Alexander E Mayer

List of Publications by Year
in descending order

105	2,206	279487	253896
papers	citations	23 h-index	43 g-index

106	106	106	1351
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Chelyabinsk Airburst, Damage Assessment, Meteorite Recovery, and Characterization. Science, 2013, 342, 1069-1073.	6.0	487
2	Dislocation based high-rate plasticity model and its application to plate-impact and ultra short electron irradiation simulations. International Journal of Plasticity, 2011, 27, 1294-1308.	4.1	111
3	Modeling of plasticity and fracture of metals at shock loading. Journal of Applied Physics, 2013, 113, .	1.1	87
4	Dynamics and kinetics of dislocations in Al and Alâ€“Cu alloy under dynamic loading. International Journal of Plasticity, 2014, 55, 94-107.	4.1	86
5	Plasticity driven growth of nanovoids and strength of aluminum at high rate tension: Molecular dynamics simulations and continuum modeling. International Journal of Plasticity, 2015, 74, 75-91.	4.1	63
6	Plastic deformation under high-rate loading: The multiscale approach. Physics of the Solid State, 2010, 52, 1386-1396.	0.2	57
7	Influence of local stresses on motion of edge dislocation in aluminum. International Journal of Plasticity, 2018, 101, 170-187.	4.1	53
8	The definition of characteristic times of plastic relaxation by dislocation slip and grain boundary sliding in copper and nickel. International Journal of Plasticity, 2016, 82, 97-111.	4.1	51
9	Dislocation dynamics in aluminum containing Î¸â€™ phase: Atomistic simulation and continuum modeling. International Journal of Plasticity, 2019, 119, 21-42.	4.1	50
10	Evolution of pore ensemble in solid and molten aluminum under dynamic tensile fracture: Molecular dynamics simulations and mechanical models. International Journal of Mechanical Sciences, 2019, 157-158, 816-832.	3.6	39
11	Influence of copper inclusions on the strength of aluminum matrix at high-rate tension. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2015, 642, 351-359.	2.6	37
12	Prediction of the shear strength of aluminum with Î¸ phase inclusions based on precipitate statistics, dislocation and molecular dynamics. International Journal of Plasticity, 2020, 128, 102672.	4.1	37
13	Simulation and experimental investigation of the spall fracture of 304L stainless steel irradiated by a nanosecond relativistic high-current electron beam. International Journal of Fracture, 2016, 199, 59-70.	1.1	36
14	Interaction of dislocation with GP zones or Î" phase precipitates in aluminum: Atomistic simulations and dislocation dynamics. International Journal of Plasticity, 2020, 125, 169-190.	4.1	36
15	Continuum model of tensile fracture of metal melts and its application to a problem of high-current electron irradiation of metals. Journal of Applied Physics, 2015, 118, .	1.1	34
16	Prediction of shear strength of cluster-strengthened aluminum with multi-scale approach describing transition from cutting to bypass of precipitates by dislocations. International Journal of Plasticity, 2021, 146, 103095.	4.1	32
17	Late stages of high rate tension of aluminum melt: Molecular dynamic simulation. Journal of Applied Physics, 2016, 120, .	1.1	31
18	Dislocation nucleation in Al single crystal at shear parallel to (111) plane: Molecular dynamics simulations and nucleation theory with artificial neural networks. International Journal of Plasticity, 2021, 139, 102953.	4.1	30

#	Article	IF	Citations
19	Structural model of mechanical twinning and its application for modeling of the severe plastic deformation of copper rods in Taylor impact tests. International Journal of Plasticity, 2015, 74, 141-157.	4.1	29
20	Influence of titanium and magnesium nanoinclusions on the strength of aluminum at high-rate tension: Molecular dynamics simulations. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2016, 662, 227-240.	2.6	27
21	Evolution of shock compression pulses in polymethylmethacrylate and aluminum. Journal of Applied Physics, 2018, 123, .	1.1	26
22	Strain rate dependence of spall strength for solid and molten lead and tin. International Journal of Fracture, 2020, 222, 171-195.	1.1	26
23	Effect of hydrogen on the collective behavior of dislocations in the case of nanoindentation. Acta Materialia, 2018, 148, 18-27.	3.8	25
24	High- and low-entropy layers in solids behind shock and ramp compression waves. International Journal of Mechanical Sciences, 2021, 189, 105971.	3.6	24
25	Dynamic compaction of aluminum with nanopores of varied shape: MD simulations and machine-learning-based approximation of deformation behavior. International Journal of Plasticity, 2022, 156, 103363.	4.1	23
26	A simple mechanical model for grain boundary sliding in nanocrystalline metals. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2012, 532, 245-248.	2.6	22
27	Maximum yield strength under quasi-static and high-rate plastic deformation of metals. Physics of the Solid State, 2014, 56, 2470-2479.	0.2	22
28	Plastic deformation at dynamic compaction of aluminum nanopowder: Molecular dynamics simulations and mechanical model. International Journal of Plasticity, 2020, 124, 22-41.	4.1	22
29	Dynamic shear and tensile strength of iron: Continual and atomistic simulation. Mechanics of Solids, 2014, 49, 649-656.	0.3	21
30	High-speed collision of copper nanoparticle with aluminum surface: Molecular dynamics simulation. Applied Surface Science, 2016, 390, 289-302.	3.1	21
31	Copper spall fracture under sub-nanosecond electron irradiation. Engineering Fracture Mechanics, 2011, 78, 1306-1316.	2.0	20
32	Dislocation based plasticity in the case of nanoindentation. International Journal of Mechanical Sciences, 2018, 148, 158-173.	3.6	20
33	Localization of plastic flow at dynamic channel angular pressing. Technical Physics, 2013, 58, 1159-1163.	0.2	19
34	Size distribution of pores in metal melts at non-equilibrium cavitation and further stretching, and similarity with the spall fracture of solids. International Journal of Heat and Mass Transfer, 2018, 127, 643-657.	2.5	19
35	Coupled model for grain rotation, dislocation plasticity and grain boundary sliding in fine-grained solids. International Journal of Plasticity, 2020, 134, 102776.	4.1	19
36	Deformation behavior and spalling fracture of a heterophase aluminum alloy with ultrafine-grained and coarse-grained structure subjected to a nanosecond relativistic high-current electron beam. Russian Physics Journal, 2011, 54, 713-720.	0.2	18

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37	Localization of plastic flow at high-rate simple shear. International Journal of Plasticity, 2013, 51, 188-199.	4.1	18
38	Shock-induced compaction of nanoparticle layers into nanostructured coating. Journal of Applied Physics, 2017, 122, .	1.1	18
39	Spall Fracture Patterns for the Heterophase Cuâ€“Alâ€“Ni Alloy in Ultrafine- and Coarse-Grained States Exposed to a Nanosecond Relativistic High-Current Electron Beam. Russian Physics Journal, 2013, 55, 1451-1457.	0.2	17
40	Yield strength of nanocrystalline materials under high-rate plastic deformation. Physics of the Solid State, 2012, 54, 808-815.	0.2	16
41	On the mechanism of cratering on solid surfaces exposed to an intense charged particle beam. Technical Physics, 2002, 47, 968-977.	0.2	15
42	Numerical investigation of the change of dislocation density and microhardness in surface layer of iron targets under the high power ion- and electron-beam treatment. Surface and Coatings Technology, 2012, 212, 79-87.	2.2	15
43	Slip of low-angle tilt grain boundary (110) in FCC metals at perpendicular shear. International Journal of Plasticity, 2020, 134, 102843.	4.1	15
44	Influence of structure of grain boundaries and size distribution of grains on the yield strength at quasistatic and dynamical loading. Materials Research Express, 2017, 4, 085040.	0.8	14
45	APPLICATION OF NEURAL NETWORKS FOR MODELING SHOCK-WAVE PROCESSES IN ALUMINUM. Mechanics of Solids, 2021, 56, 326-342.	0.3	14
46	Strength of solid and molten aluminum under dynamic tension. JETP Letters, 2015, 102, 80-84.	0.4	13
47	Evolution of foamed aluminum melt at high rate tension: A mechanical model based on atomistic simulations. Journal of Applied Physics, 2018, 124, .	1.1	13
48	Micromechanical model of nanoparticle compaction and shock waves in metal powders. International Journal of Plasticity, 2021, 147, 103102.	4.1	13
49	Distribution of dislocations and twins in copper and 18Cr-10Ni-Ti steel under shock-wave loading. Technical Physics, 2014, 59, 1163-1170.	0.2	12
50	Mechanisms of metallic nanoparticle generation during an electric explosion of conductors. Technical Physics, 2010, 55, 509-513.	0.2	11
51	Theoretical interpretation of abnormal ultrafine-grained material deformation dynamics. Modelling and Simulation in Materials Science and Engineering, 2016, 24, 025013.	0.8	11
52	Comparative study of shock-wave hardening and substructure evolution of 304L and Hadfield steels irradiated with a nanosecond relativistic high-current electron beam. Journal of Alloys and Compounds, 2017, 714, 232-244.	2.8	11
53	Surface microrelief smoothing mechanisms in a target irradiated by an intense charged particle beam. Technical Physics, 2007, 52, 431-439.	0.2	10
54	Modeling of plastic localization in aluminum and Alâ€“Cu alloys under shock loading. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2014, 619, 354-363.	2.6	10

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55	Weak increase of the dynamic tensile strength of aluminum melt at the insertion of refractory inclusions. Computational Materials Science, 2016, 114, 178-182.	1.4	10
56	Machine-Learning-Based Model of Elasticâ€"Plastic Deformation of Copper for Application to Shock Wave Problem. Metals, 2022, 12, 402.	1.0	10
57	Numerical modelling of physical processes and structural changes in metals under intensive irradiation with use of CRS code: dislocations, twinning, evaporation and stress waves. Journal of Physics: Conference Series, 2014, 552, 012002.	0.3	9
58	Physical nature of strain rate sensitivity of metals and alloys at high strain rates. Journal of Physics: Conference Series, 2018, 991, 012012.	0.3	9
59	High-speed collision of copper nanoparticles with aluminum surface: Inclined impact, interaction with roughness and multiple impact. Computational Materials Science, 2018, 142, 108-121.	1.4	9
60	Dynamics of growth and collapse of nanopores in copper. International Journal of Solids and Structures, 2020, 202, 418-433.	1.3	9
61	Taylor Impact Tests with Copper Cylinders: Experiments, Microstructural Analysis and 3D SPH Modeling with Dislocation Plasticity and MD-Informed Artificial Neural Network as Equation of State. Metals, 2022, 12, 264.	1.0	9
62	Homogeneous nucleation of dislocations in copper: Theory and approximate description based on molecular dynamics and artificial neural networks. Computational Materials Science, 2022, 206, 111266.	1.4	9
63	Model of fracture of metal melts and the strength of melts under dynamic conditions. Journal of Experimental and Theoretical Physics, 2015, 121, 35-47.	0.2	8
64	Influence of free surface nanorelief on the rear spallation threshold: Molecular-dynamics investigation. Journal of Applied Physics, 2016, 120, 165903.	1.1	8
65	Influence of Î¸â€² Phase Cutting on Precipitate Hardening of Alâ€"Cu Alloy during Prolonged Plastic Deformation: Molecular Dynamics and Continuum Modeling. Applied Sciences (Switzerland), 2021, 11, 4906.	1.3	8
66	On the mechanism of microcrater formation on the surface of a target under the action of a high-power electron beam. Technical Physics Letters, 2006, 32, 424-428.	0.2	7
67	The nonlinear dynamics of the interface between media possessing different densities and symmetries. Technical Physics Letters, 2001, 27, 20-24.	0.2	6
68	The action of ultrashort high-power electron beam pulses on metal targets. Technical Physics Letters, 2007, 33, 69-72.	0.2	6
69	Elastic waves in suspensions. Acoustical Physics, 2011, 57, 136-143.	0.2	6
70	Effect of hydrogen- and oxygen-containing heterogeneities on the tensile strength of solid and molten aluminum. Computational Materials Science, 2021, 196, 110563.	1.4	6
71	Prediction of the strength of aged Al-Cu alloys with non-hybrid and hybrid {1 0 0}Al plates. Computational Materials Science, 2022, 207, 111331.	1.4	6
72	Shear strength of metals under uniaxial deformation and pure shear. Journal of Physics: Conference Series, 2015, 653, 012041.	0.3	5

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73	Multi-scale model of the dynamic fracture of molten and solid metals. Journal of Physics: Conference Series, 2015, 653, 012093.	0.3	5
74	Mechanical stresses in an irradiated target with a disturbed surface. Technical Physics, 2006, 51, 459-465.	0.2	4
75	Dynamic Fracture of Metals in Solid and Liquid States under Ultra- short Intensive Electron or Laser Irradiation. , 2014, 3, 1890-1895.		4
76	Numerical investigations of shock wave propagation in polymethylmethacrylate. Journal of Physics: Conference Series, 2015, 653, 012045.	0.3	4
77	Tensile strength of Al matrix with nanoscale Cu, Ti and Mg inclusions. Journal of Physics: Conference Series, 2016, 774, 012034.	0.3	4
78	Molecular Dynamics Investigation of Dislocation Slip in Pure Metals and Alloys. Structural Integrity, 2019, , 59-64.	0.8	4
79	Nonlinear dynamics of the interface between continuous media with different densities. Technical Physics, 2003, 48, 275-283.	0.2	3
80	Wave attenuation in microcrystal copper at irradiation by a powerful electronÂbeam. Current Applied Physics, 2011, 11, 1315-1318.	1.1	3
81	Droplet size distribution in a metal evaporated by high-current electron beam. Technical Physics Letters, 2012, 38, 559-561.	0.2	3
82	Localization of plastic deformation and mechanical twinning in dynamical channel angular pressing. IOP Conference Series: Materials Science and Engineering, 2014, 63, 012034.	0.3	3
83	Initial stage of fracture of aluminum with ideal and defect lattice. Journal of Physics: Conference Series, 2015, 653, 012094.	0.3	3
84	Influence of deposited nanoparticles on the spall strength of metals under the action of picosecond pulses of shock compression. Journal of Physics: Conference Series, 2018, 946, 012045.	0.3	3
85	The dynamics of under surface condensed substance irradiated by intense energy stream. AIP Conference Proceedings, 2006, , .	0.3	2
86	Meteoroid, Bolide and Meteorite Â«ChelyabinskÂ». Materials Science Forum, 2016, 845, 273-284.	0.3	2
87	Tensile strength of Feâ€“Ni and Mgâ€“Al nanocomposites: Molecular dynamic simulations. Journal of Physics: Conference Series, 2018, 946, 012043.	0.3	2
88	Dynamics and Kinetics of Dislocations in Metals and Alloys Under Dynamic Loading. Materials Research Society Symposia Proceedings, 2012, 1535, 5401.	0.1	1
89	Continuum model of tensile fracture of pure aluminum and D16 alloy and its application to the shock wave problems. Journal of Physics: Conference Series, 2016, 774, 012061.	0.3	1
90	Molecular dynamics study of the nucleation rate of nanopores in aluminum at a negative pressure. Journal of Physics: Conference Series, 2016, 774, 012062.	0.3	1

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91	Molecular dynamic investigations of the shock pulses interaction with nanostructured free surface of a target. Journal of Physics: Conference Series, 2016, 774, 012060.	0.3	1
92	Two-dimensional modeling of high-velocity impingement of polymethylmethacrylate plates. Journal of Physics: Conference Series, 2016, 774, 012066.	0.3	1
93	Melting of aluminum with ideal or defect lattice: Molecular dynamics simulations with accounting of electronic heat conductivity. Journal of Physics: Conference Series, 2016, 774, 012016.	0.3	1
94	Multiscale models of metal behaviour and structural change under the action of high-current electron irradiation. Journal of Physics: Conference Series, 2017, 830, 012072.	0.3	1
95	Evolution of Size Distribution of Pores in Metal Melts at Tension with High Strain Rates. Structural Integrity, 2019, , 211-214.	0.8	1
96	Propagation of shock waves and fracture in the Alâ€”Cu composite: Numerical simulation. Journal of Physics: Conference Series, 2015, 653, 012046.	0.3	0
97	Kinetic model for mechanical twinning and its application for intensive loading of metals. EPJ Web of Conferences, 2015, 94, 04041.	0.1	0
98	Energy approach to kinetics equations for dislocations and twins and its application for high strain rate collision problems. Journal of Physics: Conference Series, 2015, 653, 012042.	0.3	0
99	2D simulations of the dynamics and fracture of metals in the energy absorption zone of the high-current electron beam. Journal of Physics: Conference Series, 2015, 653, 012010.	0.3	0
100	Numerical simulation of experiments on the high-speed impact of metal plates. Journal of Physics: Conference Series, 2015, 653, 012044.	0.3	0
101	Molecular dynamic simulations of the high-speed copper nanoparticles collision with the aluminum surface. Journal of Physics: Conference Series, 2016, 774, 012029.	0.3	0
102	Simulation of cylindrical shell collapse with considering plasticity and fracture of metals. Journal of Physics: Conference Series, 2018, 946, 012046.	0.3	0
103	Statistical Distribution of Pores in Solid and Molten Metals at Dynamic Tensile Fracture. Structural Integrity, 2019, , 119-125.	0.8	0
104	Scalability of increase in spall threshold in the presence of cylindrical protrusions on metals surface. Journal of Physics: Conference Series, 2020, 1556, 012029.	0.3	0
105	Why the stone exploded. , 2019, , 148-160.		0