Marc Bernacki

List of Publications by Year
in descending order

119 papers	4,279 citations	126858 33 h-index	118793 62 g-index
123 all docs	123 docs citations	123 times ranked	2929 citing authors

#	Article	IF	Citations
1	The unexpected surface of asteroid (101955) Bennu. Nature, 2019, 568, 55-60.	13.7	364
2	Evidence for widespread hydrated minerals on asteroid (101955) Bennu. Nature Astronomy, 2019, 3, 332-340.	4.2	251
3	Properties of rubble-pile asteroid (101955) Bennu from OSIRIS-REx imaging and thermal analysis. Nature Astronomy, 2019, 3, 341-351.	4.2	188
4	Shape of (101955) Bennu indicative of a rubble pile with internal stiffness. Nature Geoscience, 2019, 12, 247-252.	5.4	179
5	Annealing twin development during recrystallization and grain growth in pure nickel. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2014, 597, 295-303.	2.6	175
6	Craters, boulders and regolith of (101955) Bennu indicative of an old and dynamic surface. Nature Geoscience, 2019, 12, 242-246.	5.4	161
7	The dynamic geophysical environment of (101955) Bennu based on OSIRIS-REx measurements. Nature Astronomy, 2019, 3, 352-361.	4.2	132
8	Thermo-mechanical and fracture properties in single-crystal silicon. Journal of Materials Science, 2013, 48, 979-988.	1.7	126
9	About quantitative EBSD analysis of deformation and recovery substructures in pure Tantalum. IOP Conference Series: Materials Science and Engineering, 2015, 89, 012038.	0.3	110
10	Level set framework for the numerical modelling of primary recrystallization in polycrystalline materials. Scripta Materialia, 2008, 58, 1129-1132.	2.6	103
11	Level set framework for the finite-element modelling of recrystallization and grain growth in polycrystalline materials. Scripta Materialia, 2011, 64, 525-528.	2.6	100
12	Selective Growth of Low Stored Energy Grains During Î´ Sub-solvus Annealing in the Inconel 718 Nickel-Based Superalloy. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2015, 46, 4405-4421.	1.1	99
13	The operational environment and rotational acceleration of asteroid (101955) Bennu from OSIRIS-REx observations. Nature Communications, 2019, 10, 1291.	5.8	99
14	Statistical analysis of dislocations and dislocation boundaries from EBSD data. Ultramicroscopy, 2017, 179, 63-72.	0.8	95
15	Finite element model of primary recrystallization in polycrystalline aggregates using a level set framework. Modelling and Simulation in Materials Science and Engineering, 2009, 17, 064006.	0.8	92
16	Asteroid (101955) Bennuâ€™s weak boulders and thermally anomalous equator. Science Advances, 2020, 6, .	4.7	83
17	Observation of annealing twin nucleation at triple lines in nickel during grain growth. Acta Materialia, 2015, 99, 63-68.	3.8	73
18	An efficient and parallel level set reinitialization method â€“ Application to micromechanics and microstructural evolutions. Applied Mathematical Modelling, 2015, 39, 7291-7302.	2.2	63

#	Article	IF	Citations
19	Viewpoint on the Formation and Evolution of Annealing Twins During Thermomechanical Processing of FCC Metals and Alloys. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2020, 51, 2665-2684.	1.1	61
20	Precise generation of complex statistical Representative Volume Elements (RVEs) in a finite element context. Computational Materials Science, 2012, 61, 224-238.	1.4	57
21	Macroscopic thermal finite element modeling of additive metal manufacturing by selective laser melting process. Computer Methods in Applied Mechanics and Engineering, 2018, 331, 514-535.	3.4	56
22	Linking plastic deformation to recrystallization in metals using digital microstructures. Philosophical Magazine, 2008, 88, 3691-3712.	0.7	55
23	Formation of Annealing Twins during Recrystallization and Grain Growth in 304L Austenitic Stainless Steel. Materials Science Forum, 0, 753, 113-116.	0.3	54
24	New finite element developments for the full field modeling of microstructural evolutions using the level-set method. Computational Materials Science, 2015, 109, 388-398.	1.4	52
25	Modeling of dynamic and post-dynamic recrystallization by coupling a full field approach to phenomenological laws. Materials and Design, 2017, 133, 498-519.	3.3	50
26	Development of a level set methodology to simulate grain growth in the presence of real secondary phase particles and stored energy â€“ Application to a nickel-base superalloy. Computational Materials Science, 2014, 89, 233-241.	1.4	49
27	3D level set modeling of static recrystallization considering stored energy fields. Computational Materials Science, 2016, 122, 57-71.	1.4	48
28	Void closure criteria for hot metal forming: A review. Journal of Manufacturing Processes, 2015, 19, 239-250.	2.8	46
29	Optimized Dropping and Rolling (ODR) method for packing of poly-disperse spheres. Applied Mathematical Modelling, 2013, 37, 5715-5722.	2.2	44
30	Thermo-mechanical factors influencing annealing twin development in nickel during recrystallization. Journal of Materials Science, 2015, 50, 5191-5203.	1.7	43
31	Numerical validation framework for micromechanical simulations based on synchrotron 3D imaging. Computational Mechanics, 2017, 59, 419-441.	2.2	43
32	Adaptive mesh refinement and automatic remeshing in crystal plasticity finite element simulations. Modelling and Simulation in Materials Science and Engineering, 2009, 17, 075012.	0.8	38
33	On the choice of boundary conditions for micromechanical simulations based on 3DÂimaging. International Journal of Solids and Structures, 2017, 112, 83-96.	1.3	37
34	Assessment of simplified 2D grain growth models from numerical experiments based on a level set framework. Computational Materials Science, 2014, 92, 305-312.	1.4	35
35	Three-dimensional analysis of real void closure at the meso-scale during hot metal forming processes. Computational Materials Science, 2013, 77, 194-201.	1.4	34
36	A new body-fitted immersed volume method for the modeling of ductile fracture at the microscale: Analysis of void clusters and stress state effects on coalescence. Engineering Fracture Mechanics, 2015, 147, 398-417.	2.0	34

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37	A novel level-set finite element formulation for grain growth with heterogeneous grain boundary energies. Materials and Design, 2018, 160, 578-590.	3.3	32
38	Parallel discontinuous Galerkin unstructured mesh solvers for the calculation of three-dimensional wave propagation problems. Applied Mathematical Modelling, 2006, 30, 744-763.	2.2	31
39	3D finite element model of semi-solid permeability in an equiaxed granular structure. Computational Materials Science, 2010, 49, 158-170.	1.4	31
40	Strain Induced Abnormal Grain Growth in Nickel Base Superalloys. Materials Science Forum, 2013, 753, 321-324.	0.3	31
41	A geometry-dependent model for void closure in hot metal forming. Finite Elements in Analysis and Design, 2015, 105, 63-78.	1.7	31
42	Ductile fracture of a metal matrix composite studied using 3D numerical modeling of void nucleation and coalescence. Engineering Fracture Mechanics, 2018, 189, 110-132.	2.0	31
43	On the Coupling between Recrystallization and Precipitation Following Hot Deformation in a Î³-Î³â€² Nickel-Based Superalloy. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2018, 49, 4199-4213.	1.1	31
44	Estimation of geometrically necessary dislocation density from filtered EBSD data by a local linear adaptation of smoothing splines. Journal of Applied Crystallography, 2019, 52, 548-563.	1.9	30
45	2D finite element modeling of misorientation dependent anisotropic grain growth in polycrystalline materials: Level set versus multi-phase-field method. Computational Materials Science, 2015, 104, 108-123.	1.4	29
46	Evolution of the Annealing Twin Density during Î'-Supersolvus Grain Growth in the Nickel-Based Superalloy Inconelâ„¢ 718. Metals, 2016, 6, 5.	1.0	29
47	A new finite element approach for modelling ductile damage void nucleation and growthâ€"analysis of loading path effect on damage mechanisms. Modelling and Simulation in Materials Science and Engineering, 2014, 22, 075001.	0.8	26
48	An adaptive levelâ€set method with enhanced volume conservation for simulations in multiphase domains. International Journal for Numerical Methods in Engineering, 2017, 109, 555-576.	1.5	26
49	A level-set and anisotropic adaptive remeshing strategy for the modeling of void growth under large plastic strain. Computational Materials Science, 2013, 68, 32-46.	1.4	24
50	On the calibration of elastoplastic parameters at the microscale via X-ray microtomography and digital volume correlation for the simulation of ductile damage. European Journal of Mechanics, A/Solids, 2018, 72, 287-297.	2.1	24
51	TIME-DOMAIN PARALLEL SIMULATION OF HETEROGENEOUS WAVE PROPAGATION ON UNSTRUCTURED GRIDS USING EXPLICIT, NONDIFFUSIVE, DISCONTINUOUS GALERKIN METHODS. Journal of Computational Acoustics, 2006, 14, 57-81.	1.0	23
52	Fullâ€Field Modeling of Heat Transfer in Asteroid Regolith: 1. Radiative Thermal Conductivity of Polydisperse Particulates. Journal of Geophysical Research E: Planets, 2020, 125, e2019JE006100.	1.5	22
53	A new topological approach for the mean field modeling of dynamic recrystallization. Materials and Design, 2018, 146, 194-207.	3.3	21
54	Influence of Lode angle on modelling of void closure in hot metal forming processes. Finite Elements in Analysis and Design, 2017, 126, 13-25.	1.7	20

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55	A 2D level set finite element grain coarsening study with heterogeneous grain boundary energies. Applied Mathematical Modelling, 2020, 78, 505-518.	2.2	19
56	A new numerical framework for the full field modeling of dynamic recrystallization in a CPFEM context. Computational Materials Science, 2020, 179, 109645.	1.4	18
57	Analysis of stress intensity factors and T-stress to control crack propagation for kerf-less spalling of single crystal silicon foils. Computational Materials Science, 2013, 69, 243-250.	1.4	16
58	Full field modeling of recrystallization: Effect of intragranular strain gradients on grain boundary shape and kinetics. Computational Materials Science, 2018, 150, 149-161.	1.4	16
59	A new finite element strategy to simulate microstructural evolutions. Computational Materials Science, 2020, 172, 109335.	1.4	15
60	A novel highly efficient Lagrangian model for massively multidomain simulation applied to microstructural evolutions. Computer Methods in Applied Mechanics and Engineering, 2020, 367, 113107.	3.4	15
61	Improvement of 3D mean field models for capillarity-driven grain growth based on full field simulations. Journal of Materials Science, 2016, 51, 10970-10981.	1.7	14
62	Advancing layer algorithm of dense ellipse packing for generating statistically equivalent polygonal structures. Granular Matter, 2016, 18, 1.	1.1	14
63	Dissolution of the Primary Î³â€² Precipitates and Grain Growth during Solution Treatment of Three Nickel Base Superalloys. Metals, 2021, 11, 1921.	1.0	14
64	Statistical behaviour of interfaces subjected to curvature flow and torque effects applied to microstructural evolutions. Acta Materialia, 2022, 222, 117459.	3.8	13
65	Understanding and Modeling of Void Closure Mechanisms in Hot Metal Forming Processes: A Multiscale Approach. Procedia Engineering, 2014, 81, 137-142.	1.2	12
66	Void growth and coalescence in a three-dimensional non-periodic void cluster. International Journal of Solids and Structures, 2018, 139-140, 65-78.	1.3	12
67	2D and 3D simulation of grain growth in olivine aggregates using a full field model based on the level set method. Physics of the Earth and Planetary Interiors, 2018, 283, 98-109.	0.7	12
68	Computational Methods for Ductile Fracture Modeling at the Microscale. Archives of Computational Methods in Engineering, 2019, 26, 1153-1192.	6.0	12
69	A comparative study of image segmentation methods for micromechanical simulations of ductile damage. Computational Materials Science, 2019, 159, 43-65.	1.4	12
70	Full field modeling of dynamic recrystallization in a CPFEM context â€“ Application to 304L steel. Computational Materials Science, 2020, 184, 109892.	1.4	11
71	Development Of Numerical Tools For The Multiscale Modelling Of Recrystallization In Metals, Based On A Digital Material Framework. AIP Conference Proceedings, 2007, , .	0.3	10
72	A multi-scale approach for high cycle anisotropic fatigue resistance: Application to forged components. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2010, 527, 4654-4663.	2.6	10

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73	A level set approach to simulate grain growth with an evolving population of second phase particles. Modelling and Simulation in Materials Science and Engineering, 2021, 29, 035009.	0.8	10
74	Grain size characterization in metallic alloys using different microscopy and post-processing techniques. Materials Characterization, 2021, 174, 110977.	1.9	10
75	Room temperature thin foil SLIM-cut using an epoxy paste: experimental versus theoretical results. Materials Research Express, 2015, 2, 046203.	0.8	9
76	Comparative Study and Limits of Different Level-Set Formulations for the Modeling of Anisotropic Grain Growth. Materials, 2021, 14, 3883.	1.3	9
77	On the role of solute drag in reconciling laboratory and natural constraints on olivine grain growth kinetics. Geophysical Journal International, 2020, 224, 1360-1370.	1.0	8
78	Probabilistic and deterministic full field approaches to simulate recrystallization in ODS steels. Computational Materials Science, 2020, 179, 109646.	1.4	8
79	A DISSIPATION-FREE TIME-DOMAIN DISCONTINUOUS GALERKIN METHOD APPLIED TO THREE-DIMENSIONAL LINEARIZED EULER EQUATIONS AROUND A STEADY-STATE NON-UNIFORM INVISCID FLOW. Journal of Computational Acoustics, 2006, 14, 445-467.	1.0	7
80	Advances in Level-Set Modeling of Recrystallization at the Polycrystal Scale - Development of the Digi-<i>Î¼</i> Software. Key Engineering Materials, 0, 651-653, 617-623.	0.4	7
81	DIGIMUÂ®: Full field recrystallization simulations for optimization of multi-pass processes. AIP Conference Proceedings, 2019, , .	0.3	7
82	A new analytical test case for anisotropic grain growth problems. Applied Mathematical Modelling, 2021, 93, 28-52.	2.2	7
83	Understanding and Modeling of Grain Boundary Pinning in Inconel 718. , 2012, , .		7
84	Fullâ€Field Modeling of Heat Transfer in Asteroid Regolith: 2. Effects of Porosity. Journal of Geophysical Research E: Planets, 2022, 127, .	1.5	7
85	Room temperature kerfless silicon thin foils obtained via a stress inducing epoxy layer. Physica Status Solidi C: Current Topics in Solid State Physics, 2014, 11, 1644-1647.	0.8	6
86	A new algorithm for dense ellipse packing and polygonal structures generation in context of FEM or DEM. MATEC Web of Conferences, 2016, 80, 02004.	0.1	6
87	Modelling the transport of geometrically necessary dislocations on slip systems: application to single- and multi-crystals of ice. Modelling and Simulation in Materials Science and Engineering, 2017, 25, 025010.	0.8	6
88	Handling tensors using tensorial Kelvin bases: application to olivine polycrystal deformation modeling using elastically anistropic CPFEM. Computational Mechanics, 2021, 67, 955-967.	2.2	6
89	Advanced Numerical methods for F. E. Simulation of Metal Forming Processes. , 2010, , .		5
90	Numerical simulation of mechanical deformation of semi-solid material using a level-set based finite element method. Modelling and Simulation in Materials Science and Engineering, 2017, 25, 065020.	0.8	5

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91	Full Field and Mean Field Modeling of Grain Growth in a Multiphase Material Under Dry Conditions: Application to Peridotites. Journal of Geophysical Research: Solid Earth, 2020, 125, e2019JB018138.	1.4	5
92	Evolution of Microstructure in Pure Nickel during Processing for Grain Boundary Engineering. Materials Science Forum, 2013, 753, 97-100.	0.3	4
93	Finite Element Simulation of Multi Material Metal Forming. Procedia Engineering, 2014, 81, 2427-2432.	1.2	4
94	A mean field model of agglomeration as an extension to existing precipitation models. Acta Materialia, 2020, 192, 40-51.	3.8	4
95	A 2D Front-Tracking Lagrangian Model for the Modeling of Anisotropic Grain Growth. Materials, 2021, 14, 4219.	1.3	4
96	Advanced numerical method for generation of three-dimensional particles and its application in microstructure-based simulation of fatigue behavior. Computational Materials Science, 2011, 50, 2836-2847.	1.4	3
97	Introduction to the level-set full field modeling of laths spheroidization phenomenon in Î±/Î² titanium alloys. International Journal of Material Forming, 2019, 12, 173-183.	0.9	3
98	A new front-tracking Lagrangian model for the modeling of dynamic and post-dynamic recrystallization. Modelling and Simulation in Materials Science and Engineering, 2021, 29, 035004.	0.8	3
99	Experimental and Simulation Study of the Effect of Precipitation Distribution and Grain Size on the AD730TM Ni-Based Polycrystalline Superalloy Tensile Behavior. Minerals, Metals and Materials Series, 2020, , 570-578.	0.3	3
100	Permeability Computation on a Representative Volume Element (RVE) of Unidirectional Disordered Fiber Arrays. Journal of Computational Mathematics, 2016, 34, 223-239.	0.2	3
101	On the role of particles distribution on damage and fatigue mechanisms. International Journal of Material Forming, 2009, 2, 935-938.	0.9	2
102	Introduction to the level-set full field modeling of laths spheroidization phenomenon in Î±/Î² titanium alloys. MATEC Web of Conferences, 2016, 80, 02003.	0.1	2
103	Recent advances in finite element modelling of ductile fracture at mesoscale. Procedia Manufacturing, 2018, 15, 39-45.	1.9	2
104	Parallelization of an efficient 2D-Lagrangian model for massive multi-domain simulations.. Modelling and Simulation in Materials Science and Engineering, 0, , .	0.8	2
105	A new finite element approach to model microscale strain localization within olivine aggregates. Solid Earth, 2021, 12, 2369-2385.	1.2	2
106	Prediction of the grain size evolution during thermal treatments at the mesoscopic scale: a numerical framework and industrial examples. Materiaux Et Techniques, 2018, 106, 105.	0.3	2
107	Level-Set Modeling of Grain Growth in 316L Stainless Steel under Different Assumptions Regarding Grain Boundary Properties. Materials, 2022, 15, 2434.	1.3	2
108	Formation of Coarse Recrystallized Grains in 6016 Aluminum Alloy During Holding After Hot Deformation. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2022, 53, 2402-2425.	1.1	2

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109	Numerical Modelling of Plastic Deformation and Subsequent Recrystallization in Polycrystalline Materials, Based on a Digital Material Framework. Materials Science Forum, 2007, 558-559, 1133-1138.	0.3	1
110	Multiaxial fatigue criterion accounting for anisotropy in forged components. International Journal of Material Forming, 2008, 1, 379-382.	0.9	1
111	Full field modeling of dynamic recrystallization in a global level set framework, application to 304L stainless steel. MATEC Web of Conferences, 2016, 80, 02005.	0.1	1
112	Numerical Modelling of Plastic Deformation and Subsequent Recrystallization in Polycrystalline Materials, Based on a Digital Material Framework. Materials Science Forum, 0, , 1133-1138.	0.3	1
113	Mean Field and Finite Element Modeling of Static and Dynamic Recrystallization. Materials Science Forum, 2012, 715-716, 737-737.	0.3	0
114	Techniques for modelling microstructure in metal forming processes. , 2012, , 17-34.		0
115	Elastic foam compression in a finite element (FE) context. European Journal of Computational Mechanics, 2013, 22, 30-58.	0.6	0
116	Numerical modeling of ductile fracture at the microscale combined with X-ray laminography and digital volume correlation. AIP Conference Proceedings, 2017, , .	0.3	0
117	Experimental-Numerical Validation Framework for Micromechanical Simulations. Lecture Notes in Applied and Computational Mechanics, 2018, , 147-161.	2.0	0
118	Modelling of Primary Recrystallization using Digital Microstructures. Ceramic Transactions, 0, , 757-769.	0.1	0
119	Full-Field Approach for Modeling of Microstructural Evolutions During Forming Processes. , 2019, , .		0