Alexander E Mayer

List of Publications by Year in Descending Order

104 papers	1,554 citations	19 h-index	36 g-index
106 ext. papers	1,880 ext. citations	3 avg, IF	5.49 L-index

#	Paper	IF	Citations
104	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	2.3	1
103	Machine-Learning-Based Model of Elastic–Plastic Deformation of Copper for Application to Shock Wave Problem. *Metals*, **2022**, 12, 402	2.3	1
102	Homogeneous nucleation of dislocations in copper: Theory and approximate description based on molecular dynamics and artificial neural networks. *Computational Materials Science*, **2022**, 206, 111266	3.2	1
101	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	3.2	2
100	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	7.6	8
99	APPLICATION OF NEURAL NETWORKS FOR MODELING SHOCK-WAVE PROCESSES IN ALUMINUM. *Mechanics of Solids*, **2021**, 56, 326-342	0.5	6
98	Influence of θ′ Phase Cutting on Precipitate Hardening of Al–Cu Alloy during Prolonged Plastic Deformation: Molecular Dynamics and Continuum Modeling. *Applied Sciences (Switzerland)*, **2021**, 11, 4906	2.6	3
97	High- and low-entropy layers in solids behind shock and ramp compression waves. *International Journal of Mechanical Sciences*, **2021**, 189, 105971	5.5	11
96	Effect of hydrogen- and oxygen-containing heterogeneities on the tensile strength of solid and molten aluminum. *Computational Materials Science*, **2021**, 196, 110563	3.2	1
95	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	7.6	7
94	Micromechanical model of nanoparticle compaction and shock waves in metal powders. *International Journal of Plasticity*, **2021**, 147, 103102	7.6	2
93	Slip of low-angle tilt grain boundary (110) in FCC metals at perpendicular shear. *International Journal of Plasticity*, **2020**, 134, 102843	7.6	5
92	Strain rate dependence of spall strength for solid and molten lead and tin. *International Journal of Fracture*, **2020**, 222, 171-195	2.3	15
91	Coupled model for grain rotation, dislocation plasticity and grain boundary sliding in fine-grained solids. *International Journal of Plasticity*, **2020**, 134, 102776	7.6	5
90	Prediction of the shear strength of aluminum with θ′ phase inclusions based on precipitate statistics, dislocation and molecular dynamics. *International Journal of Plasticity*, **2020**, 128, 102672	7.6	18
89	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	
88	Dynamics of growth and collapse of nanopores in copper. *International Journal of Solids and Structures*, **2020**, 202, 418-433	3.1	5

87	Interaction of dislocation with GP zones or ′′ phase precipitates in aluminum: Atomistic simulations and dislocation dynamics. *International Journal of Plasticity*, **2020**, 125, 169-190	7.6	13
86	Plastic deformation at dynamic compaction of aluminum nanopowder: Molecular dynamics simulations and mechanical model. *International Journal of Plasticity*, **2020**, 124, 22-41	7.6	13
85	Molecular Dynamics Investigation of Dislocation Slip in Pure Metals and Alloys. *Structural Integrity*, **2019**, 59-64	0.2	2
84	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	5.5	20
83	Dislocation dynamics in aluminum containing ′′ phase: Atomistic simulation and continuum modeling. *International Journal of Plasticity*, **2019**, 119, 21-42	7.6	29
82	Statistical Distribution of Pores in Solid and Molten Metals at Dynamic Tensile Fracture. *Structural Integrity*, **2019**, 119-125	0.2	
81	Why the stone exploded **2019**, 148-160		
80	Evolution of Size Distribution of Pores in Metal Melts at Tension with High Strain Rates. *Structural Integrity*, **2019**, 211-214	0.2	1
79	Limit of Ultra-high Strain Rates in Plastic Response of Metals. *Structural Integrity*, **2019**, 273-278	0.2	3
78	Physical nature of strain rate sensitivity of metals and alloys at high strain rates. *Journal of Physics: Conference Series*, **2018**, 991, 012012	0.3	3
77	Effect of hydrogen on the collective behavior of dislocations in the case of nanoindentation. *Acta Materialia*, **2018**, 148, 18-27	8.4	16
76	High-speed collision of copper nanoparticles with aluminum surface: Inclined impact, interaction with roughness and multiple impact. *Computational Materials Science*, **2018**, 142, 108-121	3.2	4
75	Evolution of foamed aluminum melt at high rate tension: A mechanical model based on atomistic simulations. *Journal of Applied Physics*, **2018**, 124, 035901	2.5	12
74	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	4.9	14
73	Influence of local stresses on motion of edge dislocation in aluminum. *International Journal of Plasticity*, **2018**, 101, 170-187	7.6	42
72	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	2
71	Simulation of cylindrical shell collapse with considering plasticity and fracture of metals. *Journal of Physics: Conference Series*, **2018**, 946, 012046	0.3	
70	Tensile strength of Fe–Ni and Mg–Al nanocomposites: Molecular dynamic simulations. *Journal of Physics: Conference Series*, **2018**, 946, 012043	0.3	1

69	Dislocation based plasticity in the case of nanoindentation. *International Journal of Mechanical Sciences*, **2018**, 148, 158-173	5.5	12
68	Evolution of shock compression pulses in polymethylmethacrylate and aluminum. *Journal of Applied Physics*, **2018**, 123, 235902	2.5	16
67	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
66	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	5.7	7
65	Shock-induced compaction of nanoparticle layers into nanostructured coating. *Journal of Applied Physics*, **2017**, 122, 165901	2.5	11
64	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	1.7	11
63	High-speed collision of copper nanoparticle with aluminum surface: Molecular dynamics simulation. *Applied Surface Science*, **2016**, 390, 289-302	6.7	14
62	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
61	Influence of free surface nanorelief on the rear spallation threshold: Molecular-dynamics investigation. *Journal of Applied Physics*, **2016**, 120, 165903	2.5	5
60	Theoretical interpretation of abnormal ultrafine-grained material deformation dynamics. *Modelling and Simulation in Materials Science and Engineering*, **2016**, 24, 025013	2	7
59	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	2.3	27
58	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	7.6	37
57	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	5.3	15
56	Tensile strength of Al matrix with nanoscale Cu, Ti and Mg inclusions. *Journal of Physics: Conference Series*, **2016**, 774, 012034	0.3	2
55	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
54	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
53	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	0
52	Late stages of high rate tension of aluminum melt: Molecular dynamic simulation. *Journal of Applied Physics*, **2016**, 120, 075901	2.5	27

51	Molecular dynamic simulations of the high-speed copper nanoparticles collision with the aluminum surface. *Journal of Physics: Conference Series*, **2016**, 774, 012029	0.3	1
50	Two-dimensional modeling of high-velocity impingement of polymethylmethacrylate plates. *Journal of Physics: Conference Series*, **2016**, 774, 012066	0.3	1
49	Meteoroid, Bolide and Meteorite «Chelyabinsk». *Materials Science Forum*, **2016**, 845, 273-284	0.4	2
48	Weak increase of the dynamic tensile strength of aluminum melt at the insertion of refractory inclusions. *Computational Materials Science*, **2016**, 114, 178-182	3.2	9
47	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	5.3	24
46	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	7.6	24
45	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	7.6	47
44	Model of fracture of metal melts and the strength of melts under dynamic conditions. *Journal of Experimental and Theoretical Physics*, **2015**, 121, 35-47	1	6
43	Strength of solid and molten aluminum under dynamic tension. *JETP Letters*, **2015**, 102, 80-84	1.2	11
42	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, 035903	2.5	30
41	Shear strength of metals under uniaxial deformation and pure shear. *Journal of Physics: Conference Series*, **2015**, 653, 012041	0.3	4
40	Propagation of shock waves and fracture in the Al□u composite: Numerical simulation. *Journal of Physics: Conference Series*, **2015**, 653, 012046	0.3	
39	Kinetic model for mechanical twinning and its application for intensive loading of metals. *EPJ Web of Conferences*, **2015**, 94, 04041	0.3	
38	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	
37	Multi-scale model of the dynamic fracture of molten and solid metals. *Journal of Physics: Conference Series*, **2015**, 653, 012093	0.3	3
36	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	
35	Numerical simulation of experiments on the high-speed impact of metal plates. *Journal of Physics: Conference Series*, **2015**, 653, 012044	0.3	
34	Initial stage of fracture of aluminum with ideal and defect lattice. *Journal of Physics: Conference Series*, **2015**, 653, 012094	0.3	3

33	Numerical investigations of shock wave propagation in polymethylmethacrylate. *Journal of Physics: Conference Series*, **2015**, 653, 012045	0.3	3
32	Dynamics and kinetics of dislocations in Al and Al□Cu alloy under dynamic loading. *International Journal of Plasticity*, **2014**, 55, 94-107	7.6	77
31	Distribution of dislocations and twins in copper and 18Cr-10Ni-Ti steel under shock-wave loading. *Technical Physics*, **2014**, 59, 1163-1170	0.5	11
30	Dynamic Fracture of Metals in Solid and Liquid States under Ultra- short Intensive Electron or Laser Irradiation **2014**, 3, 1890-1895		4
29	Localization of plastic deformation and mechanical twinning in dynamical channel angular pressing. *IOP Conference Series: Materials Science and Engineering*, **2014**, 63, 012034	0.4	3
28	Dynamic shear and tensile strength of iron: Continual and atomistic simulation. *Mechanics of Solids*, **2014**, 49, 649-656	0.5	17
27	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	7
26	Modeling of plastic localization in aluminum and Al□Cu alloys under shock loading. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2014**, 619, 354-363	5.3	6
25	Maximum yield strength under quasi-static and high-rate plastic deformation of metals. *Physics of the Solid State*, **2014**, 56, 2470-2479	0.8	19
24	Chelyabinsk airburst, damage assessment, meteorite recovery, and characterization. *Science*, **2013**, 342, 1069-73	33.3	368
23	Localization of plastic flow at dynamic channel angular pressing. *Technical Physics*, **2013**, 58, 1159-1163	0.5	19
22	Modeling of plasticity and fracture of metals at shock loading. *Journal of Applied Physics*, **2013**, 113, 193508	2.5	68
21	Spall Fracture Patterns for the Heterophase Cu□Al□Ni Alloy in Ultrafine- and Coarse-Grained States Exposed to a Nanosecond Relativistic High-Current Electron Beam. *Russian Physics Journal*, **2013**, 55, 1451-1457	0.7	15
20	Localization of plastic flow at high-rate simple shear. *International Journal of Plasticity*, **2013**, 51, 188-199	7.6	15
19	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	5.3	19
18	Yield strength of nanocrystalline materials under high-rate plastic deformation. *Physics of the Solid State*, **2012**, 54, 808-815	0.8	15
17	Droplet size distribution in a metal evaporated by high-current electron beam. *Technical Physics Letters*, **2012**, 38, 559-561	0.7	3
16	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	4.4	13

15	Dynamics and Kinetics of Dislocations in Metals and Alloys Under Dynamic Loading. *Materials Research Society Symposia Proceedings*, **2012**, 1535, 5401		1
14	Wave attenuation in microcrystal copper at irradiation by a powerful electron beam. *Current Applied Physics*, **2011**, 11, 1315-1318	2.6	3
13	Elastic waves in suspensions. *Acoustical Physics*, **2011**, 57, 136-143	1.1	3
12	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	0.7	16
11	Copper spall fracture under sub-nanosecond electron irradiation. *Engineering Fracture Mechanics*, **2011**, 78, 1306-1316	4.2	19
10	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	7.6	100
9	Plastic deformation under high-rate loading: The multiscale approach. *Physics of the Solid State*, **2010**, 52, 1386-1396	0.8	52
8	Mechanisms of metallic nanoparticle generation during an electric explosion of conductors. *Technical Physics*, **2010**, 55, 509-513	0.5	10
7	Surface microrelief smoothing mechanisms in a target irradiated by an intense charged particle beam. *Technical Physics*, **2007**, 52, 431-439	0.5	6
6	The action of ultrashort high-power electron beam pulses on metal targets. *Technical Physics Letters*, **2007**, 33, 69-72	0.7	5
5	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	0.7	6
4	Mechanical stresses in an irradiated target with a disturbed surface. *Technical Physics*, **2006**, 51, 459-465	0.5	3
3	Nonlinear dynamics of the interface between continuous media with different densities. *Technical Physics*, **2003**, 48, 275-283	0.5	3
2	On the mechanism of cratering on solid surfaces exposed to an intense charged particle beam. *Technical Physics*, **2002**, 47, 968-977	0.5	12
1	The nonlinear dynamics of the interface between media possessing different densities and symmetries. *Technical Physics Letters*, **2001**, 27, 20-24	0.7	6