	7.8	83
35	Intrinsic Bauschinger Effect and Recoverable Plasticity in Pentatwinned Silver Nanowires Tested in Tension. Nano Letters, 2015, 15, 139-146.	9.1	82
36	Singular orientations and faceted motion of dislocations in body-centered cubic crystals. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 15174-15178.	7.1	80

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37	Molecular dynamics simulations of motion of edge and screw dislocations in a metal. Computational Materials Science, 2002, 23, 111-115.	3.0	78
38	Atomistic simulations of surface segregation of defects in solid oxide electrolytes. Acta Materialia, 2010, 58, 2197-2206.	7.9	78
39	Intrinsic Mobility of a Dissociated Dislocation in Silicon. Physical Review Letters, 2000, 84, 3346-3349.	7.8	72
40	Predicting the dislocation nucleation rate as a function of temperature and stress. Journal of Materials Research, 2011, 26, 2335-2354.	2.6	71
41	Parameter-free modelling of dislocation motion: The case of silicon. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 2001, 81, 1257-1281.	0.6	69
42	Atomistic simulations of grain boundary segregation in nanocrystalline yttria-stabilized zirconia and gadolinia-doped ceria solid oxide electrolytes. Acta Materialia, 2013, 61, 3872-3887.	7.9	68
43	Plasticity of metal wires in torsion: Molecular dynamics and dislocation dynamics simulations. Journal of the Mechanics and Physics of Solids, 2010, 58, 1011-1025.	4.8	65
44	Anomalous Dislocation Multiplication in FCC Metals. Physical Review Letters, 2003, 91, 025503.	7.8	63
45	Role of surface roughness in hysteresis during adhesive elastic contact. Philosophical Magazine Letters, 2010, 90, 891-902.	1.2	63
46	Modeling a distribution of point defects as misfitting inclusions in stressed solids. Journal of the Mechanics and Physics of Solids, 2014, 66, 154-171.	4.8	63
47	Dislocation motion in BCC metals by molecular dynamics. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2001, 309-310, 160-163.	5.6	62
48	Stress dependence of cross slip energy barrier for face-centered cubic nickel. Journal of the Mechanics and Physics of Solids, 2014, 62, 181-193.	4.8	62
49	Orientation-Dependent Plasticity in Metal Nanowires under Torsion: Twist Boundary Formation and Eshelby Twist. Nano Letters, 2010, 10, 139-142.	9.1	56
50	Kink Asymmetry and Multiplicity in Dislocation Cores. Physical Review Letters, 1997, 79, 5042-5045.	7.8	53
51	Nodal Effects in Dislocation Mobility. Physical Review Letters, 2002, 89, 115501.	7.8	53
52	Dislocation contribution to acoustic nonlinearity: The effect of orientation-dependent line energy. Journal of Applied Physics, 2011, 109, .	2.5	53
53	Solute drag on perfect and extended dislocations. Philosophical Magazine, 2016, 96, 895-921.	1.6	53
54	Modelling dislocations in a free-standing thin film. Modelling and Simulation in Materials Science and Engineering, 2009, 17, 075007.	2.0	51

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55	Stochastic behaviors in plastic deformation of face-centered cubic micropillars governed by surface nucleation and truncated source operation. Acta Materialia, 2015, 95, 176-183.	7.9	51
56	Computing image stress in an elastic cylinder. Journal of the Mechanics and Physics of Solids, 2007, 55, 2027-2054.	4.8	50
57	Vacancy Interaction with Dislocations in Silicon: The Shuffle-Glide Competition. Physical Review Letters, 2000, 84, 2172-2175.	7.8	49
58	Validity of classical nucleation theory for Ising models. Physical Review E, 2010, 81, 030601.	2.1	48
59	A hybrid method for computing forces on curved dislocations intersecting free surfaces in three-dimensional dislocation dynamics. Modelling and Simulation in Materials Science and Engineering, 2006, 14, 1139-1151.	2.0	45
60	Comparison of thermal properties predicted by interatomic potential models. Modelling and Simulation in Materials Science and Engineering, 2008, 16, 085005.	2.0	45
61	Kinetic Monte Carlo modeling of dislocation motion in BCC metals. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2001, 309-310, 270-273.	5.6	44
62	Plasticity of bcc micropillars controlled by competition between dislocation multiplication and depletion. Acta Materialia, 2013, 61, 3233-3241.	7.9	44
63	Analysis of the elastic strain energy driving force for grain boundary migration using phase field simulation. Scripta Materialia, 2010, 63, 1049-1052.	5.2	42
64	Improved modified embedded-atom method potentials for gold and silicon. Modelling and Simulation in Materials Science and Engineering, 2009, 17, 075008.	2.0	40
65	Zipping, entanglement, and the elastic modulus of aligned single-walled carbon nanotube films. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 20426-20430.	7.1	40
66	Synthesis of nano-AgI arrays and their optical properties. Journal of Materials Research, 2001, 16, 990-992.	2.6	38
67	Advanced time integration algorithms for dislocation dynamics simulations of work hardening. Modelling and Simulation in Materials Science and Engineering, 2016, 24, 045019.	2.0	37
68	Torsion and bending periodic boundary conditions for modeling the intrinsic strength of nanowires. Journal of the Mechanics and Physics of Solids, 2008, 56, 3242-3258.	4.8	36
69	Frontiers in the Simulation of Dislocations. Annual Review of Materials Research, 2020, 50, 437-464.	9.3	36
70	Contribution of dislocation dipole structures to the acoustic nonlinearity. Journal of Applied Physics, 2012, 111, .	2.5	35
71	Phagocytic â€˜teethâ€™ and myosin-II â€˜jawâ€™ power target constriction during phagocytosis. ELife, 2021, 10,	6.0	35
72	Enhancing ionic conductivity of bulk single-crystal yttria-stabilized zirconia by tailoring dopant distribution. Physical Review B, 2011, 83, .	3.2	34

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73	Synthesis and photoluminescence properties of hexagonal Lanthanide(iii)-doped NaYF4 microprisms. CrystEngComm, 2010, 12, 4263.	2.6	33
74	The stability of Lomerâ€“Cottrell jogs in nanopillars. Scripta Materialia, 2011, 64, 529-532.	5.2	33
75	Stress-driven migration of simple low-angle mixed grain boundaries. Acta Materialia, 2012, 60, 1395-1407.	7.9	33
76	Multivalent Assembly of Flexible Polymer Chains into Supramolecular Nanofibers. Journal of the American Chemical Society, 2020, 142, 16814-16824.	13.7	33
77	Spatiotemporal periodicity of dislocation dynamics in a two-dimensional microfluidic crystal flowing in a tapered channel. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 12082-12087.	7.1	32
78	Numerical tests of nucleation theories for the Ising models. Physical Review E, 2010, 82, 011603.	2.1	30
79	Efficient computation of forces on dislocation segments in anisotropic elasticity. Modelling and Simulation in Materials Science and Engineering, 2010, 18, 045013.	2.0	30
80	Equilibrium shape of dislocation shear loops in anisotropic Î±-Fe. Modelling and Simulation in Materials Science and Engineering, 2011, 19, 065006.	2.0	30
81	Fundamentals of Dislocation Dynamics Simulations. Springer Series in Materials Science, 2016, , 53-87.	0.6	29
82	Free energy change of a dislocation due to a Cottrell atmosphere. Philosophical Magazine, 2018, 98, 1491-1510.	1.6	27
83	Correlative image learning of chemo-mechanics in phase-transforming solids. Nature Materials, 2022, 21, 547-554.	27.5	27
84	Reliability of Single Crystal Silver Nanowire-Based Systems: Stress Assisted Instabilities. ACS Nano, 2017, 11, 4768-4776.	14.6	26
85	Dislocation dynamics simulation of Frank-Read sources in anisotropic Î±-Fe. Modelling and Simulation in Materials Science and Engineering, 2012, 20, 045022.	2.0	25
86	Molecular Dynamics. , 2012, , 249-265.		24
87	Discrete shear band plasticity through dislocation activities in body-centered cubic tungsten nanowires. Scientific Reports, 2018, 8, 4574.	3.3	22
88	Growth mode control for direct-gap core/shell Ge/GeSn nanowire light emission. Materials Today, 2020, 40, 101-113.	14.2	22
89	Ab InitioCalculations in a Uniform Magnetic Field Using Periodic Supercells. Physical Review Letters, 2004, 92, 186402.	7.8	21
90	Importance sampling of rare transition events in Markov processes. Physical Review E, 2002, 66, 046703.	2.1	20

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91	Conditional convergence in two-dimensional dislocation dynamics. Modelling and Simulation in Materials Science and Engineering, 2013, 21, 055003.	2.0	19
92	Topological origin of strain induced damage of multi-network elastomers by bond breaking. Extreme Mechanics Letters, 2020, 40, 100883.	4.1	19
93	Dislocation density-based plasticity model from massive discrete dislocation dynamics database. Journal of the Mechanics and Physics of Solids, 2020, 145, 104152.	4.8	19
94	Kinetic Monte Carlo method for dislocation glide in silicon. Journal of Computer-Aided Materials Design, 1999, 6, 175-183.	0.7	18
95	Efficient free-energy calculations by the simulation of nonequilibrium processes. Computing in Science and Engineering, 2000, 2, 88-96.	1.2	18
96	Nanoscale patterning controls inorganicâ€“membrane interface structure. Nanoscale, 2011, 3, 391-400.	5.6	18
97	A goldâ€“silicon potential fitted to the binary phase diagram. Journal of Physics Condensed Matter, 2010, 22, 055401.	1.8	17
98	Molecular dynamics simulations of gold-catalyzed growth of silicon bulk crystals and nanowires. Journal of Materials Research, 2011, 26, 2199-2206.	2.6	17
99	Dislocation Structure and Mobility in hcpHe4. Physical Review Letters, 2016, 117, 045301.	7.8	17
100	Coupling of coherent misfit strain and composition distributions in coreâ€“shell Ge/Ge1-xSnx nanowire light emitters. Materials Today Nano, 2019, 5, 100026.	4.6	17
101	Dislocation junctions and jogs in a free-standing FCC thin film. Modelling and Simulation in Materials Science and Engineering, 2011, 19, 025002.	2.0	16
102	A three-dimensional phase field model for nanowire growth by the vaporâ€“liquidâ€“solid mechanism. Modelling and Simulation in Materials Science and Engineering, 2014, 22, 055005.	2.0	16
103	Stress effects on the energy barrier and mechanisms of cross-slip in FCC nickel. Journal of the Mechanics and Physics of Solids, 2020, 144, 104105.	4.8	16
104	Kinetic Monte Carlo approach to modeling dislocation mobility. Computational Materials Science, 2002, 23, 124-130.	3.0	15
105	Computing dislocation stress fields in anisotropic elastic media using fast multipole expansions. Modelling and Simulation in Materials Science and Engineering, 2012, 20, 045015.	2.0	15
106	Anisotropic Size-Dependent Plasticity in Face-Centered Cubic Micropillars Under Torsion. Jom, 2016, 68, 253-260.	1.9	15
107	Spontaneous, Defect-Free Kinking via Capillary Instability during Vaporâ€“Liquidâ€“Solid Nanowire Growth. Nano Letters, 2016, 16, 1713-1718.	9.1	15
108	Quantum entanglement of formation between qudits. Physical Review A, 2008, 77, .	2.5	14

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109	Geometric aspects of the ideal shear resistance in simple crystal lattices. Philosophical Magazine, 2006, 86, 3847-3859.	1.6	13
110	Efficient time integration in dislocation dynamics. Modelling and Simulation in Materials Science and Engineering, 2014, 22, 025003.	2.0	13
111	GPU-accelerated dislocation dynamics using subcycling time-integration. Modelling and Simulation in Materials Science and Engineering, 2019, 27, 075014.	2.0	13
112	Strengthening Mechanism of a Single Precipitate in a Metallic Nanocube. Nano Letters, 2019, 19, 255-260.	9.1	13
113	Energy of a Prismatic Dislocation Loop in an Elastic Cylinder. Mathematics and Mechanics of Solids, 2009, 14, 192-206.	2.4	12
114	Ab initiokinetic Monte Carlo model of ionic conduction in bulk yttria-stabilized zirconia. Modelling and Simulation in Materials Science and Engineering, 2012, 20, 065006.	2.0	12
115	Phase Field Model for Morphological Transition in Nanowire Vaporâ€“Liquidâ€“Solid Growth. Crystal Growth and Design, 2017, 17, 2211-2217.	3.0	12
116	A critical look at the prediction of the temperature field around a laser-induced melt pool on metallic substrates. Scientific Reports, 2021, 11, 12224.	3.3	12
117	Computation of virtual X-ray diffraction patterns from discrete dislocation structures. Computational Materials Science, 2018, 146, 268-277.	3.0	11
118	Energy of periodic discrete dislocation networks. Journal of the Mechanics and Physics of Solids, 2018, 121, 133-146.	4.8	11
119	Spherical harmonics method for computing the image stress due to a spherical void. Journal of the Mechanics and Physics of Solids, 2019, 126, 151-167.	4.8	11
120	Intrinsic size dependent plasticity in BCC micro-pillars under uniaxial tension and pure torsion. Extreme Mechanics Letters, 2020, 40, 100901.	4.1	11
121	Kinetic Monte Carlo method for dislocation migration in the presence of solute. Physical Review B, 2005, 71, .	3.2	10
122	Point defect interaction with dislocations in silicon. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2001, 309-310, 129-132.	5.6	9
123	Title is missing!. Journal of Materials Science, 2003, 38, 3051-3054.	3.7	9
124	On the existence of Eshelbyâ€™s equivalent ellipsoidal inclusion solution. Mathematics and Mechanics of Solids, 2012, 17, 840-847.	2.4	9
125	Ideal Shear Strength of a Quantum Crystal. Physical Review Letters, 2014, 112, 155303.	7.8	9
126	Properties of the Eshelby tensor and existence of the equivalent ellipsoidal inclusion solution. Journal of the Mechanics and Physics of Solids, 2018, 121, 71-80.	4.8	9

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127	Core energies of dislocations in bcc metals. Physical Review Materials, 2021, 5, .	2.4	9
128	Kinetic Monte Carlo simulations of oxygen vacancy diffusion in a solid electrolyte: Computing the electrical impedance using the fluctuationâ€“dissipation theorem. Electrochemistry Communications, 2010, 12, 223-226.	4.7	8
129	Slip-free multiplication and complexity of dislocation networks in FCC metals. Materials Theory, 2021, 5, .	4.3	8
130	Adaptive importance sampling Monte Carlo simulation of rare transition events. Journal of Chemical Physics, 2005, 122, 074103.	3.0	7
131	Electronic structure calculations in a uniform magnetic field using periodic supercells. Journal of Computational Physics, 2007, 226, 1310-1331.	3.8	7
132	A spectral approach for discrete dislocation dynamics simulations of nanoindentation. Modelling and Simulation in Materials Science and Engineering, 2018, 26, 055004.	2.0	7
133	Geometrically projected discrete dislocation dynamics. Modelling and Simulation in Materials Science and Engineering, 2018, 26, 065011.	2.0	6
134	Highâ€Throughput Growth of Microscale Gold Bicrystals for Singleâ€Grainâ€Boundary Studies. Advanced Materials, 2019, 31, 1902189.	21.0	6
135	Molecular Dynamics. , 2020, , 573-594.		6
136	Bending and precipitate formation mechanisms in epitaxial Ge-core/GeSn-shell nanowires. Nanoscale, 2021, 13, 17547-17555.	5.6	6
137	Dynamics of Dissociated Dislocations in SI: A Micro-Meso Simulation Methodology. Materials Research Society Symposia Proceedings, 1998, 538, 69.	0.1	5
138	Dislocation dynamics simulations in a cylinder. IOP Conference Series: Materials Science and Engineering, 2009, 3, 012007.	0.6	5
139	Evaluation of the Surface Tension of Silicon-Gold Binary Liquid Alloy. Materials Science Forum, 0, 817, 772-777.	0.3	5
140	Anisotropy effect on strain-induced instability during growth of heteroepitaxial films. Journal of Materials Science, 2018, 53, 5777-5785.	3.7	5
141	A novel experimental method for in situ strain measurement during selective laser melting. Virtual and Physical Prototyping, 2020, 15, 583-595.	10.4	5
142	Anisotropy of the reflectivity spectra of a BiSrCaCuO single crystal within the (001) plane. Applied Physics Letters, 1991, 58, 1098-1099.	3.3	4
143	Pipe-diffusion-enriched dislocations and interfaces in SnSe/PbSe heterostructures. Physical Review Materials, 2021, 5, .	2.4	4
144	Atomistic mechanisms of orientation and temperature dependence in gold-catalyzed silicon growth. Journal of Applied Physics, 2017, 122, 085106.	2.5	3

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145	Phase-field investigation of the stages in radial growth of coreâ€“shell Ge/Ge_{1â”x}Sn_x nanowires. Nanoscale, 2019, 11, 21974-21980.	5.6	3
146	Stability of Eshelby dislocations in FCC crystalline nanowires. International Journal of Plasticity, 2016, 86, 26-36.	8.8	2
147	Predicting stability of nanofin arrays against collapse by phase field modeling. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2018, 36, 051602.	1.2	2
148	Electro-chemo-mechanical charge carrier equilibrium at interfaces. Physical Chemistry Chemical Physics, 2021, 23, 23730-23740.	2.8	2
149	Modeling Dislocations Using a Periodic Cell. , 2005, , 813-826.		1