W Craig Carter

List of Publications by Year
in descending order

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136 papers	12,158 citations	31976 53 h-index	27406 106 g-index
179 all docs	179 docs citations	179 times ranked	11191 citing authors

#	Article	IF	Citations
1	Semi-solid alkali metal electrodes enabling high critical current densities in solid electrolyte batteries. Nature Energy, 2021, 6, 314-322.	39.5	78
2	Simulating Infiltration as a Sequence of Pinning and De-pinning Processes. Acta Materialia, 2021, 210, 116831.	7.9	3
3	Mesoscale Model for Ostwald Ripening of Catalyst Nanoparticles. Journal of the Electrochemical Society, 2021, 168, 054515.	2.9	5
4	Heterotwin Zn₃P₂superlattice nanowires: the role of indium insertion in the superlattice formation mechanism and their optical properties. Nanoscale, 2020, 12, 22534-22540.	5.6	7
5	Growth of nanowire arrays from micron-feature templates. Nanotechnology, 2019, 30, 285302.	2.6	1
6	Questioning liquid droplet stability on nanowire tips: from theory to experiment. Nanotechnology, 2019, 30, 285604.	2.6	9
7	Phase-field model for diffusion-induced grain boundary migration: An application to battery electrodes. Physical Review Materials, 2019, 3, .	2.4	10
8	Micro-mechanics in Electrochemical Systems. , 2019, , 901-953.		0
9	Combining phase-field crystal methods with a Cahn-Hilliard model for binary alloys. Physical Review E, 2018, 97, 043304.	2.1	14
10	Micro-mechanics in Electrochemical Systems. , 2018, , 1-54.		0
11	Lithium Metal Penetration Induced by Electrodeposition through Solid Electrolytes: Example in Single-Crystal Li₆La₃ZrTaO₁₂Garnet. Journal of the Electrochemical Society, 2018, 165, A3648-A3655.	2.9	172
12	Mesoscopic Phase Transition Kinetics in Secondary Particles of Electrode-Active Materials in Lithium-Ion Batteries. Chemistry of Materials, 2018, 30, 4216-4225.	6.7	18
13	Mechanical instability of electrode-electrolyte interfaces in solid-state batteries. Physical Review Materials, 2018, 2, .	2.4	69
14	The Effect of Stress on Battery-Electrode Capacity. Journal of the Electrochemical Society, 2017, 164, A645-A654.	2.9	109
15	Random Walk Analysis of the Effect of Mechanical Degradation on All-Solid-State Battery Power. Journal of the Electrochemical Society, 2017, 164, A2660-A2664.	2.9	19
16	Modeling of internal mechanical failure of all-solid-state batteries during electrochemical cycling, and implications for battery design. Journal of Materials Chemistry A, 2017, 5, 19422-19430.	10.3	191
17	Mechanism of Lithium Metal Penetration through Inorganic Solid Electrolytes. Advanced Energy Materials, 2017, 7, 1701003.	19.5	780
18	The mechanism of corner instabilities in single-crystal thin films during dewetting. Journal of Applied Physics, 2016, 119, .	2.5	17

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19	Solvent Effects on Polysulfide Redox Kinetics and Ionic Conductivity in Lithium-Sulfur Batteries. Journal of the Electrochemical Society, 2016, 163, A3111-A3116.	2.9	74
20	A low-dissipation, pumpless, gravity-induced flow battery. Energy and Environmental Science, 2016, 9, 1760-1770.	30.8	39
21	Impact of the Ga Droplet Wetting, Morphology, and Pinholes on the Orientation of GaAs Nanowires. Crystal Growth and Design, 2016, 16, 5781-5786.	3.0	38
22	Formulation of the coupled electrochemicalâ€“mechanical boundary-value problem, with applications to transport of multiple charged species. Acta Materialia, 2016, 104, 33-51.	7.9	44
23	Power-law scaling regimes for solid-state dewetting of thin films. Scripta Materialia, 2016, 116, 143-146.	5.2	7
24	Mechanism and Kinetics of Li₂S Precipitation in Lithiumâ€“Sulfur Batteries. Advanced Materials, 2015, 27, 5203-5209.	21.0	704
25	Reversible Aluminumâ€ion Intercalation in Prussian Blue Analogs and Demonstration of a Highâ€Power Aluminumâ€ion Asymmetric Capacitor. Advanced Energy Materials, 2015, 5, 1401410.	19.5	142
26	Gemini: Engaging Experiential and Feature Scales Through Multimaterial Digital Design and Hybrid Additiveâ€“Subtractive Fabrication. 3D Printing and Additive Manufacturing, 2014, 1, 108-114.	2.9	11
27	Strategies to Avert Electrochemical Shock and Their Demonstration in Spinels. Journal of the Electrochemical Society, 2014, 161, F3005-F3009.	2.9	17
28	Chemomechanics of ionically conductive ceramics for electrical energy conversion and storage. Journal of Electroceramics, 2014, 32, 3-27.	2.0	38
29	Polysulfide Flow Batteries Enabled by Percolating Nanoscale Conductor Networks. Nano Letters, 2014, 14, 2210-2218.	9.1	201
30	Maximizing Energetic Efficiency in Flow Batteries Utilizing Non-Newtonian Fluids. Journal of the Electrochemical Society, 2014, 161, A486-A496.	2.9	83
31	Electroactive-Zone Extension in Flow-Battery Stacks. Electrochimica Acta, 2014, 147, 460-469.	5.2	34
32	Capillary Instability in Nanowire Geometries. Nano Letters, 2014, 14, 3577-3581.	9.1	11
33	Quantifying reliability statistics for electrochemical shock of brittle materials. Journal of the Mechanics and Physics of Solids, 2014, 70, 71-83.	4.8	4
34	A review of wetting versus adsorption, complexions, and related phenomena: the rosetta stone of wetting. Journal of Materials Science, 2013, 48, 5681-5717.	3.7	238
35	Aqueous semi-solid flow cell: demonstration and analysis. Physical Chemistry Chemical Physics, 2013, 15, 15833.	2.8	112
36	Electrochemical Shock in Ion-Intercalation Materials with Limited Solid-Solubility. Journal of the Electrochemical Society, 2013, 160, A1286-A1292.	2.9	52

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37	A model for solid-state dewetting of a fully-faceted thin film. Comptes Rendus Physique, 2013, 14, 564-577.	0.9	41
38	Branching Mechanisms in Surfactant Micellar Growth. Journal of Physical Chemistry B, 2013, 117, 2898-2905.	2.6	16
39	Quantitative analysis of anisotropic edge retraction by solid-state dewetting of thin single crystal films. Journal of Applied Physics, 2013, 113, .	2.5	33
40	Towards High Power High Energy Aqueous Sodiumâ€Ion Batteries: The NaTi₂(PO₄)₃/Na_{0.44}MnO₂ System. Advanced Energy Materials, 2013, 3, 290-294.	19.5	430
41	New software tools for the calculation and display of isolated and attached interfacial-energy minimizing particle shapes. Journal of Materials Science, 2012, 47, 8290-8302.	3.7	168
42	Design criteria for electrochemical shock resistant battery electrodes. Energy and Environmental Science, 2012, 5, 8014.	30.8	146
43	Nanomechanical Quantification of Elastic, Plastic, and Fracture Properties of LiCoO₂. Advanced Energy Materials, 2012, 2, 940-944.	19.5	74
44	Modeling the hydrodynamic and electrochemical efficiency of semi-solid flow batteries. Electrochimica Acta, 2012, 69, 301-307.	5.2	73
45	Percolation of diffusionally evolved two-phase systems. Physical Review E, 2011, 83, 021119.	2.1	13
46	Semiâ€Solid Lithium Rechargeable Flow Battery. Advanced Energy Materials, 2011, 1, 511-516.	19.5	482
47	High-strength all-solid lithium ion electrodes based on Li4Ti5O12. Journal of Power Sources, 2011, 196, 6507-6511.	7.8	14
48	Thermodynamic phase-field model for microstructure with multiple components and phases: The possibility of metastable phases. Physical Review E, 2011, 83, 061602.	2.1	51
49	Templated self-assembly of non-close-packed colloidal crystals: Toward diamond cubic and novel heterostructures. Journal of Materials Research, 2011, 26, 247-253.	2.6	8
50	Instruction Online: Core Components for Re-Use. ACS Symposium Series, 2010, , 235-262.	0.5	0
51	Four questions about triple lines. Scripta Materialia, 2010, 62, 894-898.	5.2	6
52	Modeling the competing phase transition pathways in nanoscale olivine electrodes. Electrochimica Acta, 2010, 56, 969-976.	5.2	43
53	The genetics of grain boundaries. Nature Materials, 2010, 9, 383-385.	27.5	4
54	Shape-controlled nanopores in single crystals. Nanotechnology, 2010, 21, 475301.	2.6	7

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55	â€œElectrochemical Shockâ€•of Intercalation Electrodes: A Fracture Mechanics Analysis. Journal of the Electrochemical Society, 2010, 157, A1052.	2.9	274
56	Electrochemically Driven Phase Transitions in Insertion Electrodes for Lithium-Ion Batteries: Examples in Lithium Metal Phosphate Olivines. Annual Review of Materials Research, 2010, 40, 501-529.	9.3	151
57	Comparative Study of Lithium Transport Kinetics in Olivine Cathodes for Li-ion Batteries. Chemistry of Materials, 2010, 22, 1088-1097.	6.7	79
58	Overpotential-Dependent Phase Transformation Pathways in Lithium Iron Phosphate Battery Electrodes. Chemistry of Materials, 2010, 22, 5845-5855.	6.7	109
59	The 7th International Workshop on Interfaces: New Materials via Interfacial Control. International Journal of Materials Research, 2010, 101, 7-7.	0.3	0
60	Phase Behavior of Nanoscale Intercalation Compounds and Impact on Electrochemical Properties. ECS Meeting Abstracts, 2009, , .	0.0	1
61	Self-ordering mechanism of nanocluster-chain on the functional vicinal surfaces. Applied Physics Letters, 2009, 95, 253110.	3.3	2
62	Controlled and rapid ordering of oppositely charged colloidal particles. Journal of Colloid and Interface Science, 2009, 333, 230-236.	9.4	17
63	Model for the Particle Size, Overpotential, and Strain Dependence of Phase Transition Pathways in Storage Electrodes: Application to Nanoscale Olivines. Chemistry of Materials, 2009, 21, 1557-1571.	6.7	144
64	Electrochemically Induced Phase Transformation in Nanoscale Olivines Li_{1â^'x}MPO₄ (M = Fe, Mn). Chemistry of Materials, 2008, 20, 6189-6198.	6.7	121
65	Nanometer-Scale Wetting of the Silicon Surface by Its Equilibrium Oxide. Langmuir, 2008, 24, 1891-1896.	3.5	7
66	Modeling Particle Size Effects on Phase Stability and Transition Pathways in Nanosized Olivine Cathode Particles. Materials Research Society Symposia Proceedings, 2008, 1100, 3041.	0.1	2
67	Cross-disciplinary molecular science education in introductory science courses. , 2008, , .		2
68	Percolation of Diffusionally Evolved Two-Phase Systems. Materials Research Society Symposia Proceedings, 2007, 1059, 1.	0.1	0
69	Size-Dependent Lithium Miscibility Gap in Nanoscale Li[sub 1â^'x]FePO[sub 4]. Electrochemical and Solid-State Letters, 2007, 10, A134.	2.2	413
70	Strain Accommodation during Phase Transformations in Olivine-Based Cathodes as a Materials Selection Criterion for High-Power Rechargeable Batteries. Advanced Functional Materials, 2007, 17, 1115-1123.	14.9	394
71	Complexion: A new concept for kinetic engineering in materials science. Acta Materialia, 2007, 55, 6208-6218.	7.9	496
72	Diffuse interface model for structural transitions of grain boundaries. Physical Review B, 2006, 73, .	3.2	208

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73	Numerical Analysis of the Shapes and Energies of Droplets on Micropatterned Substrates. Langmuir, 2006, 22, 4237-4243.	3.5	46
74	Grain Boundary Transitions in Binary Alloys. Physical Review Letters, 2006, 97, 075502.	7.8	165
75	Ionic colloidal crystals: Ordered, multicomponent structures via controlled heterocoagulation. Physical Review E, 2006, 73, 011402.	2.1	25
76	Simultaneous grain boundary migration and grain rotation. Acta Materialia, 2006, 54, 1707-1719.	7.9	173
77	Pressure-balance and diffuse-interface models for surficial amorphous films. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2006, 422, 19-28.	5.6	41
78	Continuum modelling and representations of interfaces and their transitions in materials. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2006, 422, 102-114.	5.6	38
79	Grain boundary order-disorder transitions. Journal of Materials Science, 2006, 41, 7691-7695.	3.7	55
80	Experimental verification of the applicability of the homogenization approximation to rough one-dimensional photonic crystals using a holographically fabricated reflection grating. Journal of Applied Physics, 2006, 100, 066103.	2.5	5
81	Microstructural Modeling of Multifunctional Material Properties: The OOF Project. , 2005, , 573-587.		1
82	A diffuse interface model of interfaces: Grain boundaries in silicon nitride. Acta Materialia, 2005, 53, 4755-4764.	7.9	29
83	The Effect of Texture and Microstructure on the Macroscopic Properties of Polycrystalline Piezoelectrics: Application to Barium Titanate and PZN-PT. Journal of the American Ceramic Society, 2005, 88, 750-757.	3.8	34
84	Finite Element Implementation of a Thermodynamic Description of Piezoelectric Microstructures. Journal of the American Ceramic Society, 2005, 88, 742-749.	3.8	8
85	A stochastic model of damage accumulation in complex microstructures. Journal of Materials Science, 2005, 40, 3993-4004.	3.7	6
86	Orientation-dependent surface tension functions for surface energy minimizing calculations. Journal of Materials Science, 2005, 40, 3107-3113.	3.7	9
87	A simple model of fully-faceted grain growth and coarsening with non-linear growth laws. International Journal of Materials Research, 2005, 96, 124-134.	0.8	3
88	Microstructural Modeling and Design of Rechargeable Lithium-Ion Batteries. Journal of the Electrochemical Society, 2005, 152, A255.	2.9	269
89	The effect of interfacial roughness on the normal incidence bandgap of one-dimensional photonic crystals. Optics Express, 2005, 13, 8380.	3.4	10
90	Application of the homogenization approximation to rough one-dimensional photonic crystals. Optics Letters, 2005, 30, 2930.	3.3	4

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91	The equilibrium shape of anisotropic interfacial particles. Philosophical Magazine, 2004, 84, 991-1010.	1.6	24
92	Spreading of metallic drops. Nature Materials, 2004, 3, 843-845.	27.5	29
93	Thermodynamically consistent variational principles with applications to electrically and magnetically active systems. Acta Materialia, 2004, 52, 11-21.	7.9	62
94	Diminished normal reflectivity of one-dimensional photonic crystals due to dielectric interfacial roughness. Optics Letters, 2004, 29, 2791.	3.3	13
95	Validation of the effective-medium approximation for the dielectric permittivity of oriented nanoparticle-filled materials: effective permittivity for dielectric nanoparticles in multilayer photonic composites. Applied Physics B: Lasers and Optics, 2003, 76, 877-884.	2.2	37
96	Effect of charge separation on the stability of large wavelength fluctuations during spinodal decomposition. Acta Materialia, 2003, 51, 1517-1524.	7.9	23
97	Exploring for 3D photonic bandgap structures in the 11 f.c.c. space groups. Nature Materials, 2003, 2, 664-667.	27.5	87
98	Extending phase field models of solidification to polycrystalline materials. Acta Materialia, 2003, 51, 6035-6058.	7.9	288
99	Three-dimensional dielectric network structures with large photonic band gaps. Applied Physics Letters, 2003, 83, 5172-5174.	3.3	18
100	Metallic Island Coalescence: Molecular Dynamics Simulations of Boundary Formation and Tensile Strain in Polycrystalline Thin Films. Materials Research Society Symposia Proceedings, 2003, 779, 451.	0.1	1
101	Relating atomistic grain boundary simulation results to the phase-field model. Computational Materials Science, 2002, 25, 378-386.	3.0	26
102	The Stability of Several Triply Periodic Surfaces. Journal of Materials Science, 2002, 10, 287-296.	1.2	11
103	Damage evolution during microcracking of brittle solids. Acta Materialia, 2001, 49, 127-137.	7.9	53
104	Wetting in Multiphase Systems with Complex Geometries. Journal of Materials Science, 2001, 9, 191-197.	1.2	14
105	OOF: an image-based finite-element analysis of material microstructures. Computing in Science and Engineering, 2001, 3, 15-23.	1.2	197
106	Residualâ€Stress Predictions in Polycrystalline Alumina. Journal of the American Ceramic Society, 2001, 84, 2947-2954.	3.8	117
107	Modeling grain boundaries using a phase-field technique. Journal of Crystal Growth, 2000, 211, 18-20.	1.5	48
108	A continuum model of grain boundaries. Physica D: Nonlinear Phenomena, 2000, 140, 141-150.	2.8	299

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109	Computation and simulation of reliability parameters and their variations in heterogeneous materials. Acta Materialia, 2000, 48, 3593-3605.	7.9	27
110	The Wulff Shape of Alumina: I, Modeling the Kinetics of Morphological Evolution. Journal of the American Ceramic Society, 2000, 83, 2561-2531.	3.8	31
111	Analytical and numerical analyses for two-dimensional stress transfer. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 1999, 268, 1-7.	5.6	34
112	Faceting and Wetting Transitions of Anisotropic Interfaces and Grain Boundaries. Journal of the American Ceramic Society, 1999, 82, 1889-1900.	3.8	37
113	Effects of Interface Roughness on Residual Stresses in Thermal Barrier Coatings. Journal of the American Ceramic Society, 1999, 82, 1073-1075.	3.8	88
114	Stability of multilayer structures: Capillary effects. Scripta Materialia, 1999, 12, 387-390.	0.5	31
115	Simulations of microstructural evolution: anisotropic growth and coarsening. Physica A: Statistical Mechanics and Its Applications, 1998, 261, 232-247.	2.6	217
116	A phase field model of the impingement of solidifying particles. Physica A: Statistical Mechanics and Its Applications, 1998, 261, 159-166.	2.6	38
117	Vector-valued phase field model for crystallization and grain boundary formation. Physica D: Nonlinear Phenomena, 1998, 119, 415-423.	2.8	182
118	Wulffman: A tool for the calculation and display of crystal shapes. Computational Materials Science, 1998, 11, 16-26.	3.0	91
119	Interplay of capillary and elastic driving forces during microstructural evolution: Applications of a digital image model. Journal of Applied Physics, 1998, 83, 4477-4486.	2.5	10
120	Equilibrium Shape of Internal Cavities in Sapphire. Journal of the American Ceramic Society, 1997, 80, 62-68.	3.8	137
121	Variational methods for microstructural-evolution theories. Jom, 1997, 49, 30-36.	1.9	55
122	Surface formulation for molecular interactions of macroscopic bodies. Journal of the Mechanics and Physics of Solids, 1997, 45, 1161-1183.	4.8	76
123	Possible Explanations of Transient Neck Formation between Pairs of (100) Faceted Particles. Journal of the American Ceramic Society, 1996, 79, 2443-2451.	3.8	7
124	Numerical methods for computing interfacial mean curvature. Computational Materials Science, 1995, 4, 103-116.	3.0	60
125	A binary model of textile compositesâ€"II. The elastic regime. Acta Metallurgica Et Materialia, 1995, 43, 3511-3524.	1.8	97
126	Shape evolution by surface diffusion and surface attachment limited kinetics on completely faceted surfaces. Acta Metallurgica Et Materialia, 1995, 43, 4309-4323.	1.8	138

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127	A binary model of textile compositesâ€”I. Formulation. Acta Metallurgica Et Materialia, 1994, 42, 3463-3479.	1.8	181
128	Morphology of grain growth in response to diffusion induced elastic stresses: cubic systems. Acta Metallurgica Et Materialia, 1993, 41, 1633-1642.	1.8	10
129	Cellular automaton algorithm for surface mass transport due to curvature gradients simulations of sintering. Computational Materials Science, 1992, 1, 63-77.	3.0	35
130	Phase diagram and low-temperature behavior of oxygen ordering inYBa2Cu3Ozusingab initiointeractions. Physical Review B, 1990, 41, 8698-8701.	3.2	102
131	Transient subcritical crack-growth behavior in transformation-toughened ceramics. Acta Metallurgica Et Materialia, 1990, 38, 2327-2336.	1.8	28
132	Interplay of Sintering Microstructures, Driving Forces, and Mass Transport Mechanisms. Journal of the American Ceramic Society, 1989, 72, 1550-1555.	3.8	79
133	The forces and behavior of fluids constrained by solids. Acta Metallurgica, 1988, 36, 2283-2292.	2.1	81
134	The morphological stability of continuous intergranular phases: Thermodynamic considerations. Acta Metallurgica, 1987, 35, 237-245.	2.1	28
135	The effect of finite amplitude perturbations on the stability of continuous phases. Materials Science and Engineering, 1987, 89, L41-L45.	0.1	11
136	Dihedral Angle Effects on the Stability of Pore Channels. Journal of the American Ceramic Society, 1984, 67, C-124-C-127.	3.8	9