

Michael L Falk

List of Publications by Year in descending order

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104
papers

6,803
citations

94433

37
h-index

58581

82
g-index

106
all docs

106
docs citations

106
times ranked

4143
citing authors

#	ARTICLE	IF	CITATIONS
1	Predicting plastic events and quantifying the local yield surface in 3D model glasses. <i>Journal of the Mechanics and Physics of Solids</i> , 2022, 158, 104671.	4.8	10
2	Strengthening magnesium by design: Integrating alloying and dynamic processing. <i>Mechanics of Materials</i> , 2022, 167, 104203.	3.2	11
3	Strategic control of atomic-scale defects for tuning properties in metals. <i>Nature Reviews Physics</i> , 2021, 3, 148-149.	26.6	8
4	Atomic nonaffinity as a predictor of plasticity in amorphous solids. <i>Physical Review Materials</i> , 2021, 5, .	2.4	13
5	Manifold learning for coarse-graining atomistic simulations: Application to amorphous solids. <i>Acta Materialia</i> , 2021, 215, 117008.	7.9	9
6	Recrystallization mechanisms, grain refinement, and texture evolution during ECAE processing of Mg and its alloys. <i>Mechanics of Materials</i> , 2021, 162, 104067.	3.2	10
7	Predicting the Rate of Homogeneous Intermetallic Nucleation within Steep Composition Gradients. <i>Journal of Physical Chemistry C</i> , 2020, 124, 23807-23814.	3.1	3
8	Undergraduate Engineering Students'™ Types and Quality of Knowledge Used in Synthetic Modeling. <i>Cognition and Instruction</i> , 2020, 38, 503-537.	2.9	7
9	Deformation assisted nucleation of continuous nanoprecipitates in Mg-Al alloys. <i>Materialia</i> , 2020, 9, 100583.	2.7	17
10	Predicting plasticity in disordered solids from structural indicators. <i>Physical Review Materials</i> , 2020, 4, .	2.4	112
11	Student Explanations in the Context of Computational Science and Engineering Education. <i>Cognition and Instruction</i> , 2019, 37, 201-231.	2.9	24
12	Critical Analysis of an FeP Empirical Potential Employed to Study the Fracture of Metallic Glasses. <i>Physical Review Letters</i> , 2019, 122, 035501.	7.8	19
13	Characterizing the interplay of cognitive and metacognitive knowledge in computational modeling and simulation practices. <i>Journal of Engineering Education</i> , 2019, 108, 276-303.	3.0	18
14	Dynamic precipitation and recrystallization in Mg-9wt.%Al during equal-channel angular extrusion: A comparative study to conventional aging. <i>Acta Materialia</i> , 2019, 172, 185-199.	7.9	99
15	Thermally activated twin thickening and solute softening in magnesium alloys - a molecular simulation study. <i>Scripta Materialia</i> , 2019, 162, 195-199.	5.2	10
16	Promoting sulfur adsorption using surface Cu sites in metal-organic frameworks for lithium sulfur batteries. <i>Journal of Materials Chemistry A</i> , 2018, 6, 4811-4821.	10.3	85
17	Local yield stress statistics in model amorphous solids. <i>Physical Review E</i> , 2018, 97, 033001.	2.1	67
18	Predicting Shear Transformation Events in Metallic Glasses. <i>Physical Review Letters</i> , 2018, 120, 125503.	7.8	52

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19	Shear band broadening in simulated glasses. <i>Physical Review E</i> , 2018, 98, .	2.1	20
20	Intermetallic formation at deeply supercooled Ni/Al multilayer interfaces: A molecular dynamics study. <i>Journal of Applied Physics</i> , 2018, 124, .	2.5	11
21	Suppression of homogeneous crystal nucleation of the NiAl intermetallic by a composition gradient: A molecular dynamics study. <i>Journal of Chemical Physics</i> , 2017, 146, .	3.0	10
22	Affordances and challenges of computational tools for supporting modeling and simulation practices. <i>Computer Applications in Engineering Education</i> , 2017, 25, 352-375.	3.4	20
23	Tribochemical Wear of Diamond-Like Carbon-Coated Atomic Force Microscope Tips. <i>ACS Applied Materials & Interfaces</i> , 2017, 9, 35341-35348.	8.0	39
24	Solute softening and defect generation during prismatic slip in magnesium alloys. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2017, 25, 085001.	2.0	14
25	Writing In-Code Comments to Self-Explain in Computational Science and Engineering Education. <i>ACM Transactions on Computing Education</i> , 2017, 17, 1-21.	3.5	31
26	Multibond Model of Single-Asperity Tribochemical Wear at the Nanoscale. <i>ACS Applied Materials & Interfaces</i> , 2017, 9, 35333-35340.	8.0	33
27	Strain-dependent activation energy of shear transformation in metallic glasses. <i>Physical Review B</i> , 2017, 95, .	3.2	18
28	Coarse graining atomistic simulations of plastically deforming amorphous solids. <i>Physical Review E</i> , 2017, 95, 053001.	2.1	38
29	A small-gap effective-temperature model of transient shear band formation during flow. <i>Journal of Rheology</i> , 2016, 60, 873-882.	2.6	12
30	Multiphysics Simulations of Lithiation-Induced Stress in $\text{Li}_{1+x}\text{Ti}_2\text{O}_4$ Electrode Particles. <i>Journal of Physical Chemistry C</i> , 2016, 120, 27871-27881.	3.1	8
31	Connecting Local Yield Stresses with Plastic Activity in Amorphous Solids. <i>Physical Review Letters</i> , 2016, 117, 045501.	7.8	137
32	A case study of undergraduate engineering students' computational literacy and self-beliefs about computing in the context of authentic practices. <i>Computers in Human Behavior</i> , 2016, 61, 427-442.	8.5	36
33	Deformation of metallic glasses: Recent developments in theory, simulations, and experiments. <i>Acta Materialia</i> , 2016, 109, 375-393.	7.9	400
34	Amorphous ZnO-Based Compounds as Thermoelectrics. <i>Journal of Physical Chemistry C</i> , 2016, 120, 2529-2535.	3.1	19
35	Atomistic simulation of solid solution hardening in Mg/Al alloys: Examination of composition scaling and thermo-mechanical relationships. <i>Acta Materialia</i> , 2016, 105, 378-389.	7.9	24
36	ZT > 0.1 Electron-Carrying Polymer Thermoelectric Composites with In Situ SnCl_2 Microstructure Growth. <i>Advanced Science</i> , 2015, 2, 1500015.	11.2	22

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37	Spatial nonuniformity in heat transport across hybrid material interfaces. <i>Physical Review B</i> , 2014, 90, .	3.2	12
38	A practical perspective on the implementation of hyperdynamics for accelerated simulation. <i>Journal of Chemical Physics</i> , 2014, 140, 044107.	3.0	6
39	Soft spots and their structural signature in a metallic glass. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2014, 111, 14052-14056.	7.1	348
40	Interdiffusion of Ni-Al multilayers: A continuum and molecular dynamics study. <i>Journal of Applied Physics</i> , 2013, 114, .	2.5	44
41	Ion Dependence of Gate Dielectric Behavior of Alkali Metal Ion-Incorporated Aluminas in Oxide Field-Effect Transistors. <i>Chemistry of Materials</i> , 2013, 25, 3788-3796.	6.7	58
42	Cavitation in Amorphous Solids. <i>Physical Review Letters</i> , 2013, 110, 185502.	7.8	75
43	Introducing Discipline-Based Computing in Undergraduate Engineering Education. <i>ACM Transactions on Computing Education</i> , 2013, 13, 1-22.	3.5	37
44	Length-scale dependence of elastic strain from scattering measurements in metallic glasses. <i>Physical Review B</i> , 2012, 85, .	3.2	31
45	Thermodynamic and kinetic properties of Li_2O	3.2	16
46	Deformation and Failure of Amorphous, Solidlike Materials. <i>Annual Review of Condensed Matter Physics</i> , 2011, 2, 353-373.	14.5	296
47	Role of intermediate states in low-velocity friction between amorphous surfaces. <i>Physical Review B</i> , 2011, 84, .	3.2	20
48	Bayesian Inference of Atomic Diffusivity in a Binary Ni/Al System Based on Molecular Dynamics. <i>Multiscale Modeling and Simulation</i> , 2011, 9, 486-512.	1.6	29
49	Simulating the mechanical response of amorphous solids using atomistic methods. <i>European Physical Journal B</i> , 2010, 75, 405-413.	1.5	46
50	Shear localization and the plasticity of bulk amorphous alloys. <i>Scripta Materialia</i> , 2010, 63, 231-234.	5.2	33
51	An energy basin finding algorithm for kinetic Monte Carlo acceleration. <i>Journal of Chemical Physics</i> , 2010, 132, 134104.	3.0	83
52	Paradoxical phenomena between the homogeneous and inhomogeneous deformations of metallic glasses. <i>Applied Physics Letters</i> , 2009, 94, 021907.	3.3	18
53	Atomic-scale simulations on the sliding of incommensurate surfaces: The breakdown of superlubricity. <i>Physical Review B</i> , 2009, 80, .	3.2	43
54	Nanostructures generated by explosively driven friction: Experiments and molecular dynamics simulations. <i>Acta Materialia</i> , 2009, 57, 5270-5282.	7.9	42

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55	A computational analysis of the deformation mechanisms of a nanocrystal-metallic glass composite. <i>Acta Materialia</i> , 2008, 56, 995-1000.	7.9	55
56	Elastostatically induced structural disordering in amorphous alloys. <i>Acta Materialia</i> , 2008, 56, 5440-5450.	7.9	191
57	Modeling low energy sputtering of hexagonal boron nitride by xenon ions. <i>Journal of Applied Physics</i> , 2008, 104, .	2.5	16
58	Accelerated Molecular Dynamics Simulation of AFM Experiments Using the Bond-Boost Method. <i>Materials Research Society Symposia Proceedings</i> , 2008, 1085, 20201.	0.1	2
59	Elastic effects on relaxation volume tensor calculations. <i>Physical Review B</i> , 2008, 77, .	3.2	16
60	Structural disordering process of an amorphous alloy driven by the elastostatic compression at room temperature. <i>Applied Physics Letters</i> , 2008, 92, .	3.3	55
61	The Flow of Glass. <i>Science</i> , 2007, 318, 1880-1881.	12.6	29
62	Evaluation of the Disorder Temperature and Free-Volume Formalisms via Simulations of Shear Banding in Amorphous Solids. <i>Physical Review Letters</i> , 2007, 98, 185505.	7.8	160
63	Simulations of nanoindentation in a thin amorphous metal film. <i>Thin Solid Films</i> , 2007, 515, 3179-3182.	1.8	20
64	Stress-induced structural transformation and shear banding during simulated nanoindentation of a metallic glass. <i>Acta Materialia</i> , 2007, 55, 4317-4324.	7.9	140
65	MD Simulations of Microstructure Evolution during High-Velocity Sliding between Crystalline Materials. <i>Tribology Letters</i> , 2007, 28, 299-306.	2.6	40
66	Atomic-scale simulations of strain localization in three-dimensional model amorphous solids. <i>Physical Review B</i> , 2006, 73, .	3.2	154
67	Medium range order and the radial distribution function. <i>Journal of Non-Crystalline Solids</i> , 2006, 352, 116-122.	3.1	13
68	The continuum elastic and atomistic viewpoints on the formation volume and strain energy of a point defect. <i>Journal of the Mechanics and Physics of Solids</i> , 2006, 54, 1929-1951.	4.8	25
69	Multiscale diffusion Monte Carlo simulation of epitaxial growth. <i>Journal of Computational Physics</i> , 2006, 217, 519-529.	3.8	17
70	Does metallic glass have a backbone? The role of percolating short range order in strength and failure. <i>Scripta Materialia</i> , 2006, 54, 381-386.	5.2	79
71	Tribological characteristics of diamond-like carbon (DLC) based nanocomposite coatings. <i>Wear</i> , 2005, 259, 744-751.	3.1	22
72	Structural transformation and localization during simulated nanoindentation of a noncrystalline metal film. <i>Applied Physics Letters</i> , 2005, 86, 011914.	3.3	77

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73	Shear softening and structure in a simulated three-dimensional binary glass. <i>Journal of Chemical Physics</i> , 2005, 122, 154508.	3.0	50
74	Strain Localization and Percolation of Stable Structure in Amorphous Solids. <i>Physical Review Letters</i> , 2005, 95, 095502.	7.8	258
75	Atomic-scale simulations of strain localization in a single-component three-dimensional model amorphous solid. <i>Materials Research Society Symposia Proceedings</i> , 2005, 903, 1.	0.1	1
76	Thermal effects in the shear-transformation-zone theory of amorphous plasticity: Comparisons to metallic glass data. <i>Physical Review E</i> , 2004, 70, 011507.	2.1	104
77	Pit nucleation in the presence of three-dimensional islands during heteroepitaxial growth. <i>Physical Review B</i> , 2004, 70, .	3.2	11
78	AtomLab: A tool for teaching materials science and simulation on the atomic scale. <i>Materials Research Society Symposia Proceedings</i> , 2004, 827, 261.	0.1	0
79	Tribological behavior of WC/DLC/WS ₂ nanocomposite coatings. <i>Surface and Coatings Technology</i> , 2004, 188-189, 605-611.	4.8	48
80	Relating metallic glass mechanical properties to liquid structure. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2004, 375-377, 671-674.	5.6	23
81	Examples of structural evolution during sliding and shear of ductile materials. <i>Scripta Materialia</i> , 2003, 49, 977-983.	5.2	85
82	The effect of island density on pit nucleation in In _{0.27} Ga _{0.73} As/GaAs films. <i>Surface Science</i> , 2003, 525, 222-228.	1.9	11
83	Sliding and deformation of metallic glass: experiments and MD simulations. <i>Journal of Non-Crystalline Solids</i> , 2003, 317, 206-214.	3.1	47
84	The Thermal Shear-Transformation-Zone Theory: Homogeneous Flow and Superplasticity in Bulk Metallic Glasses. <i>Materials Research Society Symposia Proceedings</i> , 2003, 806, 262.	0.1	0
85	Pit nucleation in compound semiconductor thin films. <i>Materials Research Society Symposia Proceedings</i> , 2003, 794, 82.	0.1	0
86	Strain Localization in a Molecular-Dynamics Model of a Metallic Glass. <i>Materials Research Society Symposia Proceedings</i> , 2002, 754, 1.	0.1	2
87	Sliding behavior of metallic glass. <i>Wear</i> , 2001, 250, 420-430.	3.1	87
88	Sliding behavior of metallic glass. <i>Wear</i> , 2001, 250, 409-419.	3.1	88
89	Experimental Studies and Molecular Dynamics Simulations of the Sliding Contact of Metallic Glass. <i>Materials Research Society Symposia Proceedings</i> , 2000, 644, 181.	0.1	1
90	From Simulation to Theory in the Physics of Deformation and Fracture. <i>MRS Bulletin</i> , 2000, 25, 40-45.	3.5	58

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91	Molecular-dynamics study of ductile and brittle fracture in model noncrystalline solids. Physical Review B, 1999, 60, 7062-7070.	3.2	172
92	Dynamics of viscoplastic deformation in amorphous solids. Physical Review E, 1998, 57, 7192-7205.	2.1	1,749
93	Interactions between charged spherical macroions. Journal of Chemical Physics, 1996, 104, 5209-5219.	3.0	125
94	Electronic structure of the triangular quantum well in a tilted magnetic field. Physica B: Condensed Matter, 1993, 184, 318-322.	2.7	12
95	Symmetry-dependent localization in a finite superlattice. Physical Review B, 1992, 46, 9564-9568.	3.2	8
96	Quantum wire in a longitudinal magnetic field: Effect of quantum confinement on magnetization. Physical Review B, 1992, 46, 15270-15273.	3.2	7
97	Oscillating magnetization of quantum wells and wires in tilted magnetic fields. Physical Review B, 1992, 46, 15530-15533.	3.2	15
98	Interface localized states in coupled superlattices. Journal of Applied Physics, 1992, 72, 5325-5328.	2.5	12
99	Investigation of localization in an infinite superlattice. Superlattices and Microstructures, 1992, 12, 159-161.	3.1	4
100	Materials Science Studentsâ€™ Perceptions and Usage Intentions of Computation. , 0, , .		2
101	Deformation Assisted Nucleation of Continuous Nanoprecipitates in Mg-Al Alloys. SSRN Electronic Journal, 0, , .	0.4	3
102	Teaching The Molecular Simulation Of Materials To A Diverse Cross Section Of Engineering Graduate Students. , 0, , .		0
103	Student Driven Engineering Design Projects. , 0, , .		0
104	TITLE: Rethinking the Gateway Computing Curriculum Across Engineering Disciplines. , 0, , .		0