

Jaafar A El-Awady

List of Publications by Year in descending order

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83
papers

2,856
citations

147726
31
h-index

175177
52
g-index

84
all docs

84
docs citations

84
times ranked

1997
citing authors

#	ARTICLE	IF	CITATIONS
1	The interplay of local chemistry and plasticity in controlling microstructure formation during laser powder bed fusion of metals. Additive Manufacturing, 2022, , 102791.	1.7	1
2	Atomistic simulations and theoretical modeling of dislocation slip and yield response of industrial tantalum alloys. Materialia, 2022, 23, 101429.	1.3	1
3	Characteristics of screw dislocations and their slip on prismatic and pyramidal planes in pure titanium from atomistic simulations. Materialia, 2022, 24, 101503.	1.3	5
4	A statistical model for predicting size effects on the yield strength in dislocation-mediated crystal plasticity. Journal of the Mechanics and Physics of Solids, 2021, 147, 104245.	2.3	5
5	Slip delocalization and diffusion mediated carbide formation during fatigue of a nickel-base superalloy. International Journal of Fatigue, 2021, 145, 106077.	2.8	0
6	Strain rate dependency of dislocation plasticity. Nature Communications, 2021, 12, 1845.	5.8	97
7	Understanding the interaction of extension twinning and basal-plate precipitates in Mg-9Al using precession electron diffraction. Materialia, 2021, 15, 101044.	1.3	15
8	Micro-mechanical investigation of the thermo-mechanical properties of micro-architected tungsten coatings. Journal of the Mechanics and Physics of Solids, 2021, 150, 104326.	2.3	5
9	Virtual Electron Backscatter Diffraction for Multiscale Defect Characterization. Microscopy and Microanalysis, 2021, 27, 1458-1459.	0.2	1
10	The effect of local chemical ordering on dislocation activity in multi-principle element alloys: A three-dimensional discrete dislocation dynamics study. Acta Materialia, 2021, 220, 117307.	3.8	19
11	Insights from the MEDE program: An overview of microstructure-property linkages in the dynamic behaviors of magnesium alloys. Mechanics of Materials, 2021, 163, 104084.	1.7	13
12	Scanning transmission electron microscopy image simulations of complex dislocation structures generated by discrete dislocation dynamics. Ultramicroscopy, 2020, 219, 113124.	0.8	2
13	The heterogeneity of persistent slip band nucleation and evolution in metals at the micrometer scale. Science, 2020, 370, .	6.0	52
14	Statistics of dislocation avalanches in FCC and BCC metals: dislocation mechanisms and mean swept distances across microsample sizes and temperatures. Scientific Reports, 2020, 10, 19024.	1.6	10
15	Machine Learning of Dislocation-Induced Stress Fields and Interaction Forces. Jom, 2020, 72, 4380-4392.	0.9	3
16	Dislocations in	3.8	14
17	Effect of basal precipitates on extension twinning and pyramidal slip: A micro-mechanical and electron microscopy study of a Mg-Al binary alloy. Acta Materialia, 2020, 189, 35-46.	3.8	36
18	Core structure and mobility of edge dislocations in face-centered-cubic chemically complex NiCoFe and NiCoFeCu equiatomic solid-solution alloys. Materialia, 2020, 9, 100628.	1.3	19

#	ARTICLE	IF	CITATIONS
19	Hierarchical Multiscale Approach for Modeling the Deformation and Failure of Epoxy-Based Polymer Matrix Composites. <i>Journal of Physical Chemistry B</i> , 2020, 124, 11928-11938.	1.2	11
20	Theoretical framework for predicting solute concentrations and solute-induced stresses in finite volumes with arbitrary elastic fields. <i>Materials Theory</i> , 2020, 4, .	2.2	9
21	Multiscale Modeling of Epoxies and Epoxy-Based Composites. , 2020, , 267-296.		2
22	Effect of temperature on the suppression of twinning in textured magnesium. <i>MRS Communications</i> , 2019, 9, 1093-1097.	0.8	4
23	Effect of temperature on the transition in deformation modes in Mg single crystals. <i>Acta Materialia</i> , 2019, 178, 241-248.	3.8	21
24	Micro-scale fatigue mechanisms in metals: Insights gained from small-scale experiments and discrete dislocation dynamics simulations. <i>Current Opinion in Solid State and Materials Science</i> , 2019, 23, 100765.	5.6	30
25	Intrinsic and extrinsic size effects in materials. <i>Journal of Materials Research</i> , 2019, 34, 2147.	1.2	1
26	Effects of alloying on deformation twinning in high entropy alloys. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2019, 763, 138143.	2.6	37
27	Alloy design for mechanical properties: Conquering the length scales. <i>MRS Bulletin</i> , 2019, 44, 257-265.	1.7	15
28	Hardening Effects of Precipitates with Different Shapes on the Twinning in Magnesium Alloys. <i>Minerals, Metals and Materials Series</i> , 2019, , 257-261.	0.3	0
29	The Effect of the Orientation of Second-Order Pyramidal $c + a$ Dislocations on Plastic Flow in Magnesium. <i>Minerals, Metals and Materials Series</i> , 2019, , 305-310.	0.3	0
30	Large-scale dislocation dynamics simulations of strain hardening of Ni microcrystals under tensile loading. <i>Acta Materialia</i> , 2019, 164, 171-183.	3.8	24
31	Atomistic Simulations of Carbon Diffusion and Segregation in $\hat{\pm}$ -Iron Grain Boundaries. <i>Minerals, Metals and Materials Series</i> , 2018, , 323-332.	0.3	2
32	Quantifying the effect of hydrogen on dislocation dynamics: A three-dimensional discrete dislocation dynamics framework. <i>Journal of the Mechanics and Physics of Solids</i> , 2018, 112, 491-507.	2.3	55
33	Precipitation hardening effects on extension twinning in magnesium alloys. <i>International Journal of Plasticity</i> , 2018, 106, 186-202.	4.1	89
34	Thermo-mechanical response of single-phase face-centered-cubic Al _x CoCrFeNi high-entropy alloy microcrystals. <i>Materials Research Letters</i> , 2018, 6, 300-306.	4.1	15
35	Anomalous hardening in magnesium driven by a size-dependent transition in deformation modes. <i>Acta Materialia</i> , 2018, 144, 11-20.	3.8	58
36	High frequency in situ fatigue response of Ni-base superalloy Ren ^Å N5 microcrystals. <i>Acta Materialia</i> , 2018, 144, 154-163.	3.8	26

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37	Impact of angular deviation from coincidence site lattice grain boundaries on hydrogen segregation and diffusion in α -iron. MRS Communications, 2018, 8, 1197-1203.	0.8	5
38	Unveiling the role of super-jogs and dislocation induced atomic-shuffling on controlling plasticity in magnesium. Acta Materialia, 2018, 161, 182-193.	3.8	18
39	Atomistic Simulations of Carbon and Hydrogen Diffusion and Segregation in Alpha-Iron Deviant CSL Grain Boundaries. MRS Advances, 2018, 3, 2795-2800.	0.5	4
40	Self-healing of low angle grain boundaries by vacancy diffusion and dislocation climb. Scripta Materialia, 2018, 155, 155-159.	2.6	16
41	The plausibility of $\frac{1}{2}\langle 111 \rangle$ dislocation slip on $\{-12-11\}$ planes in Mg. Scripta Materialia, 2018, 156, 19-22.	2.6	7
42	Origin of double-peak precipitation hardening in metallic alloys. International Journal of Plasticity, 2018, 111, 152-167.	4.1	42
43	Deformation of magnesium during c-axis compression at low temperatures. Acta Materialia, 2017, 133, 282-292.	3.8	29
44	Core structures and mobility of $\frac{1}{2}\langle 111 \rangle$ dislocations in magnesium. Scripta Materialia, 2017, 135, 37-40.	2.6	21
45	The strength and dislocation microstructure evolution in superalloy microcrystals. Journal of the Mechanics and Physics of Solids, 2017, 99, 146-162.	2.3	36
46	Micro-mechanical characterization of micro-architected tungsten coatings. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2017, 705, 366-375.	2.6	5
47	Correlating Free-Volume Hole Distribution to the Glass Transition Temperature of Epoxy Polymers. Journal of Physical Chemistry B, 2017, 121, 8399-8407.	1.2	10
48	Temperature effects on the mobility of pyramidal $\frac{1}{2}\langle c+a \rangle$ dislocations in magnesium. Scripta Materialia, 2017, 127, 68-71.	2.6	65
49	Surface roughness evolution during early stages of mechanical cyclic loading. International Journal of Fatigue, 2016, 87, 339-350.	2.8	27
50	Quantifying dislocation microstructure evolution and cyclic hardening in fatigued face-centered cubic single crystals. Journal of the Mechanics and Physics of Solids, 2016, 91, 126-144.	2.3	39
51	Advances in Discrete Dislocation Dynamics Modeling of Size-Affected Plasticity. Springer Series in Materials Science, 2016, , 337-371.	0.4	6
52	Coarse-Grained Molecular Dynamics Study of the Curing and Properties of Highly Cross-Linked Epoxy Polymers. Journal of Physical Chemistry B, 2016, 120, 9495-9505.	1.2	29
53	Grain size effects on dislocation and twinning mediated plasticity in magnesium. Scripta Materialia, 2016, 112, 50-53.	2.6	139
54	Hydrogen Diffusion and Segregation in Alpha Iron α (111) Grain Boundaries. , 2015, , .		4

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55	Molecular Dynamics Simulations of Orientation Effects During Tension, Compression, and Bending Deformations of Magnesium Nanocrystals. <i>Journal of Applied Mechanics, Transactions ASME</i> , 2015, 82, .	1.1	47
56	The effect of size, orientation and alloying on the deformation of AZ31 nanopillars. <i>Journal of the Mechanics and Physics of Solids</i> , 2015, 76, 208-223.	2.3	51
57	Towards further understanding of stacking fault tetrahedron absorption and defect-free channels "A molecular dynamics study. <i>Journal of Nuclear Materials</i> , 2015, 458, 176-186.	1.3	35
58	Towards resolving the anonymity of pyramidal slip in magnesium. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2015, 644, 318-324.	2.6	68
59	The role of twinning deformation on the hardening response of polycrystalline magnesium from discrete dislocation dynamics simulations. <i>Acta Materialia</i> , 2015, 92, 126-139.	3.8	112
60	Discrete dislocation dynamics simulations of twin size-effects in magnesium. <i>Materials Research Society Symposia Proceedings</i> , 2015, 1741, 27.	0.1	5
61	Unravelling the physics of size-dependent dislocation-mediated plasticity. <i>Nature Communications</i> , 2015, 6, 5926.	5.8	232
62	Discerning enhanced dislocation plasticity in hydrogen-charged \pm -iron nano-crystals. <i>Materials Research Letters</i> , 2015, 3, 184-189.	4.1	17
63	Screw dislocation cross slip at cross-slip plane jogs and screw dipole annihilation in FCC Cu and Ni investigated via atomistic simulations. <i>Acta Materialia</i> , 2015, 101, 10-15.	3.8	28
64	Microstructurally based cross-slip mechanisms and their effects on dislocation microstructure evolution in fcc crystals. <i>Acta Materialia</i> , 2015, 85, 180-190.	3.8	146
65	Orientation influence on grain size effects in ultrafine-grained magnesium. <i>Scripta Materialia</i> , 2015, 97, 25-28.	2.6	50
66	Highly anisotropic slip-behavior of pyramidal $\frac{1}{2}\langle 11\bar{2}0 \rangle$ dislocations in hexagonal close-packed magnesium. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2014, 618, 424-432.	2.6	35
67	Formation and slip of pyramidal dislocations in hexagonal close-packed magnesium single crystals. <i>Acta Materialia</i> , 2014, 71, 319-332.	3.8	145
68	Spontaneous athermal cross-slip nucleation at screw dislocation intersections in FCC metals and L1 ₂ intermetallics investigated via atomistic simulations. <i>Philosophical Magazine</i> , 2013, 93, 3012-3028.	0.7	21
69	Pre-straining effects on the power-law scaling of size-dependent strengthening in Ni single crystals. <i>Scripta Materialia</i> , 2013, 68, 207-210.	2.6	54
70	Atomistic simulations of the interactions of hydrogen with dislocations in fcc metals. <i>Physical Review B</i> , 2012, 86, .	1.1	51
71	Calculations of intersection cross-slip activation energies in fcc metals using nudged elastic band method. <i>Acta Materialia</i> , 2011, 59, 7135-7144.	3.8	53
72	Trapping and escape of dislocations in micro-crystals with external and internal barriers. <i>International Journal of Plasticity</i> , 2011, 27, 372-387.	4.1	46

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73	Activated states for cross-slip at screw dislocation intersections in face-centered cubic nickel and copper via atomistic simulation. Acta Materialia, 2010, 58, 5547-5557.	3.8	44
74	The Science and Technologies for Fusion Energy With Lasers and Direct-Drive Targets. IEEE Transactions on Plasma Science, 2010, 38, 690-703.	0.6	51
75	Effects of focused ion beam induced damage on the plasticity of micropillars. Physical Review B, 2009, 80, .	1.1	62
76	The role of the weakest-link mechanism in controlling the plasticity of micropillars. Journal of the Mechanics and Physics of Solids, 2009, 57, 32-50.	2.3	148
77	Interface strength measurement of tungsten coatings on F82H substrates. Journal of Nuclear Materials, 2009, 386-388, 863-865.	1.3	10
78	Atomistic simulations of cross-slip nucleation at screw dislocation intersections in face-centered cubic nickel. Philosophical Magazine, 2009, 89, 3351-3369.	0.7	30
79	A self-consistent boundary element, parametric dislocation dynamics formulation of plastic flow in finite volumes. Journal of the Mechanics and Physics of Solids, 2008, 56, 2019-2035.	2.3	101
80	Failure Strength Measurements of VPS Tungsten Coatings for HAPL First Wall Armor. Fusion Science and Technology, 2007, 52, 875-879.	0.6	6
81	Development Status of the Helium-Cooled Porous Tungsten Heat Exchanger Concept. , 2007, , .		1
82	Proposed damage evolution model for large-scale finite element modeling of the dual coolant US-ITER TBM. Journal of Nuclear Materials, 2007, 367-370, 1337-1343.	1.3	1
83	Hydrogen-Dislocation Interactions and Cross-Slip Inhibition in FCC Nickel. , 0, , 719-726.		1