Mark A Tschopp

List of Publications by Year
in descending order

94 papers	5,294 citations	87843 38 h-index	85498 71 g-index
102 all docs	102 docs citations	102 times ranked	4116 citing authors

#	Article	IF	Citations
1	Molecular dynamics simulations of deformation mechanisms of amorphous polyethylene. Polymer, 2010, 51, 6071-6083.	1.8	365
2	Probing grain boundary sink strength at the nanoscale: Energetics and length scales of vacancy and interstitial absorption by grain boundaries in<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>α</mml:mi></mml:math>-Fe. Physical Review B, 2012, 85, .	1.1	285
3	Asymmetric tilt grain boundary structure and energy in copper and aluminium. Philosophical Magazine, 2007, 87, 3871-3892.	0.7	237
4	Structures and energies of Σ 3 asymmetric tilt grain boundaries in copper and aluminium. Philosophical Magazine, 2007, 87, 3147-3173.	0.7	224
5	Tensile strength of ⟨100⟩ and ⟨110⟩ tilt bicrystal copper interfaces. Acta Materialia, 2007, 55, 705-714.	3.4	217
6	Effect of grain boundaries on texture formation during dynamic recrystallization of magnesium alloys. Acta Materialia, 2017, 128, 270-283.	3.8	194
7	Porosity prediction: Supervised-learning of thermal history for direct laser deposition. Journal of Manufacturing Systems, 2018, 47, 69-82.	7.6	191
8	Influence of single crystal orientation on homogeneous dislocation nucleation under uniaxial loading. Journal of the Mechanics and Physics of Solids, 2008, 56, 1806-1830.	2.3	167
9	<i>In-situ</i> monitoring of melt pool images for porosity prediction in directed energy deposition processes. IISE Transactions, 2019, 51, 437-455.	1.6	157
10	Symmetric and asymmetric tilt grain boundary structure and energy in Cu and Al (and transferability) Tj ETQq0 0 0 rgBT /Overlock 10 Tf	1.2	122
11	Atomistic simulations of homogeneous dislocation nucleation in single crystal copper. Modelling and Simulation in Materials Science and Engineering, 2007, 15, 693-709.	0.8	114
12	Dislocation nucleation in Σ3 asymmetric tilt grain boundaries. International Journal of Plasticity, 2008, 24, 191-217.	4.1	111
13	Breakdown of the Schmid law in homogeneous and heterogeneous nucleation events of slip and twinning in magnesium. Journal of the Mechanics and Physics of Solids, 2012, 60, 2084-2099.	2.3	111
14	Mitigating grain growth in binary nanocrystalline alloys through solute selection based on thermodynamic stability maps. Computational Materials Science, 2014, 84, 255-266.	1.4	111
15	Microstructure and mechanical properties of bulk nanostructured Cu–Ta alloys consolidated by equal channel angular extrusion. Acta Materialia, 2014, 76, 168-185.	3.8	108
16	Structure and free volume of ⟨110⟩ symmetric tilt grain boundaries with the E structural unit. Acta Materialia, 2007, 55, 3959-3969.	3.8	107
17	Atomic-scale analysis of liquid-gallium embrittlement of aluminum grain boundaries. Acta Materialia, 2014, 73, 312-325.	3.8	105
18	An internal state variable material model for predicting the time, thermomechanical, and stress state dependence of amorphous glassy polymers under large deformation. International Journal of Plasticity, 2013, 42, 168-193.	4.1	100

#	ARTICLE	IF	CITATIONS
19	Atomistic simulations of tension–compression asymmetry in dislocation nucleation for copper grain boundaries. Computational Materials Science, 2008, 44, 351-362.	1.4	91
20	Grain boundary dislocation sources in nanocrystalline copper. Scripta Materialia, 2008, 58, 299-302.	2.6	89
21	Atomistic Investigation of the Role of Grain Boundary Structure on Hydrogen Segregation and Embrittlement in Î±-Fe. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2013, 44, 1365-1375.	1.1	89
22	Structural, elastic, and thermal properties of cementite (<mml:math) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 627 Td (xmlns:mml="http://w calculated using a modified embedded atom method. Physical Review B, 2014, 89, .	1.1	81
23	Evolution of structure and free volume in symmetric tilt grain boundaries during dislocation nucleation. Acta Materialia, 2010, 58, 6464-6473.	3.8	79
24	Grain Boundary Segregation of Interstitial and Substitutional Impurity Atoms in Alpha-Iron. Jom, 2014, 66, 129-138.	0.9	78
25	Microstructure-Dependent Local Strain Behavior in Polycrystals through In-Situ Scanning Electron Microscope Tensile Experiments. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2009, 40, 2363-2368.	1.1	74
26	Energetic driving force for preferential binding of self-interstitial atoms to Fe grain boundaries over vacancies. Scripta Materialia, 2011, 64, 908-911.	2.6	69
27	Solid State Porous Metal Production: A Review of the Capabilities, Characteristics, and Challenges. Advanced Engineering Materials, 2018, 20, 1700766.	1.6	68
28	Tension-compression asymmetry in homogeneous dislocation nucleation in single crystal copper. Applied Physics Letters, 2007, 90, 121916.	1.5	64
29	Effect of resistance spot welding parameters on weld pool properties in a DP600 dual-phase steel: A parametric study using thermomechanically-coupled finite element analysis. Materials & Design, 2014, 56, 387-397.	5.1	64
30	A multiscale model of grain boundary structure and energy: From atomistics to a continuum description. Acta Materialia, 2015, 82, 513-529.	3.8	60
31	Dual process monitoring of metal-based additive manufacturing using tensor decomposition of thermal image streams. Additive Manufacturing, 2018, 23, 443-456.	1.7	60
32	Influence of Grain Boundary Structure on Dislocation Nucleation in FCC Metals. Dislocations in Solids, 2008, 14, 43-139.	1.6	57
33	Enhancing grain refinement in polycrystalline materials using surface mechanical attrition treatment at cryogenic temperatures. Scripta Materialia, 2013, 69, 461-464.	2.6	54
34	Unraveling Recrystallization Mechanisms Governing Texture Development from Rare-Earth Element Additions to Magnesium. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2018, 49, 1809-1829.	1.1	53
35	Quantifying the energetics and length scales of carbon segregation toÎ±-Fe symmetric tilt grain boundaries using atomistic simulations. Modelling and Simulation in Materials Science and Engineering, 2013, 21, 035009.	0.8	47
36	Influence of Mn solute content on grain size reduction and improved strength in mechanically alloyed Alâ€"Mn alloys. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2014, 589, 57-65.	2.6	44

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37	An interatomic potential for saturated hydrocarbons based on the modified embedded-atom method. Physical Chemistry Chemical Physics, 2014, 16, 6233-6249.	1.3	41
38	Structural unit and faceting description of Σ3 asymmetric tilt grain boundaries. Journal of Materials Science, 2007, 42, 7806-7811.	1.7	39
39	The candidacy of shuffle and shear during compound twinning in hexagonal close-packed structures. Acta Materialia, 2013, 61, 7646-7659.	3.8	39
40	Characterizing the Local Primary Dendrite Arm Spacing in Directionally Solidified Dendritic Microstructures. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2014, 45, 426-437.	1.1	37
41	The role of Ta on twinnability in nanocrystalline Cu–Ta alloys. Materials Research Letters, 2017, 5, 48-54.	4.1	37
42	Structure and mechanical properties of Fe–Ni–Zr oxide-dispersion-strengthened (ODS) alloys. Journal of Nuclear Materials, 2015, 467, 205-213.	1.3	35
43	Quantification of damage evolution in a 7075 aluminum alloy using an acoustic emission technique. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2011, 528, 6708-6714.	2.6	33
44	Investigating Damage Evolution at the Nanoscale: Molecular Dynamics Simulations of Nanovoid Growth in Single-Crystal Aluminum. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2013, 44, 617-626.	1.1	32
45	Binding energetics of substitutional and interstitial helium and di-helium defects with grain boundary structure in α-Fe. Journal of Applied Physics, 2014, 115, .	1.1	31
46	Automated analysis of twins in hexagonal close-packed metals using molecular dynamics. Scripta Materialia, 2012, 66, 666-669.	2.6	30
47	Finite element analysis of occupant head injuries: Parametric effects of the side curtain airbag deployment interaction with a dummy head in a side impact crash. Accident Analysis and Prevention, 2013, 55, 232-241.	3.0	30
48	Orientation and rate dependence of dislocation nucleation stress computed using molecular dynamics. Scripta Materialia, 2009, 60, 675-678.	2.6	29
49	Shock wave propagation and spall failure of nanocrystalline Cu/Ta alloys: Effect of Ta in solid-solution. Journal of Applied Physics, 2017, 122, .	1.1	29
50	Multi-scale characterization of orthotropic microstructures. Modelling and Simulation in Materials Science and Engineering, 2008, 16, 065009.	0.8	28
51	Microstructure and damage evolution during tensile loading in a wrought magnesium alloy. Scripta Materialia, 2011, 64, 912-915.	2.6	27
52	He–V cluster nucleation and growth in α-Fe grain boundaries. Acta Materialia, 2017, 124, 544-555.	3.8	27
53	Role of nanoscale Cu/Ta interfaces on the shock compression and spall failure of nanocrystalline Cu/Ta systems at the atomic scales. Journal of Materials Science, 2018, 53, 5745-5765.	1.7	27
54	The role of grain boundary structure and crystal orientation on crack growth asymmetry in aluminum. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2014, 618, 345-354.	2.6	26

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55	Atomic scale investigation of grain boundary structure role on intergranular deformation in aluminium. Philosophical Magazine, 2014, 94, 3445-3466.	0.7	25
56	Comparison of reconstructed spatial microstructure images using different statistical descriptors. Computational Materials Science, 2012, 51, 437-444.	1.4	24
57	Structure and thermal decomposition of a nanocrystalline mechanically alloyed supersaturated Cu–Ta solid solution. MRS Communications, 2015, 5, 333-339.	0.8	24
58	Effect of vacancy defects on generalized stacking fault energy of fcc metals. Journal of Physics Condensed Matter, 2014, 26, 115404.	0.7	21
59	An efficient Monte Carlo algorithm for determining the minimum energy structures of metallic grain boundaries. Computational Materials Science, 2018, 155, 466-475.	1.4	21
60	Generalized framework for interatomic potential design: Application to Fe–He system. Journal of Nuclear Materials, 2012, 425, 22-32.	1.3	20
61	Mechanical properties of amorphous cellulose using molecular dynamics simulations with a reactive force field. International Journal of Modelling, Identification and Control, 2013, 18, 211.	0.2	20
62	Using Similarity Metrics to Quantify Differences in High-Throughput Data Sets: Application to X-ray Diffraction Patterns. ACS Combinatorial Science, 2017, 19, 25-36.	3.8	20
63	Investigating occupant safety through simulating the interaction between side curtain airbag deployment and an out-of-position occupant. Accident Analysis and Prevention, 2012, 49, 392-403.	3.0	19
64	Machine learning to predict aluminum segregation to magnesium grain boundaries. Scripta Materialia, 2021, 204, 114150.	2.6	18
65	Integrating computational modeling and first-principles calculations to predict stacking fault energy of dilute multicomponent Ni-base alloys. Computational Materials Science, 2014, 91, 50-55.	1.4	17
66	Towards Reaching the Theoretical Limit of Porosity in Solid State Metal Foams: Intraparticle Expansion as A Primary and Additive Means to Create Porosity. Advanced Engineering Materials, 2014, 16, 190-195.	1.6	17
67	Binding of He$_n$V clusters to α-Fe grain boundaries. Journal of Applied Physics, 2014, 115, .	1.1	16
68	Solid–State Foaming by Oxide Reduction and Expansion: Tailoring the Foamed Metal Microstructure in the Cu–CuO System with Oxide Content and Annealing Conditions. Advanced Engineering Materials, 2016, 18, 83-95.	1.6	16
69	Beyond initial twin nucleation in hcp metals: Micromechanical formulation for determining twin spacing during deformation. Acta Materialia, 2017, 133, 134-146.	3.8	15
70	Simulations of tensile bond rupture in single alkane molecules using reactive interatomic potentials. Chemical Physics Letters, 2015, 635, 278-284.	1.2	14
71	A Review on Capturing Twin Nucleation in Crystal Plasticity for Hexagonal Metals. Metals, 2021, 11, 1373.	1.0	14
72	Evaluating Local Primary Dendrite Arm Spacing Characterization Techniques Using Synthetic Directionally Solidified Dendritic Microstructures. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2015, 46, 4610-4628.	1.1	13

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73	Challenges of Engineering Grain Boundaries in Boron-Based Armor Ceramics. Jom, 2016, 68, 1605-1615.	0.9	13
74	Symmetry-based automated extraction of microstructural features: Application to dendritic cores in single-crystal Ni-based superalloys. Scripta Materialia, 2010, 62, 357-360.	2.6	12
75	Effect of magnetic fields on microstructure evolution. Computational Materials Science, 2018, 150, 464-474.	1.4	12
76	Property mapping of friction stir welded Al-2139 T8 plate using site specific shear punch testing. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2017, 682, 192-201.	2.6	11
77	Measurement of γ€² precipitates in a nickel-based superalloy using energy-filtered transmission electron microscopy coupled with automated segmenting techniques. Micron, 2010, 41, 641-647.	1.1	10
78	Synthesis, characterization and quantitative analysis of porous metal microstructures: Application to microporous copper produced by solid state foaming. AIMS Materials Science, 2016, 3, 573-590.	0.7	10
79	Multi-scale characterization of inhomogeneous morphologically textured microstructures. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2010, 527, 883-889.	2.6	9
80	Automated extraction of symmetric microstructure features in serial sectioning images. Materials Characterization, 2010, 61, 1406-1417.	1.9	8
81	Molecular Dynamics Simulations of the Glass Transition Temperature of Amorphous Cellulose. Applied Mechanics and Materials, 0, 214, 7-11.	0.2	7
82	Automated detection and characterization of microstructural features: application to eutectic particles in single crystal Ni-based superalloys. Modelling and Simulation in Materials Science and Engineering, 2010, 18, 025014.	0.8	6
83	Bridging atomistic simulations and experiments via virtual diffraction: understanding homophase grain boundary and heterophase interface structures. Journal of Materials Science, 2016, 51, 1251-1260.	1.7	6
84	Automated identification and characterisation of secondary and tertiary <i>γ</i>€² precipitates in nickel-based superalloys. Materials Science and Technology, 2010, 26, 1414-1422.	0.8	4
85	Quantifying Parameter Sensitivity and Uncertainty for Interatomic Potential Design: Application to Saturated Hydrocarbons. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering, 2018, 4, .	0.7	4
86	Correlating deformation mechanisms with X-ray diffraction phenomena in nanocrystalline metals using atomistic simulations. Computational Materials Science, 2018, 154, 178-186.	1.4	3
87	Transition of deformation mechanisms in nanotwinned single crystalline SiC. Philosophical Magazine, 2019, 99, 2636-2660.	0.7	3
88	Effect of Processing Parameters on the Microstructure of Mechanically Alloyed Nanostructured Al-Mn Alloys. , 2015, , 3-11.		3
89	Algorithm Development in Computational Materials Science. Jom, 2014, 66, 397-398.	0.9	1
90	Rebuttal comments on â€œMitigating grain growth in binary nanocrystalline alloys through solute selection based on thermodynamic stability mapsâ€• Computational Materials Science, 2015, 107, 238-242.	1.4	1

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91	A thermodynamic and kinetic-based grain growth model for nanocrystalline materials: Parameter sensitivity analysis and model extension. Computational Materials Science, 2017, 131, 250-265.	1.4	1
92	Multiscale Characterization of Spatial Heterogeneity in Multiphase Composite Microstructures. Journal of Engineering Materials and Technology, Transactions of the ASME, 2011, 133, .	0.8	0
93	Integrating exploratory data analytics into ReaxFF parameterization. MRS Communications, 2018, 8, 1300-1310.	0.8	0
94	Enhancing Mechanical Properties of Hot Wrought Steel by Microalloying and Optimizing Heat Treatments. Journal of Materials Engineering and Performance, 2020, 29, 5374-5387.	1.2	0