

# Rodney J Mccabe

## List of Publications by Year in descending order

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81  
papers

4,822  
citations

71102

41  
h-index

95266

68  
g-index

84  
all docs

84  
docs citations

84  
times ranked

2295  
citing authors

#	ARTICLE	IF	CITATIONS
1	Effect of microstructure on the nucleation of deformation twins in polycrystalline high-purity magnesium: A multi-scale modeling study. <i>Journal of the Mechanics and Physics of Solids</i> , 2011, 59, 988-1003.	4.8	291
2	Nucleation and growth of twins in Zr: A statistical study. <i>Acta Materialia</i> , 2009, 57, 6047-6056.	7.9	249
3	Twin-twin interactions in magnesium. <i>Acta Materialia</i> , 2014, 77, 28-42.	7.9	243
4	Strain rate and temperature effects on the selection of primary and secondary slip and twinning systems in HCP Zr. <i>Acta Materialia</i> , 2015, 88, 55-73.	7.9	216
5	Integration of self-consistent polycrystal plasticity with dislocation density based hardening laws within an implicit finite element framework: Application to low-symmetry metals. <i>Journal of the Mechanics and Physics of Solids</i> , 2013, 61, 2034-2046.	4.8	146
6	A strain-rate and temperature dependent constitutive model for BCC metals incorporating non-Schmid effects: Application to tantalum-tungsten alloys. <i>International Journal of Plasticity</i> , 2014, 62, 93-104.	8.8	143
7	Interface-driven microstructure development and ultra high strength of bulk nanostructured Cu-Nb multilayers fabricated by severe plastic deformation. <i>Journal of Materials Research</i> , 2013, 28, 1799-1812.	2.6	142
8	Role of twinning in the hardening response of zirconium during temperature reloads. <i>Acta Materialia</i> , 2006, 54, 2887-2896.	7.9	140
9	Quantitative analysis of deformation twinning in zirconium. <i>International Journal of Plasticity</i> , 2009, 25, 454-472.	8.8	133
10	Explicit incorporation of deformation twins into crystal plasticity finite element models. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2015, 295, 396-413.	6.6	133
11	Modeling mechanical response and texture evolution of $\delta$ -uranium as a function of strain rate and temperature using polycrystal plasticity. <i>International Journal of Plasticity</i> , 2013, 43, 70-84.	8.8	118
12	Anisotropic stress-strain response and microstructure evolution of textured $\delta$ -uranium. <i>Acta Materialia</i> , 2012, 60, 702-715.	7.9	109
13	Effects of texture, temperature and strain on the deformation modes of zirconium. <i>Philosophical Magazine</i> , 2006, 86, 3595-3611.	1.6	96
14	Creep of tin, Sb-solution-strengthened tin, and SbSn-precipitate-strengthened tin. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2002, 33, 1531-1539.	2.2	95
15	Co-zone $\{1\bar{1}0\{12\}$ Twin Interaction in Magnesium Single Crystal. <i>Materials Research Letters</i> , 2014, 2, 82-88.	8.7	89
16	Deformation behavior of the cobalt-based superalloy Haynes 25: Experimental characterization and crystal plasticity modeling. <i>Acta Materialia</i> , 2014, 63, 162-168.	7.9	86
17	Observation of deformation twinning and formation of basal stacking faults in $\alpha$ -Mg. <i>Acta Materialia</i> , 2014, 63, 162-168.	7.9	85
18	Bulk texture evolution of nanolamellar Zr-Nb composites processed via accumulative roll bonding. <i>Acta Materialia</i> , 2015, 92, 97-108.	7.9	79

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19	Anisotropic modeling of structural components using embedded crystal plasticity constructive laws within finite elements. <i>International Journal of Mechanical Sciences</i> , 2016, 105, 227-238.	6.7	74
20	Modeling the texture evolution of Cu/Nb layered composites during rolling. <i>International Journal of Plasticity</i> , 2013, 49, 71-84.	8.8	72
21	A new implementation of the spectral crystal plasticity framework in implicit finite elements. <i>Mechanics of Materials</i> , 2015, 84, 114-126.	3.2	72
22	Processing Parameter Influence on Texture and Microstructural Evolution in Cu-Nb Multilayer Composites Fabricated via Accumulative Roll Bonding. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2014, 45, 2192-2208.	2.2	67
23	Texture formation in orthorhombic alpha-uranium under simple compression and rolling to high strains. <i>Journal of Nuclear Materials</i> , 2016, 473, 143-156.	2.7	66
24	Engineering Interface Structures and Thermal Stabilities via SPD Processing in Bulk Nanostructured Metals. <i>Scientific Reports</i> , 2014, 4, 4226.	3.3	65
25	In-Situ TEM Observation of Twinning and Detwinning During Cyclic Loading in Mg. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2014, 45, 36-40.	2.2	64
26	Toward understanding twin-twin interactions in hcp metals: Utilizing multiscale techniques to characterize deformation mechanisms in magnesium. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2014, 613, 365-371.	5.6	63
27	Effect of martensitic phase transformation on the behavior of 304 austenitic stainless steel under tension. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2016, 649, 174-183.	5.6	63
28	The critical role of grain orientation and applied stress in nanoscale twinning. <i>Nature Communications</i> , 2014, 5, 3806.	12.8	62
29	Spectral database solutions to elasto-viscoplasticity within finite elements: Application to a cobalt-based FCC superalloy. <i>International Journal of Plasticity</i> , 2015, 70, 151-165.	8.8	62
30	Average intragranular misorientation trends in polycrystalline materials predicted by a viscoplastic self-consistent approach. <i>Acta Materialia</i> , 2016, 104, 228-236.	7.9	60
31	Modelling recrystallization textures driven by intragranular fluctuations implemented in the viscoplastic self-consistent formulation. <i>Acta Materialia</i> , 2019, 164, 530-546.	7.9	57
32	Exploring the dislocation/twin interactions in zirconium. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2007, 463, 122-127.	5.6	56
33	Deformation of wrought uranium: Experiments and modeling. <i>Acta Materialia</i> , 2010, 58, 5447-5459.	7.9	53
34	Origin of dislocations within tensile and compressive twins in pure textured Zr. <i>Acta Materialia</i> , 2009, 57, 305-315.	7.9	51
35	Microstructure and texture evolution in Mg/Nb layered materials made by accumulative roll bonding. <i>International Journal of Plasticity</i> , 2020, 125, 1-26.	8.8	50
36	A statistical analysis of the influence of microstructure and twin-twin junctions on twin nucleation and twin growth in Zr. <i>Acta Materialia</i> , 2015, 95, 399-410.	7.9	49

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37	Transitioning rate sensitivities across multiple length scales: Microstructure-property relationships in the Taylor cylinder impact test on zirconium. <i>International Journal of Plasticity</i> , 2016, 84, 138-159.	8.8	47
38	Observations of the Atomic Structure of Tensile and Compressive Twin Boundaries and Twin-Twin Interactions in Zirconium. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2014, 45, 5891-5897.	2.2	46
39	Modeling of intragranular misorientation and grain fragmentation in polycrystalline materials using the viscoplastic self-consistent formulation. <i>International Journal of Plasticity</i> , 2018, 109, 193-211.	8.8	46
40	Origin of texture development in orthorhombic uranium. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2016, 665, 108-124.	5.6	44
41	Predicting intragranular misorientation distributions in polycrystalline metals using the viscoplastic self-consistent formulation. <i>Acta Materialia</i> , 2017, 140, 398-410.	7.9	43
42	Influence of slip and twinning on the crystallographic stability of bimetal interfaces in nanocomposites under deformation. <i>Acta Materialia</i> , 2014, 72, 137-147.	7.9	40
43	Temperature and direction dependence of internal strain and texture evolution during deformation of uranium. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2009, 512, 67-75.	5.6	39
44	OpenMP and MPI implementations of an elasto-viscoplastic fast Fourier transform-based micromechanical solver for fast crystal plasticity modeling. <i>Advances in Engineering Software</i> , 2018, 126, 46-60.	3.8	39
45	Detwinning of High-Purity Zirconium: In-Situ Neutron Diffraction Experiments. <i>Experimental Mechanics</i> , 2010, 50, 125-133.	2.0	38
46	Automatic twin statistics from electron backscattered diffraction data. <i>Journal of Microscopy</i> , 2010, 238, 218-229.	1.8	36
47	Analysis of recrystallized volume fractions in uranium using electron backscatter diffraction. <i>Journal of Microscopy</i> , 2006, 223, 33-39.	1.8	34
48	Nuclear, chemical, and physical characterization of nuclear materials. <i>Journal of Radioanalytical and Nuclear Chemistry</i> , 2008, 276, 467-473.	1.5	34
49	Predicting deformation behavior of $\delta$ -uranium during tension, compression, load reversal, rolling, and sheet forming using elasto-plastic, multi-level crystal plasticity coupled with finite elements. <i>Journal of the Mechanics and Physics of Solids</i> , 2020, 138, 103924.	4.8	34
50	Predicting Texture Evolution in Ta and Ta-10W Alloys Using Polycrystal Plasticity. <i>Jom</i> , 2015, 67, 2670-2674.	1.9	33
51	Microstructure effects on the recrystallization of low-symmetry alpha-uranium. <i>Journal of Nuclear Materials</i> , 2015, 465, 189-195.	2.7	33
52	Experimentally determined content of a geometrically necessary dislocation boundary in copper. <i>Acta Materialia</i> , 2004, 52, 705-714.	7.9	32
53	Microstructural evolution of a uranium-10wt.% molybdenum alloy for nuclear reactor fuels. <i>Journal of Nuclear Materials</i> , 2015, 465, 784-792.	2.7	31
54	Spectral database constitutive representation within a spectral micromechanical solver for computationally efficient polycrystal plasticity modelling. <i>Computational Mechanics</i> , 2018, 61, 89-104.	4.0	31

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55	Filiform-mode hydride corrosion of uranium surfaces. <i>Journal of Nuclear Materials</i> , 2013, 442, 106-115.	2.7	30
56	Formation and stability of long basal-prismatic facets in Mg. <i>Acta Materialia</i> , 2020, 185, 119-128.	7.9	30
57	EBSD and FIB/TEM examination of shape memory effect deformation structures in U-14at.% Nb. <i>Acta Materialia</i> , 2008, 56, 2638-2648.	7.9	29
58	A generalized spherical harmonics-based procedure for the interpolation of partial datasets of orientation distributions to enable crystal mechanics-based simulations. <i>Materialia</i> , 2019, 6, 100328.	2.7	28
59	Dislocation motion in thin Cu foils: a comparison between computer simulations and experiment. <i>Acta Materialia</i> , 2004, 52, 1535-1542.	7.9	25
60	Characteristic boundaries associated with three-dimensional twins in hexagonal metals. <i>Science Advances</i> , 2020, 6, eaaz2600.	10.3	24
61	Deformation twinning and twinning related fracture in coarse-grained $\delta$ -uranium. <i>Journal of Nuclear Materials</i> , 2009, 392, 105-113.	2.7	23
62	Variability in EBSD statistics for textured zirconium. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2013, 574, 157-162.	5.6	21
63	Three-dimensional atomic scale characterization of $\langle 11\bar{1}2 \rangle$ twin boundaries in titanium. <i>Acta Materialia</i> , 2021, 208, 116707.		
64	Revealing the effect of local stresses on twin growth mechanisms in titanium using synchrotron X-ray diffraction. <i>Acta Materialia</i> , 2021, 221, 117359.	7.9	20
65	High creep resistance tin-based alloys for soldering applications. <i>Journal of Electronic Materials</i> , 2002, 31, 1276-1282.	2.2	19
66	The Suppression of Instabilities via Biphasic Interfaces During Bulk Fabrication of Nanograined Zr. <i>Materials Research Letters</i> , 2015, 3, 50-57.	8.7	18
67	Kink mechanism in Cu/Nb nanolaminates explored by in situ pillar compression. <i>Acta Materialia</i> , 2022, 237, 118150.	7.9	17
68	Powder Synthesis and Hot Pressing of a $\text{LiTaO}_3$ Ceramic. <i>Journal of the American Ceramic Society</i> , 2012, 95, 2820-2826.	3.8	13
69	Nd-Mo-borosilicate glass ceramic: Synthesis, characterization and response to ionizing radiation. <i>Journal of Nuclear Materials</i> , 2013, 437, 216-221.	2.7	13
70	Interface-Driven Plasticity: The Presence of an Interface Affected Zone in Metallic Lamellar Composites. <i>Advanced Engineering Materials</i> , 2015, 17, 109-114.	3.5	13
71	A Graph Theory-Based Automated Twin Recognition Technique for Electron Backscatter Diffraction Analysis. <i>Integrating Materials and Manufacturing Innovation</i> , 2018, 7, 12-27.	2.6	13
72	Evolution of microstructures and properties leading to layer instabilities during accumulative roll bonding of Fe-Cu, Fe-Ag, and Fe-Al. <i>Materials and Design</i> , 2021, 212, 110204.	7.0	12

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73	Experimental verification of a crystal plasticity-based simulation framework for predicting microstructure and geometric shape changes: Application to bending and Taylor impact testing of Zr. International Journal of Impact Engineering, 2020, 144, 103655.	5.0	11
74	Crystal mechanics-based thermo-elastic constitutive modeling of orthorhombic uranium using generalized spherical harmonics and first-order bounding theories. Journal of Nuclear Materials, 2022, 560, 153472.	2.7	11
75	Recrystallization and Grain Growth in Accumulative Roll-Bonded Metal Composites. Jom, 2015, 67, 2810-2819.	1.9	9
76	A Single-Tilt TEM Stereomicroscopy Technique for Crystalline Materials. Microscopy and Microanalysis, 2003, 9, 29-35.	0.4	7
77	Quantification of strain and orientation measurement error in cross-correlation EBSD in hexagonal close-packed materials. Scripta Materialia, 2012, 67, 818-821.	5.2	7
78	Establishing reactor operations from uranium targets used for the production of plutonium. Journal of Radioanalytical and Nuclear Chemistry, 2009, 282, 573-579.	1.5	6
79	An automated procedure built on MTEX for reconstructing deformation twin hierarchies from electron backscattered diffraction datasets of heavily twinned microstructures. Materials Characterization, 2021, 171, 110808.	4.4	6
80	Atomistic and phase field simulations of three dimensional interactions of $\langle 10\bar{1}0 \rangle$ twins with grain boundaries in Mg: Twin transmission and dislocation emission. Materialia, 2021, 20, 101247.	2.7	6
81	Unexpected transient creep behavior of tin alloys strengthened by high volume fractions of SbSn. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2002, 33, 575-580.	2.2	4