

Katsuyo Thornton

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131
papers

5,927
citations

36
h-index

74
g-index

140
ext. papers

6,794
ext. citations

7.1
avg, IF

5.79
L-index

#	Paper	IF	Citations
131	Diffuse-charge dynamics in electrochemical systems. <i>Physical Review E</i> , 2004 , 70, 021506	2.4	695
130	Three-dimensional reconstruction of a solid-oxide fuel-cell anode. <i>Nature Materials</i> , 2006 , 5, 541-4	27	644
129	Dendrites and Pits: Untangling the Complex Behavior of Lithium Metal Anodes through Operando Video Microscopy. <i>ACS Central Science</i> , 2016 , 2, 790-801	16.8	477
128	Energy Input and Mass Redistribution by Supernovae in the Interstellar Medium. <i>Astrophysical Journal</i> , 1998 , 500, 95-119	4.7	317
127	Tracking lithium transport and electrochemical reactions in nanoparticles. <i>Nature Communications</i> , 2012 , 3, 1201	17.4	231
126	New frontiers for the materials genome initiative. <i>Npj Computational Materials</i> , 2019 , 5,	10.9	171
125	Single-particle measurements of electrochemical kinetics in NMC and NCA cathodes for Li-ion batteries. <i>Energy and Environmental Science</i> , 2018 , 11, 860-871	35.4	139
124	Electrochemical Stability Window of Imidazolium-Based Ionic Liquids as Electrolytes for Lithium Batteries. <i>Journal of Physical Chemistry B</i> , 2016 , 120, 5691-702	3.4	124
123	Quantitative three-dimensional microstructure of a solid oxide fuel cell cathode. <i>Electrochemistry Communications</i> , 2009 , 11, 1052-1056	5.1	124
122	Effect of composition of (La _{0.8} Sr _{0.2} MnO ₃ /ZrO ₂ -stabilized ZrO ₂) cathodes: Correlating three-dimensional microstructure and polarization resistance. <i>Journal of Power Sources</i> , 2010 , 195, 1829-1840	8.9	124
121	Modelling the evolution of phase boundaries in solids at the meso- and nano-scales. <i>Acta Materialia</i> , 2003 , 51, 5675-5710	8.4	113
120	Three-dimensional mesostructures as high-temperature growth templates, electronic cellular scaffolds, and self-propelled microrobots. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2017 , 114, E9455-E9464	11.5	104
119	Designing the next generation high capacity battery electrodes. <i>Energy and Environmental Science</i> , 2014 , 7, 1760	35.4	91
118	Simulation of coarsening in three-phase solid oxide fuel cell anodes. <i>Journal of Power Sources</i> , 2011 , 196, 1333-1337	8.9	88
117	Vacancy mediated substitutional diffusion in binary crystalline solids. <i>Progress in Materials Science</i> , 2010 , 55, 61-105	42.2	81
116	Mapping the Inhomogeneous Electrochemical Reaction Through Porous LiFePO ₄ -Electrodes in a Standard Coin Cell Battery. <i>Chemistry of Materials</i> , 2015 , 27, 2374-2386	9.6	79
115	Tortuosity characterization of 3D microstructure at nano-scale for energy storage and conversion materials. <i>Journal of Power Sources</i> , 2014 , 249, 349-356	8.9	75

114	Efficient fast-charging of lithium-ion batteries enabled by laser-patterned three-dimensional graphite anode architectures. <i>Journal of Power Sources</i> , 2020 , 471, 228475	8.9	67
113	Quantum dot formation on a strain-patterned epitaxial thin film. <i>Applied Physics Letters</i> , 2005 , 87, 133103	8.4	67
112	Three-dimensional analysis of particle coarsening in high volume fraction solid-liquid mixtures. <i>Acta Materialia</i> , 2006 , 54, 2027-2039	8.4	64
111	Topological complexity and the dynamics of coarsening. <i>Nature Materials</i> , 2004 , 3, 385-8	27	58
110	Extended smoothed boundary method for solving partial differential equations with general boundary conditions on complex boundaries. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2012 , 20, 075008	2	57
109	Particle-Level Modeling of the Charge-Discharge Behavior of Nanoparticulate Phase-Separating Li-Ion Battery Electrodes. <i>Journal of the Electrochemical Society</i> , 2014 , 161, A535-A546	3.9	56
108	The evolution of interfacial topology during coarsening. <i>Acta Materialia</i> , 2006 , 54, 743-750	8.4	55
107	X-ray micro-computed tomography and tortuosity calculations of percolating pore networks. <i>Acta Materialia</i> , 2014 , 71, 126-135	8.4	53
106	Modeling fluid flow in three-dimensional single crystal dendritic structures. <i>Acta Materialia</i> , 2010 , 58, 2864-2875	8.4	53
105	Large-scale simulations of Ostwald ripening in elastically stressed solids: I. Development of microstructure. <i>Acta Materialia</i> , 2004 , 52, 1353-1364	8.4	47
104	Localized concentration reversal of lithium during intercalation into nanoparticles. <i>Science Advances</i> , 2018 , 4, eaao2608	14.3	44
103	Large-scale simulations of Ostwald ripening in elastically stressed solids. II. Coarsening kinetics and particle size distribution. <i>Acta Materialia</i> , 2004 , 52, 1365-1378	8.4	43
102	Effects of Antisite Defects on Li Diffusion in LiFePO ₄ Revealed by Li Isotope Exchange. <i>Journal of Physical Chemistry C</i> , 2017 , 121, 12025-12036	3.8	42
101	Density-amplitude formulation of the phase-field crystal model for two-phase coexistence in two and three dimensions. <i>Philosophical Magazine</i> , 2010 , 90, 237-263	1.6	40
100	Multifunctionality of three-dimensional self-assembled composite structure. <i>Scripta Materialia</i> , 2009 , 61, 52-55	5.6	40
99	Computational materials science and engineering education: A survey of trends and needs. <i>Jom</i> , 2009 , 61, 12-17	2.1	39
98	Phase field modeling of solidification under stress. <i>Physical Review B</i> , 2006 , 74,	3.3	38
97	Particle-size and morphology dependence of the preferred interface orientation in LiFePO ₄ nano-particles. <i>Journal of Materials Chemistry A</i> , 2014 , 2, 15437-15447	13	37

96	Radiative effects in radiative shocks in shock tubes. <i>High Energy Density Physics</i> , 2011 , 7, 130-140	1.2	37
95	Theory of grain boundary diffusion induced by the Kirkendall effect. <i>Applied Physics Letters</i> , 2008 , 93, 091908	3.4	36
94	Three-Dimensional Materials Science: An Intersection of Three-Dimensional Reconstructions and Simulations. <i>MRS Bulletin</i> , 2008 , 33, 587-595	3.2	36
93	Architecture Dependence on the Dynamics of Nano-LiFePO ₄ Electrodes. <i>Electrochimica Acta</i> , 2014 , 137, 245-257	6.7	35
92	Morphology and topology in coarsening of domains via non-conserved and conserved dynamics. <i>Philosophical Magazine</i> , 2010 , 90, 317-335	1.6	35
91	Coarsening of bicontinuous structures via nonconserved and conserved dynamics. <i>Physical Review E</i> , 2007 , 75, 021120	2.4	35
90	Enabling 6C Fast Charging of Li-Ion Batteries with Graphite/Hard Carbon Hybrid Anodes. <i>Advanced Energy Materials</i> , 2021 , 11, 2003336	21.8	35
89	The Kirkendall effect in the phase field crystal model. <i>Philosophical Magazine</i> , 2011 , 91, 151-164	1.6	34
88	Coupled composition-deformation phase-field method for multicomponent lipid membranes. <i>Physical Review E</i> , 2007 , 76, 011912	2.4	34
87	Two- and three-dimensional equilibrium morphology of a misfitting particle and the Gibbs-Thomson effect. <i>Acta Materialia</i> , 2004 , 52, 5829-5843	8.4	32
86	Dynamics of late-stage phase separation in crystalline solids. <i>Physical Review Letters</i> , 2001 , 86, 1259-62	7.4	32
85	Quantifying Reaction and Rate Heterogeneity in Battery Electrodes in 3D through Operando X-ray Diffraction Computed Tomography. <i>ACS Applied Materials & Interfaces</i> , 2019 , 11, 18386-18394	9.5	31
84	The topology and morphology of bicontinuous interfaces during coarsening. <i>Europhysics Letters</i> , 2009 , 86, 46005	1.6	31
83	Calculations of isothermal elastic constants in the phase-field crystal model. <i>Physical Review B</i> , 2013 , 87,	3.3	29
82	High-Operating-Temperature Direct Ink Writing of Mesoscale Eutectic Architectures. <i>Advanced Materials</i> , 2017 , 29, 1604778	24	28
81	Large-Scale Simulations of Microstructural Evolution in Elastically Stressed Solids. <i>Journal of Computational Physics</i> , 2001 , 173, 61-86	4.1	28
80	Domain growth in ternary fluids: A level set approach. <i>Physical Review Letters</i> , 2000 , 84, 91-4	7.4	27
79	The thermodynamic stability of intermediate solid solutions in LiFePO ₄ nanoparticles. <i>Journal of Materials Chemistry A</i> , 2016 , 4, 5436-5447	13	26

78	The dynamics of interfaces during coarsening in solid-liquid systems. <i>Acta Materialia</i> , 2014 , 70, 66-78	8.4	26
77	Misfit-driven δ precipitate composition and morphology in Mg-Nd alloys. <i>Acta Materialia</i> , 2017 , 136, 378-389	8.4	26
76	Template-Directed Directionally Solidified 3D Mesostructured AgCl-KCl Eutectic Photonic Crystals. <i>Advanced Materials</i> , 2015 , 27, 4551-9	24	26
75	Substitutional diffusion and Kirkendall effect in binary crystalline solids containing discrete vacancy sources and sinks. <i>Acta Materialia</i> , 2007 , 55, 6690-6704	8.4	26
74	Fluid Flow and Defect Formation in the Three-Dimensional Dendritic Structure of Nickel-Based Single Crystals. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2012 , 43, 369-380	2.3	25
73	General method for incorporating CALPHAD free energies of mixing into phase field models: Application to the Zirconium/Hydride system. <i>Calphad: Computer Coupling of Phase Diagrams and Thermochemistry</i> , 2015 , 51, 334-343	1.9	25
72	Effect of a Size-Dependent Equilibrium Potential on Nano-LiFePO ₄ Particle Interactions. <i>Journal of the Electrochemical Society</i> , 2015 , 162, A1718-A1724	3.9	24
71	Thermodynamic Overpotentials and Nucleation Rates for Electrodeposition on Metal Anodes. <i>ACS Applied Materials & Interfaces</i> , 2019 , 11, 7954-7964	9.5	23
70	Kinetics of Nanoparticle Interactions in Battery Electrodes. <i>Journal of the Electrochemical Society</i> , 2015 , 162, A965-A973	3.9	23
69	PRISMS: An Integrated, Open-Source Framework for Accelerating Predictive Structural Materials Science. <i>Jom</i> , 2018 , 70, 2298-2314	2.1	22
68	A nucleation algorithm for the coupled conserved-nonconserved phase field model. <i>Computational Materials Science</i> , 2016 , 112, 128-138	3.2	21
67	Numerical Modeling of Localized Corrosion Using Phase-Field and Smoothed Boundary Methods. <i>Journal of the Electrochemical Society</i> , 2018 , 165, C633-C646	3.9	17
66	Application of the level-set method to the analysis of an evolving microstructure. <i>Computational Materials Science</i> , 2014 , 85, 46-58	3.2	17
65	Template-Directed Solidification of Eutectic Optical Materials. <i>Advanced Optical Materials</i> , 2018 , 6, 1800871	7.1	15
64	Computational Model of Magnesium Deposition and Dissolution for Property Determination via Cyclic Voltammetry. <i>Journal of the Electrochemical Society</i> , 2016 , 163, A1813-A1821	3.9	15
63	Coarsening of complex microstructures following spinodal decomposition. <i>Acta Materialia</i> , 2017 , 132, 13-24	8.4	14
62	Computational Examination of Orientation-Dependent Morphological Evolution during the Electrodeposition and Electrodeposition of Magnesium. <i>Journal of the Electrochemical Society</i> , 2016 , 163, A513-A521	3.9	14
61	Deformation and stresses in solid-state composite battery cathodes. <i>Journal of Power Sources</i> , 2019 , 440, 227116	8.9	13

60	Modeling SOFC Cathodes Based on 3-D Representations of Electrode Microstructure. <i>ECS Transactions</i> , 2011 , 35, 815-822	1	13
59	Rate Limitations in Composite Solid-State Battery Electrodes: Revealing Heterogeneity with Operando Microscopy. <i>ACS Energy Letters</i> , 2021 , 6, 2993-3003	20.1	13
58	Charge attachment induced transport - bulk and grain boundary diffusion of potassium in PrMnO. <i>Physical Chemistry Chemical Physics</i> , 2017 , 19, 9762-9769	3.6	12
57	Evolution of interfacial curvatures of a bicontinuous structure generated via nonconserved dynamics. <i>Acta Materialia</i> , 2015 , 90, 182-193	8.4	12
56	Phase-field crystal model for a diamond-cubic structure. <i>Physical Review E</i> , 2015 , 91, 053305	2.4	12
55	Morphological stability during electrodeposition. <i>MRS Communications</i> , 2017 , 7, 658-663	2.7	12
54	Simulations of the Kirkendall-Effect-Induced Deformation of Thermodynamically Ideal Binary Diffusion Couples with General Geometries. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2012 , 43, 3481-3500	2.3	12
53	Archimedean lattices emerge in template-directed eutectic solidification. <i>Nature</i> , 2020 , 577, 355-358	50.4	11
52	PRISMS-PF: A general framework for phase-field modeling with a matrix-free finite element method. <i>Npj Computational Materials</i> , 2020 , 6,	10.9	11
51	Simulating recrystallization in titanium using the phase field method. <i>IOP Conference Series: Materials Science and Engineering</i> , 2015 , 89, 012024	0.4	11
50	Phase-field simulations of GaN growth by selective area epitaxy from complex mask geometries. <i>Journal of Applied Physics</i> , 2015 , 117, 194302	2.5	11
49	Classical density functional theory and the phase-field crystal method using a rational function to describe the two-body direct correlation function. <i>Physical Review E</i> , 2013 , 87, 013313	2.4	11
48	Dynamics of two-phase lipid vesicles: effects of mechanical properties on morphology evolution. <i>Soft Matter</i> , 2010 , 6, 3462	3.6	11
47	Continuum simulations of the formation of Kirkendall-effect-induced hollow cylinders in a binary substitutional alloy. <i>Acta Materialia</i> , 2009 , 57, 5348-5360	8.4	11
46	Conditions for overall planarity in membranes: Applications to multicomponent membranes with lamellar morphology. <i>Europhysics Letters</i> , 2008 , 82, 38001	1.6	11
45	Linear stability analysis for step meandering instabilities with elastic interactions and Ehrlich-Schwoebel barriers. <i>Physical Review E</i> , 2007 , 76, 011601	2.4	11
44	Three Dimensional Reconstruction of Solid Oxide Fuel Cell Electrodes Using Focused Ion Beam - Scanning Electron Microscopy. <i>ECS Transactions</i> , 2007 , 7, 1879-1887	1	11
43	Model for anodic film growth on aluminum with coupled bulk transport and interfacial reactions. <i>Langmuir</i> , 2014 , 30, 5314-25	4	10

42	Effects of interleaflet coupling on the morphologies of multicomponent lipid bilayer membranes. <i>Journal of Chemical Physics</i> , 2013 , 138, 024909	3.9	10
41	Ionic and Electronic Transport in Metal Fluoride Conversion Electrodes. <i>ECS Transactions</i> , 2013 , 50, 19-25	1	10
40	The morphology of topologically complex interfaces. <i>Scripta Materialia</i> , 2009 , 60, 301-304	5.6	10
39	Dynamics of coarsening in multicomponent lipid vesicles with non-uniform mechanical properties. <i>Journal of Chemical Physics</i> , 2014 , 140, 144908	3.9	9
38	Current status and outlook of computational materials science education in the US. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2005 , 13, R53-R69	2	9
37	A Phase-Field Model and Simulation of Kinetically Asymmetric Ternary Conversion-Reconversion Transformation in Battery Electrodes. <i>Journal of Phase Equilibria and Diffusion</i> , 2016 , 37, 86-99	1	8
36	Phase-field simulations of GaN/InGaN quantum dot growth by selective area epitaxy. <i>Journal of Crystal Growth</i> , 2012 , 361, 57-65	1.6	8
35	Simulating complex crystal structures using the phase-field crystal model. <i>Physical Review Materials</i> , 2017 , 1,	3.2	8
34	A thermal-gradient approach to variable-temperature measurements resolved in space. <i>Journal of Applied Crystallography</i> , 2020 , 53, 662-670	3.8	8
33	Smoothed Boundary Method for simulating bulk and grain boundary transport in complex polycrystalline microstructures. <i>Computational Materials Science</i> , 2016 , 121, 14-22	3.2	8
32	Origins of ion irradiation-induced Ga nanoparticle motion on GaAs surfaces. <i>Applied Physics Letters</i> , 2013 , 103, 072115	3.4	7
31	Operando video microscopy of Li plating and re-intercalation on graphite anodes during fast charging. <i>Journal of Materials Chemistry A</i> , 2021 , 9, 23522-23536	13	7
30	The effect of surface-bulk potential difference on the kinetics of intercalation in core-shell active cathode particles. <i>Journal of Power Sources</i> , 2018 , 382, 30-37	8.9	6
29	Simulations of Anodic Nanopore Growth Using the Smoothed Boundary and Level Set Methods. <i>Journal of Physical Chemistry C</i> , 2016 , 120, 2419-2431	3.8	6
28	Simulation of coarsening in two-phase systems with dissimilar mobilities. <i>Computational Materials Science</i> , 2020 , 173, 109418	3.2	6
27	Self-Similarity and the Dynamics of Coarsening in Materials. <i>Scientific Reports</i> , 2018 , 8, 17940	4.9	6
26	Thermodynamic relationships for homogeneous crystalline and liquid phases in the phase-field crystal model. <i>Computational Materials Science</i> , 2017 , 135, 205-213	3.2	5
25	Simulation of the diffusional impedance and application to the characterization of electrodes with complex microstructures. <i>Electrochimica Acta</i> , 2020 , 354, 136534	6.7	5

24	Processing-Dependent Microstructure of AgCl _{1-x} AgCl ₂ Eutectic Photonic Crystals. <i>Advanced Optical Materials</i> , 2018 , 6, 1701316	8.1	5
23	Advancing quantitative description of porosity in autogenous laser-welds of 304L stainless steel. <i>Integrating Materials and Manufacturing Innovation</i> , 2014 , 3, 141-157	2.9	5
22	Channel size distribution of complex three-dimensional microstructures calculated from the topological characterization of isodistance structures. <i>Acta Materialia</i> , 2012 , 60, 2509-2517	8.4	5
21	Effect of transport mechanism on the coarsening of bicontinuous structures: A comparison between bulk and surface diffusion. <i>Physical Review Materials</i> , 2020 , 4,	3.2	5
20	Origin of broad luminescence from site-controlled InGaN nanodots fabricated by selective-area epitaxy. <i>Physica Status Solidi (A) Applications and Materials Science</i> , 2014 , 211, 531-535	1.6	4
19	Performance Variability and Degradation in Porous La _{1-x} Sr _x CoO _{3-δ} Electrodes. <i>Journal of the Electrochemical Society</i> , 2014 , 161, F561-F568	3.9	4
18	Three-Dimensional Analysis of Solid Oxide Fuel Cells, Using Focused Ion Beam Scanning Electron Microscopy. <i>Microscopy and Microanalysis</i> , 2007 , 13,	0.5	4
17	Phase Field Modeling of Microstructural Evolution 2018 , 67-87		4
16	Stability of strained thin films with interface misfit dislocations: A multiscale computational study. <i>Thin Solid Films</i> , 2010 , 519, 809-817	2.2	3
15	In situ temperature profile measurements with high-energy X-rays as a probe of optical floating zone crystal growth environment. <i>Journal of Applied Crystallography</i> , 2020 , 53, 982-990	3.8	3
14	Lowering Ternary Oxide Synthesis Temperatures by Solid-State Cometathesis Reactions. <i>Chemistry of Materials</i> , 2021 , 33, 3692-3701	9.6	3
13	Sensitivity analysis of a phase field model for static recrystallization of deformed microstructures. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2020 , 28, 065002	2	2
12	Control of lamellar eutectic orientation via template-directed solidification. <i>Acta Materialia</i> , 2019 , 166, 715-722	8.4	2
11	Computational Materials Science and Engineering Education: An Updated Survey of Trends and Needs. <i>Jom</i> , 2018 , 70, 1644-1651	2.1	1
10	Anodic Oxide Nanostructures and Their Applications in Energy Generation and Storage. <i>ACS Symposium Series</i> , 2015 , 19-39	0.4	1
9	Automated extraction of physical parameters from experimentally obtained thermal profiles using a machine learning approach. <i>Computational Materials Science</i> , 2021 , 194, 110459	3.2	1
8	Towards the Validation of a Phase Field Model for Ni Coarsening in Solid Oxide Cells. <i>Acta Materialia</i> , 2021 , 212, 116887	8.4	1
7	Enabling the electrochemical simulation of Li-ion battery electrodes with anisotropic tortuosity in COMSOL Multiphysics. <i>MethodsX</i> , 2021 , 8, 101425	1.9	1

6	Simulation of the Electrochemical Impedance in a Three-Dimensional, Complex Microstructure of Solid Oxide Fuel Cell Cathode and Its Application in the Microstructure Characterization. <i>Frontiers in Chemistry</i> , 2021 , 9, 627699	5	0
5	Photonic Crystals: Template-Directed Directionally Solidified 3D Mesostructured AgCl/Ag Eutectic Photonic Crystals (Adv. Mater. 31/2015). <i>Advanced Materials</i> , 2015 , 27, 4550-4550	24	
4	Applying for computational time on NSF's TeraGrid—the world's largest cyberinfrastructure supporting open research. <i>Jom</i> , 2010 , 62, 17-18	2.1	
3	The Mean and Gaussian Curvature of Systems Undergoing Coarsening: Experiment and Theory. <i>Microscopy and Microanalysis</i> , 2004 , 10, 74-75	0.5	
2	Rate-dependent Reversal of Lithium Concentration During Intercalation into Li_xFePO_4 Nanoparticles. <i>Microscopy and Microanalysis</i> , 2018 , 24, 1482-1483	0.5	
1	Sample environment effects on synchrotron-measured temperature profiles in an approximant of optical floating zone crystal growth. <i>Journal of Crystal Growth</i> , 2021 , 574, 126331	1.6	