

Franz Roters

List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

122
papers

8,418
citations

48
h-index

91
g-index

128
ext. papers

9,650
ext. citations

4.9
avg, IF

6.21
L-index

#	Paper	IF	Citations
122	Characterizing Localized Microstructural Deformation of Multiphase Steel by Crystal Plasticity Simulation with Multi-Constitutive Law. <i>Journal of the Japan Society for Technology of Plasticity</i> , 2022 , 63, 1-8	0.3	
121	Modeling and simulation of microstructure in metallic systems based on multi-physics approaches. <i>Npj Computational Materials</i> , 2022 , 8,	10.9	1
120	Determination and analysis of the constitutive parameters of temperature-dependent dislocation-density-based crystal plasticity models. <i>Mechanics of Materials</i> , 2021 , 104117	3.3	5
119	Lath Martensite Microstructure Modeling: A High-Resolution Crystal Plasticity Simulation Study. <i>Materials</i> , 2021 , 14,	3.5	2
118	Large-deformation crystal plasticity simulation of microstructure and microtexture evolution through adaptive remeshing. <i>International Journal of Plasticity</i> , 2021 , 146, 103078	7.6	3
117	Quantification of 3D spatial correlations between state variables and distances to the grain boundary network in full-field crystal plasticity spectral method simulations. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2020 , 28, 055005	2	3
116	A numerical study of the influence of crystal plasticity modeling parameters on the plastic anisotropy of rolled aluminum sheet. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2020 , 28, 085005	2	3
115	An FFT-based spectral solver for interface decohesion modelling using a gradient damage approach. <i>Computational Mechanics</i> , 2020 , 65, 925-939	4	11
114	Solving Material Mechanics and Multiphysics Problems of Metals with Complex Microstructures Using DAMASK The Düsseldorf Advanced Material Simulation Kit. <i>Advanced Engineering Materials</i> , 2020 , 22, 1901044	3.5	5
113	Anisotropic polycrystal plasticity due to microstructural heterogeneity: A multi-scale experimental and numerical study on additively manufactured metallic materials. <i>Acta Materialia</i> , 2020 , 185, 340-369	8.4	30
112	Current Challenges and Opportunities in Microstructure-Related Properties of Advanced High-Strength Steels. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2020 , 51, 5517-5586	2.3	42
111	Microstructure-based multiscale modeling of large strain plastic deformation by coupling a full-field crystal plasticity-spectral solver with an implicit finite element solver. <i>International Journal of Plasticity</i> , 2020 , 125, 97-117	7.6	22
110	Using spectral-based representative volume element crystal plasticity simulations to predict yield surface evolution during large scale forming simulations. <i>Journal of Materials Processing Technology</i> , 2020 , 277, 116449	5.3	13
109	Spectral Solvers for Crystal Plasticity and Multi-physics Simulations 2019 , 1-25		
108	Computer-Aided Material Design for Crash Boxes Made of High Manganese Steels. <i>Metals</i> , 2019 , 9, 772	2.3	0
107	The through-process texture analysis of plate rolling by coupling finite element and fast Fourier transform crystal plasticity analysis. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2019 , 27, 085005	2	1
106	Understanding the mechanisms of electroplasticity from a crystal plasticity perspective. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2019 , 27, 085006	2	12

105	Spectral Solvers for Crystal Plasticity and Multi-physics Simulations 2019 , 1-26		2
104	Spectral Solvers for Crystal Plasticity and Multi-physics Simulations 2019 , 1347-1372		6
103	Microstructural Influences on Fracture at Prior Austenite Grain Boundaries in Dual-Phase Steels. <i>Materials</i> , 2019 , 12,	3.5	5
102	Dislocation mechanism based size-dependent crystal plasticity modeling and simulation of gradient nano-grained copper. <i>International Journal of Plasticity</i> , 2019 , 113, 52-73	7.6	69
101	DAMASK The Düsseldorf Advanced Material Simulation Kit for modeling multi-physics crystal plasticity, thermal, and damage phenomena from the single crystal up to the component scale. <i>Computational Materials Science</i> , 2019 , 158, 420-478	3.2	237
100	Experimental-numerical study on strain and stress partitioning in bainitic steels with martensite-austenite constituents. <i>International Journal of Plasticity</i> , 2018 , 104, 39-53	7.6	30
99	Temperature dependent strain hardening and fracture behavior of TWIP steel. <i>International Journal of Plasticity</i> , 2018 , 104, 80-103	7.6	64
98	FFT-based interface decohesion modelling by a nonlocal interphase. <i>Advanced Modeling and Simulation in Engineering Sciences</i> , 2018 , 5,	2.7	16
97	An integrated crystal plasticity-phase field model for spatially resolved twin nucleation, propagation, and growth in hexagonal materials. <i>International Journal of Plasticity</i> , 2018 , 106, 203-227	7.6	93
96	On the role of the collinear dislocation interaction in deformation patterning and laminate formation in single crystal plasticity. <i>Mechanics of Materials</i> , 2018 , 125, 70-79	3.3	6
95	Multiscale Modelling of Hydrogen Transport and Segregation in Polycrystalline Steels. <i>Metals</i> , 2018 , 8, 430	2.3	13
94	Yield locus prediction using statistical and RVE-based fast Fourier transform crystal plasticity models and validation for drawing steels. <i>Journal of Physics: Conference Series</i> , 2018 , 1063, 012051	0.3	1
93	Spectral Solvers for Crystal Plasticity and Multi-physics Simulations 2018 , 1-27		4
92	Spectral Solvers for Crystal Plasticity and Multi-physics Simulations 2018 , 1-25		1
91	Identifying Structure-Property Relationships Through DREAM.3D Representative Volume Elements and DAMASK Crystal Plasticity Simulations: An Integrated Computational Materials Engineering Approach. <i>Jom</i> , 2017 , 69, 848-855	2.1	46
90	A Flexible and Efficient Output File Format for Grain-Scale Multiphysics Simulations. <i>Integrating Materials and Manufacturing Innovation</i> , 2017 , 6, 83-91	2.9	4
89	Coupled Crystal Plasticity-Phase Field Fracture Simulation Study on Damage Evolution Around a Void: Pore Shape Versus Crystallographic Orientation. <i>Jom</i> , 2017 , 69, 872-878	2.1	32
88	Crystal plasticity study on stress and strain partitioning in a measured 3D dual phase steel microstructure. <i>Physical Mesomechanics</i> , 2017 , 20, 311-323	1.6	42

87	Constitutive modeling of strain induced grain boundary migration via coupling crystal plasticity and phase-field methods. <i>International Journal of Plasticity</i> , 2017 , 99, 19-42	7.6	27
86	Elasto-viscoplastic phase field modelling of anisotropic cleavage fracture. <i>Journal of the Mechanics and Physics of Solids</i> , 2017 , 99, 19-34	5	67
85	Development of a Model for Dynamic Recrystallization Consistent with the Second Derivative Criterion. <i>Materials</i> , 2017 , 10,	3.5	5
84	A virtual laboratory using high resolution crystal plasticity simulations to determine the initial yield surface for sheet metal forming operations. <i>International Journal of Plasticity</i> , 2016 , 80, 111-138	7.6	107
83	Unraveling the temperature dependence of the yield strength in single-crystal tungsten using atomistically-informed crystal plasticity calculations. <i>International Journal of Plasticity</i> , 2016 , 78, 242-265	7.6	100
82	Crystal plasticity study of monocrystalline stochastic honeycombs under in-plane compression. <i>Acta Materialia</i> , 2016 , 103, 796-808	8.4	14
81	A phase field model for damage in elasto-viscoplastic materials. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2016 , 312, 167-185	5.7	57
80	Ab initio-guided design of twinning-induced plasticity steels. <i>MRS Bulletin</i> , 2016 , 41, 320-325	3.2	21
79	Neighborhood influences on stress and strain partitioning in dual-phase microstructures. <i>Meccanica</i> , 2016 , 51, 429-441	2.1	30
78	Microstructure Modeling 2016 , 269-323		
77	A crystal plasticity model for twinning- and transformation-induced plasticity. <i>Acta Materialia</i> , 2016 , 118, 140-151	8.4	127
76	Assessing and ensuring parameter identifiability for a physically-based strain hardening model for twinning-induced plasticity. <i>Mechanics of Materials</i> , 2015 , 84, 127-139	3.3	9
75	Analytical bounds of in-plane Young's modulus and full-field simulations of two-dimensional monocrystalline stochastic honeycomb structures. <i>Computational Materials Science</i> , 2015 , 109, 323-329	3.2	4
74	Recrystallization behavior of a high-manganese steel: Experiments and simulations. <i>Acta Materialia</i> , 2015 , 100, 155-168	8.4	72
73	Numerically robust spectral methods for crystal plasticity simulations of heterogeneous materials. <i>International Journal of Plasticity</i> , 2015 , 66, 31-45	7.6	136
72	Linking atomistic, kinetic Monte Carlo and crystal plasticity simulations of single-crystal tungsten strength. <i>GAMM Mitteilungen</i> , 2015 , 38, 213-227	1.8	5
71	In situ observation of collective grain-scale mechanics in Mg and Mg-based rare earth alloys. <i>Acta Materialia</i> , 2014 , 80, 77-93	8.4	66
70	Interfacial dislocation motion and interactions in single-crystal superalloys. <i>Acta Materialia</i> , 2014 , 79, 216-233	8.4	42

69	Applying the texture analysis for optimizing thermomechanical treatment of high manganese twinning-induced plasticity steel. <i>Acta Materialia</i> , 2014 , 80, 327-340	8.4	83
68	Dislocation density distribution around an indent in single-crystalline nickel: Comparing nonlocal crystal plasticity finite-element predictions with experiments. <i>Acta Materialia</i> , 2014 , 71, 333-348	8.4	86
67	Integrated experimental-simulation analysis of stress and strain partitioning in multiphase alloys. <i>Acta Materialia</i> , 2014 , 81, 386-400	8.4	221
66	Strain localization and damage in dual phase steels investigated by coupled in-situ deformation experiments and crystal plasticity simulations. <i>International Journal of Plasticity</i> , 2014 , 63, 198-210	7.6	320
65	Simulation of shear banding in heterophase co-deformation: Example of plane strain compressed Cu ₃ Ag and Cu ₃ Nb metal matrix composites. <i>Acta Materialia</i> , 2013 , 61, 4591-4606	8.4	53
64	Revealing the strain-hardening behavior of twinning-induced plasticity steels: Theory, simulations, experiments. <i>Acta Materialia</i> , 2013 , 61, 494-510	8.4	357
63	A spectral method solution to crystal elasto-viscoplasticity at finite strains. <i>International Journal of Plasticity</i> , 2013 , 46, 37-53	7.6	263
62	DAMASK: the Düsseldorf Advanced MATERIAL Simulation Kit for studying crystal plasticity using an FE based or a spectral numerical solver. <i>Procedia IUTAM</i> , 2012 , 3, 3-10		132
61	Simulation of dislocation penetration through a general low-angle grain boundary. <i>Acta Materialia</i> , 2012 , 60, 5380-5390	8.4	62
60	Non-crystallographic shear banding in crystal plasticity FEM simulations: Example of texture evolution in brass. <i>Acta Materialia</i> , 2012 , 60, 1099-1115	8.4	65
59	Orientation dependence of shear banding in face-centered-cubic single crystals. <i>Acta Materialia</i> , 2012 , 60, 3415-3434	8.4	97
58	Microstructure Evolution during Recrystallization in Dual-Phase Steels. <i>Materials Science Forum</i> , 2012 , 715-716, 13-22	0.4	7
57	Analysis of the plastic anisotropy and pre-yielding of α -phase titanium aluminide microstructures by crystal plasticity simulation. <i>Intermetallics</i> , 2011 , 19, 820-827	3.5	21
56	Dislocation interactions and low-angle grain boundary strengthening. <i>Acta Materialia</i> , 2011 , 59, 7125-7134	8.4	64
55	Editorial Steel ab initio. <i>Steel Research International</i> , 2011 , 82, 85-85	1.6	1
54	Experimental and numerical investigations of the plane strain compression of an oligocrystalline pure copper specimen. <i>Journal of Materials Processing Technology</i> , 2011 , 211, 1305-1323	5.3	5
53	2010 ,		72
52	EBSD Study of Substructure and Texture Formation in Dual-Phase Steel Sheets for Semi-Finished Products. <i>Solid State Phenomena</i> , 2010 , 160, 251-256	0.4	3

51	Overview of constitutive laws, kinematics, homogenization and multiscale methods in crystal plasticity finite-element modeling: Theory, experiments, applications. <i>Acta Materialia</i> , 2010 , 58, 1152-1214	8.4	1239
50	The mechanical size effect as a mean-field breakdown phenomenon: Example of microscale single crystal beam bending. <i>Acta Materialia</i> , 2010 , 58, 1876-1886	8.4	71
49	Microstructure and texture evolution in dual-phase steels: Competition between recovery, recrystallization, and phase transformation. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2010 , 527, 4161-4168	5.3	93
48	On the Modeling of Dual Phase Steels: Microstructure-based Simulation from the Hot Rolled Sheet to the Deep Drawn Component. <i>International Journal of Material Forming</i> , 2010 , 3, 73-76	2	8
47	Bending of single crystal microcantilever beams of cube orientation: Finite element model and experiments. <i>Journal of the Mechanics and Physics of Solids</i> , 2010 , 58, 1599-1612	5	26
46	Comparison of texture evolution in fcc metals predicted by various grain cluster homogenization schemes. <i>International Journal of Materials Research</i> , 2009 , 100, 500-509	0.5	21
45	Texture prediction from a novel grain cluster-based homogenization scheme. <i>International Journal of Material Forming</i> , 2009 , 2, 523-526	2	4
44	Relaxed grain cluster (RGC) homogenization scheme. <i>International Journal of Material Forming</i> , 2009 , 2, 939-942	2	4
43	Smaller is stronger: The effect of strain hardening. <i>Acta Materialia</i> , 2009 , 57, 5996-6005	8.4	98
42	Virtual material testing for stamping simulations based on polycrystal plasticity. <i>Computational Materials Science</i> , 2009 , 46, 383-392	3.2	52
41	The role of heterogeneous deformation on damage nucleation at grain boundaries in single phase metals. <i>International Journal of Plasticity</i> , 2009 , 25, 1655-1683	7.6	255
40	Selecting a set of discrete orientations for accurate texture reconstruction. <i>Computational Materials Science</i> , 2008 , 42, 670-678	3.2	49
39	Simulation of earing of a 17% Cr stainless steel considering texture gradients. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2008 , 488, 482-490	5.3	38
38	Multiscale simulation of polycrystal mechanics of textured Ti alloys using ab initio and crystal-based finite element methods. <i>Physica Status Solidi (B): Basic Research</i> , 2008 , 245, 2642-2648	1.3	24
37	Texture Evolution During Bending of a Single Crystal Copper Nanowire Studied by EBSD and Crystal Plasticity Finite Element Simulations. <i>Advanced Engineering Materials</i> , 2008 , 10, 737-741	3.5	10
36	On the origin of deformation-induced rotation patterns below nanoindents. <i>Acta Materialia</i> , 2008 , 56, 31-42	8.4	94
35	Effects of initial orientation, sample geometry and friction on anisotropy and crystallographic orientation changes in single crystal microcompression deformation: A crystal plasticity finite element study. <i>Acta Materialia</i> , 2007 , 55, 4567-4583	8.4	99
34	A Finite Element approach with patch projection for strain gradient plasticity formulations. <i>International Journal of Plasticity</i> , 2007 , 23, 690-710	7.6	39

33	Simulation of earing during deep drawing of an Al β % Mg alloy (AA 5754) using a texture component crystal plasticity FEM. <i>Journal of Materials Processing Technology</i> , 2007 , 183, 169-175	5.3	35
32	Recent Progress in the 3D Experimentation and Simulation of Nanoindents. <i>Materials Science Forum</i> , 2007 , 550, 199-204	0.4	
31	Iso-Work-Rate Weighted-Taylor Homogenization Scheme for Multiphase Steels Assisted by Transformation-induced Plasticity Effect. <i>Steel Research International</i> , 2007 , 78, 777-783	1.6	7
30	Mechanism Oriented Steel Development. <i>Steel Research International</i> , 2007 , 78, 195-198	1.6	
29	A dislocation density based constitutive law for BCC materials in crystal plasticity FEM. <i>Computational Materials Science</i> , 2007 , 39, 91-95	3.2	54
28	On strain gradients and size-dependent hardening descriptions in crystal plasticity frameworks. <i>Metals and Materials International</i> , 2006 , 12, 407-411	2.4	5
27	Mapping the Crystal Orientation Distribution Function to Discrete Orientations in Crystal Plasticity Finite Element Forming Simulations of Bulk Materials. <i>Materials Science Forum</i> , 2006 , 519-521, 803-808	0.4	
26	Studying the effect of grain boundaries in dislocation density based crystal-plasticity finite element simulations. <i>International Journal of Solids and Structures</i> , 2006 , 43, 7287-7303	3.1	54
25	Three-dimensional investigation of the texture and microstructure below a nanoindent in a Cu single crystal using 3D EBSD and crystal plasticity finite element simulations. <i>Acta Materialia</i> , 2006 , 54, 1863-1876	8.4	247
24	On the consideration of interactions between dislocations and grain boundaries in crystal plasticity finite element modeling Theory, experiments, and simulations. <i>Acta Materialia</i> , 2006 , 54, 2181-2194	8.4	172
23	A dislocation density based constitutive model for crystal plasticity FEM including geometrically necessary dislocations. <i>Acta Materialia</i> , 2006 , 54, 2169-2179	8.4	264
22	Application of crystal plasticity FEM from single crystal to bulk polycrystal. <i>Computational Materials Science</i> , 2005 , 32, 509-517	3.2	23
21	Crystal plasticity simulation study on the influence of texture on earing in steel. <i>Computational Materials Science</i> , 2005 , 34, 221-234	3.2	76
20	Phase-Field Extension of Crystal Plasticity with Application to Hardening Modeling 2005 , 501-511		1
19	Simulation of Earing during Deep Drawing of bcc Steel by Use of a Texture Component Crystal Plasticity Finite Element Method. <i>Materials Science Forum</i> , 2005 , 495-497, 1529-1534	0.4	6
18	A Texture Evolution Study Using the Texture Component Crystal Plasticity FEM. <i>Materials Science Forum</i> , 2005 , 495-497, 937-944	0.4	6
17	Using texture components in crystal plasticity finite element simulations. <i>International Journal of Plasticity</i> , 2004 , 20, 339-361	7.6	158
16	Comparison of Single Crystal Simple Shear Deformation Experiments with Crystal Plasticity Finite Element Simulations. <i>Advanced Engineering Materials</i> , 2004 , 6, 653-656	3.5	24

15	A texture optimization study for minimum earing in aluminium by use of a texture component crystal plasticity finite element method. <i>Acta Materialia</i> , 2004 , 52, 1003-1012	8.4	65
14	Orientation dependence of nanoindentation pile-up patterns and of nanoindentation microtextures in copper single crystals. <i>Acta Materialia</i> , 2004 , 52, 2229-2238	8.4	202
13	A constitutive model for fcc single crystals based on dislocation densities and its application to uniaxial compression of aluminium single crystals. <i>Acta Materialia</i> , 2004 , 52, 3603-3612	8.4	183
12	Numerical study of textures and Lankford values for FCC polycrystals by use of a modified Taylor model. <i>Computational Materials Science</i> , 2004 , 29, 353-361	3.2	13
11	A new concept for the calculation of the mobile dislocation density in constitutive models of strain hardening. <i>Physica Status Solidi (B): Basic Research</i> , 2003 , 240, 68-74	1.3	20
10	Concepts for Integrating Plastic Anisotropy into Metal Forming Simulations. <i>Advanced Engineering Materials</i> , 2002 , 4, 169-180	3.5	61
9	Development and application of constitutive equations for the multiple-stand hot rolling of Al-alloys. <i>Journal of Materials Processing Technology</i> , 2002 , 123, 155-166	5.3	17
8	Theory of orientation gradients in plastically strained crystals. <i>Acta Materialia</i> , 2002 , 50, 421-440	8.4	165
7	A Texture Component Crystal Plasticity Finite Element Method for Physically-Based Metal Forming Simulations Including Texture Update. <i>Materials Science Forum</i> , 2002 , 396-402, 31-38	0.4	6
6	A finite element method on the basis of texture components for fast predictions of anisotropic forming operations. <i>Steel Research = Archiv für Das Eisenhüttenwesen</i> , 2001 , 72, 421-426		16
5	Spontaneous Dislocation Annihilation Explains the Breakdown of the Power Law of Steady State Deformation. <i>Physica Status Solidi A</i> , 2001 , 184, 257-261		8
4	Micromechanical and macromechanical effects in grain scale polycrystal plasticity experimentation and simulation. <i>Acta Materialia</i> , 2001 , 49, 3433-3441	8.4	341
3	Application of a dislocation model for FE-process simulation. <i>Computational Materials Science</i> , 2001 , 21, 1-8	3.2	21
2	Work hardening in heterogeneous alloys – microstructural approach based on three internal state variables. <i>Acta Materialia</i> , 2000 , 48, 4181-4189	8.4	318
1	Crystal Plasticity Modeling 41-67		