Jaafar A El-Awady

List of Publications by Year
in descending order

83	2,856	147726 31	175177 52
papers	citations	h-index	g-index

84	84	84	1997
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Unravelling the physics of size-dependent dislocation-mediated plasticity. Nature Communications, 2015, 6, 5926.	5.8	232
2	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
3	Microstructurally based cross-slip mechanisms and their effects on dislocation microstructure evolution in fcc crystals. Acta Materialia, 2015, 85, 180-190.	3.8	146
4	Formation and slip of pyramidal dislocations in hexagonal close-packed magnesium single crystals. Acta Materialia, 2014, 71, 319-332.	3.8	145
5	Grain size effects on dislocation and twinning mediated plasticity in magnesium. Scripta Materialia, 2016, 112, 50-53.	2.6	139
6	The role of twinning deformation on the hardening response of polycrystalline magnesium from discrete dislocation dynamics simulations. Acta Materialia, 2015, 92, 126-139.	3.8	112
7	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
8	Strain rate dependency of dislocation plasticity. Nature Communications, 2021, 12, 1845.	5.8	97
9	Precipitation hardening effects on extension twinning in magnesium alloys. International Journal of Plasticity, 2018, 106, 186-202.	4.1	89
10	Towards resolving the anonymity of pyramidal slip in magnesium. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2015, 644, 318-324.	2.6	68
11	Temperature effects on the mobility of pyramidal < c + a > dislocations in magnesium. Scripta Materialia, 2017, 127, 68-71.	2.6	65
12	Effects of focused ion beam induced damage on the plasticity of micropillars. Physical Review B, 2009, 80, .	1.1	62
13	Anomalous hardening in magnesium driven by a size-dependent transition in deformation modes. Acta Materialia, 2018, 144, 11-20.	3.8	58
14	Quantifying the effect of hydrogen on dislocation dynamics: A three-dimensional discrete dislocation dynamics framework. Journal of the Mechanics and Physics of Solids, 2018, 112, 491-507.	2.3	55
15	Pre-straining effects on the power-law scaling of size-dependent strengthening in Ni single crystals. Scripta Materialia, 2013, 68, 207-210.	2.6	54
16	Calculations of intersection cross-slip activation energies in fcc metals using nudged elastic band method. Acta Materialia, 2011, 59, 7135-7144.	3.8	53
17	The heterogeneity of persistent slip band nucleation and evolution in metals at the micrometer scale. Science, 2020, 370, .	6.0	52
18	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

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19	Atomistic simulations of the interactions of hydrogen with dislocations in fcc metals. Physical Review B, 2012, 86, .	1.1	51
20	The effect of size, orientation and alloying on the deformation of AZ31 nanopillars. Journal of the Mechanics and Physics of Solids, 2015, 76, 208-223.	2.3	51
21	Orientation influence on grain size effects in ultrafine-grained magnesium. Scripta Materialia, 2015, 97, 25-28.	2.6	50
22	Molecular Dynamics Simulations of Orientation Effects During Tension, Compression, and Bending Deformations of Magnesium Nanocrystals. Journal of Applied Mechanics, Transactions ASME, 2015, 82, .	1.1	47
23	Trapping and escape of dislocations in micro-crystals with external and internal barriers. International Journal of Plasticity, 2011, 27, 372-387.	4.1	46
24	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
25	Origin of double-peak precipitation hardening in metallic alloys. International Journal of Plasticity, 2018, 111, 152-167.	4.1	42
26	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
27	Effects of alloying on deformation twinning in high entropy alloys. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2019, 763, 138143.	2.6	37
28	The strength and dislocation microstructure evolution in superalloy microcrystals. Journal of the Mechanics and Physics of Solids, 2017, 99, 146-162.	2.3	36
29	Effect of basal precipitates on extension twinning and pyramidal slip: A micro-mechanical and electron microscopy study of a Mgâ€“Al binary alloy. Acta Materialia, 2020, 189, 35-46.	3.8	36
30	Highly anisotropic slip-behavior of pyramidal I ã€ c+a ã€‰ dislocations in hexagonal close-packed magnesium. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2014, 618, 424-432.	2.6	35
31	Towards further understanding of stacking fault tetrahedron absorption and defect-free channels â€“ A molecular dynamics study. Journal of Nuclear Materials, 2015, 458, 176-186.	1.3	35
32	Atomistic simulations of cross-slip nucleation at screw dislocation intersections in face-centered cubic nickel. Philosophical Magazine, 2009, 89, 3351-3369.	0.7	30
33	Micro-scale fatigue mechanisms in metals: Insights gained from small-scale experiments and discrete dislocation dynamics simulations. Current Opinion in Solid State and Materials Science, 2019, 23, 100765.	5.6	30
34	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
35	Deformation of magnesium during c-axis compression at low temperatures. Acta Materialia, 2017, 133, 282-292.	3.8	29
36	Screw dislocation cross slip at cross-slip plane jogs and screw dipole annihilation in FCC Cu and Ni investigated via atomistic simulations. Acta Materialia, 2015, 101, 10-15.	3.8	28

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37	Surface roughness evolution during early stages of mechanical cyclic loading. International Journal of Fatigue, 2016, 87, 339-350.	2.8	27
38	High frequency in situ fatigue response of Ni-base superalloy RenÃ©-N5 microcrystals. Acta Materialia, 2018, 144, 154-163.	3.8	26
39	Large-scale dislocation dynamics simulations of strain hardening of Ni microcrystals under tensile loading. Acta Materialia, 2019, 164, 171-183.	3.8	24
40	Spontaneous athermal cross-slip nucleation at screw dislocation intersections in FCC metals and L1₂intermetallics investigated via atomistic simulations. Philosophical Magazine, 2013, 93, 3012-3028.	0.7	21
41	Core structures and mobility of âŸ¨câŸ© dislocations in magnesium. Scripta Materialia, 2017, 135, 37-40.	2.6	21
42	Effect of temperature on the transition in deformation modes in Mg single crystals. Acta Materialia, 2019, 178, 241-248.	3.8	21
43	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
44	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
45	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
46	Discerning enhanced dislocation plasticity in hydrogen-chargedÎ±-iron nano-crystals. Materials Research Letters, 2015, 3, 184-189.	4.1	17
47	Self-healing of low angle grain boundaries by vacancy diffusion and dislocation climb. Scripta Materialia, 2018, 155, 155-159.	2.6	16
48	Thermo-mechanical response of single-phase face-centered-cubic Al_xCoCrFeNi high-entropy alloy microcrystals. Materials Research Letters, 2018, 6, 300-306.	4.1	15
49	Alloy design for mechanical properties: Conquering the length scales. MRS Bulletin, 2019, 44, 257-265.	1.7	15
50	Understanding the interaction of extension twinning and basal-plate precipitates in Mg-9Al using precession electron diffraction. Materialia, 2021, 15, 101044.	1.3	15
51	<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si4.gif"><mml:mrow><mml:mo>â€˜</mml:mo><mml:mrow><mml:mi>c</mml:mi><mml:mo linebreak="badbreak">+</mml:mo><mml:mi>a</mml:mi></mml:mrow><mml:mo>â€‰</mml:mo></mml:mrow></mml:math> dislocations in <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si10.gif"><mml:mrow><mml:mo>{</mml:mo><mml:mrow><mml:mn>10</mml:mn><mml:mover accent="true"><mml:mn>1</mml:mn><mml:mo>Ä</mml:mo></mml:mover><mml:mn>2</mml:mn></mml:mrow><mml:mo>}	3.8	14
52	Insights from the MEDE program: An overview of microstructureâ€“property linkages in the dynamic behaviors of magnesium alloys. Mechanics of Materials, 2021, 163, 104084.	1.7	13
53	Hierarchical Multiscale Approach for Modeling the Deformation and Failure of Epoxy-Based Polymer Matrix Composites. Journal of Physical Chemistry B, 2020, 124, 11928-11938.	1.2	11
54	Interface strength measurement of tungsten coatings on F82H substrates. Journal of Nuclear Materials, 2009, 386-388, 863-865.	1.3	10

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55	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
56	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
57	Theoretical framework for predicting solute concentrations and solute-induced stresses in finite volumes with arbitrary elastic fields. Materials Theory, 2020, 4, .	2.2	9
58	The plausibility of <câ€¯+â€¯a> dislocation slip on {-12-11} planes in Mg. Scripta Materialia, 2018, 156, 19-22.	2.6	7
59	Failure Strength Measurements of VPS Tungsten Coatings for HAPL First Wall Armor. Fusion Science and Technology, 2007, 52, 875-879.	0.6	6
60	Advances in Discrete Dislocation Dynamics Modeling of Size-Affected Plasticity. Springer Series in Materials Science, 2016, , 337-371.	0.4	6
61	Discrete dislocation dynamics simulations of twin size-effects in magnesium. Materials Research Society Symposia Proceedings, 2015, 1741, 27.	0.1	5
62	Micro-mechanical characterization of micro-architectured tungsten coatings. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2017, 705, 366-375.	2.6	5
63	Impact of angular deviation from coincidence site lattice grain boundaries on hydrogen segregation and diffusion in Î±-iron. MRS Communications, 2018, 8, 1197-1203.	0.8	5
64	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
65	Micro-mechanical investigation of the thermo-mechanical properties of micro-architectured tungsten coatings. Journal of the Mechanics and Physics of Solids, 2021, 150, 104326.	2.3	5
66	Characteristics of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si8.svg"><mml:mrow><mml:mo>ã€ˆ</mml:mo><mml:mi>a</mml:mi><mml:mo>ã€‰</mml:mo></mml:mrow></mml:math> screw dislocations and their slip on prismatic and pyramidal planes in pure <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si50.svg"><mml:mi>Î±</mml:mi></mml:math> titanium from atomistic simulations. Materialia, 2022, 24, 101503.	1.3	5
67	Hydrogen Diffusion and Segregation in Alpha Iron â˜… 3 (111) Grain Boundaries. , 2015, , .		4
68	Atomistic Simulations of Carbon and Hydrogen Diffusion and Segregation in Alfa-Iron Deviant CSL Grain Boundaries. MRS Advances, 2018, 3, 2795-2800.	0.5	4
69	Effect of temperature on the suppression of twinning in textured magnesium. MRS Communications, 2019, 9, 1093-1097.	0.8	4
70	Machine Learning of Dislocation-Induced Stress Fields and Interaction Forces. Jom, 2020, 72, 4380-4392.	0.9	3
71	Atomistic Simulations of Carbon Diffusion and Segregation in Î±-Iron Grain Boundaries. Minerals, Metals and Materials Series, 2018, , 323-332.	0.3	2
72	Scanning transmission electron microscopy image simulations of complex dislocation structures generated by discrete dislocation dynamics. Ultramicroscopy, 2020, 219, 113124.	0.8	2

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73	Multiscale Modeling of Epoxies and Epoxy-Based Composites. , 2020, , 267-296.		2
74	Development Status of the Helium-Cooled Porous Tungsten Heat Exchanger Concept. , 2007, , .		1
75	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
76	Intrinsic and extrinsic size effects in materials. Journal of Materials Research, 2019, 34, 2147.	1.2	1
77	Virtual Electron Backscatter Diffraction for Multiscale Defect Characterization. Microscopy and Microanalysis, 2021, 27, 1458-1459.	0.2	1
78	Hydrogen-Dislocation Interactions and Cross-Slip Inhibition in FCC Nickel. , 0, , 719-726.		1
79	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
80	Atomistic simulations and theoretical modeling of dislocation slip and yield response of industrial tantalum alloys. Materialia, 2022, 23, 101429.	1.3	1
81	Hardening Effects of Precipitates with Different Shapes on the Twinning in Magnesium Alloys. Minerals, Metals and Materials Series, 2019, , 257-261.	0.3	0
82	The Effect of the Orientation of Second-Order Pyramidalâ€‰<c + aâ€‰>â€‰Dislocations on Plastic Flow in Magnesium. Minerals, Metals and Materials Series, 2019, , 305-310.	0.3	0
83	Slip delocalization and diffusion mediated carbide formation during fatigue of a nickel-base superalloy. International Journal of Fatigue, 2021, 145, 106077.	2.8	0