George M Pharr

List of Publications by Year
in descending order

Source: https://exaly.com/author-pdf/5570828/publications.pdf

Version: 2024-02-01

117 papers	39,656 citations	70961 41 h-index	23472 111 g-index
121 all docs	121 docs citations	121 times ranked	22888 citing authors

#	Article	IF	Citations
1	An improved technique for determining hardness and elastic modulus using load and displacement sensing indentation experiments. Journal of Materials Research, 1992, 7, 1564-1583.	1.2	22,457
2	Measurement of hardness and elastic modulus by instrumented indentation: Advances in understanding and refinements to methodology. Journal of Materials Research, 2004, 19, 3-20.	1.2	6,313
3	On the generality of the relationship among contact stiffness, contact area, and elastic modulus during indentation. Journal of Materials Research, 1992, 7, 613-617.	1.2	1,355
4	Direct Observation and Analysis of Indentation Cracking in Glasses and Ceramics. Journal of the American Ceramic Society, 1990, 73, 787-817.	1.9	935
5	Influences of pileup on the measurement of mechanical properties by load and depth sensing indentation techniques. Journal of Materials Research, 1998, 13, 1049-1058.	1.2	807
6	The Indentation Size Effect: A Critical Examination of Experimental Observations and Mechanistic Interpretations. Annual Review of Materials Research, 2010, 40, 271-292.	4.3	546
7	Influences of stress on the measurement of mechanical properties using nanoindentation: Part I. Experimental studies in an aluminum alloy. Journal of Materials Research, 1996, 11, 752-759.	1.2	537
8	Influences of stress on the measurement of mechanical properties using nanoindentation: Part II. Finite element simulations. Journal of Materials Research, 1996, 11, 760-768.	1.2	451
9	Understanding nanoindentation unloading curves. Journal of Materials Research, 2002, 17, 2660-2671.	1.2	396
10	A critical examination of the fundamental relations used in the analysis of nanoindentation data. Journal of Materials Research, 1999, 14, 2296-2305.	1.2	383
11	Nanoindentation and Nanoscratching of Hard Carbon Coatings for Magnetic Disks. Materials Research Society Symposia Proceedings, 1995, 383, 447.	0.1	356
12	Substrate effects on nanoindentation mechanical property measurement of soft films on hard substrates. Journal of Materials Research, 1999, 14, 292-301.	1.2	325
13	Elastic properties of microstructural components of human bone tissue as measured by nanoindentation. Journal of Biomedical Materials Research Part B, 1999, 45, 48-54.	3.0	292
14	On the elastic moduli of nanocrystalline Fe, Cu, Ni, and Cuâ€“Ni alloys prepared by mechanical milling/alloying. Journal of Materials Research, 1995, 10, 2892-2896.	1.2	227
15	New evidence for a pressure-induced phase transformation during the indentation of silicon. Journal of Materials Research, 1991, 6, 1129-1130.	1.2	221
16	Critical issues in making small-depth mechanical property measurements by nanoindentation with continuous stiffness measurement. Journal of Materials Research, 2009, 24, 653-666.	1.2	202
17	Size Effects and Stochastic Behavior of Nanoindentation Pop In. Physical Review Letters, 2011, 106, 165502.	2.9	189
18	Strength differences arising from homogeneous versus heterogeneous dislocation nucleation. Physical Review B, 2008, 77, .	1.1	166

#	Article	IF	Citations
19	Cracking During Nanoindentation and its Use in the Measurement of Fracture Toughness. Materials Research Society Symposia Proceedings, 1994, 356, 663.	0.1	157
20	Indentation of elastically anisotropic half-spaces by cones and parabolae of revolution. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 2001, 81, 447-466.	0.8	142
21	Effects of focused ion beam milling on the nanomechanical behavior of a molybdenum-alloy single crystal. Applied Physics Letters, 2007, 91, .	1.5	141
22	Mechanical and morphological variation of the human lumbar vertebral cortical and trabecular bone. , 1999, 44, 191-197.		138
23	Electrical resistance of metallic contacts on silicon and germanium during indentation. Journal of Materials Research, 1992, 7, 961-972.	1.2	132
24	The mechanical behavior of silicon during small-scale indentation. Journal of Electronic Materials, 1990, 19, 881-887.	1.0	123
25	Measurement of power-law creep parameters by instrumented indentation methods. Journal of the Mechanics and Physics of Solids, 2013, 61, 517-536.	2.3	111
26	Mechanical properties of metallic lithium: from nano to bulk scales. Acta Materialia, 2020, 186, 215-222.	3.8	103
27	Time Dependent Deformation During Indentation Testing. Materials Research Society Symposia Proceedings, 1996, 436, 233.	0.1	97
28	Nanoindentation of silver-relations between hardness and dislocation structure. Journal of Materials Research, 1989, 4, 94-101.	1.2	95
29	The Role of Eta Phase Formation on the Creep Strength and Ductility of INCONEL Alloy 740 at 1023ÂK (750ÂÂ°C). Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2012, 43, 1902-1910.	1.1	85
30	Elastic Anisotropy of ÃŸâ€šilicon Nitride Whiskers. Journal of the American Ceramic Society, 1998, 81, 2661-2669.	1.9	78
31	Measuring the constitutive behavior of viscoelastic solids in the time and frequency domain using flat punch nanoindentation. Journal of Materials Research, 2009, 24, 626-637.	1.2	77
32	Mechanical properties of blended single-wall carbon nanotube composites. Journal of Materials Research, 2003, 18, 1849-1853.	1.2	70
33	Measurement of Fracture Toughness in Thin Films and Small Volumes Using Nanoindentation Methods. , 1993, , 449-461.		70
34	The Compelling Case for Indentation as a Functional Exploratory and Characterization Tool. Journal of the American Ceramic Society, 2015, 98, 2671-2680.	1.9	67
35	Effects of indenter angle on microâ€scale fracture toughness measurement by pillar splitting. Journal of the American Ceramic Society, 2017, 100, 5731-5738.	1.9	66
36	Nanoindentation creep of quartz, with implications for rate- and state-variable friction laws relevant to earthquake mechanics. Journal of Materials Research, 2004, 19, 357-365.	1.2	61

#	Article	IF	Citations
37	Tissue-Level Mechanical Properties of Bone Contributing to Fracture Risk. Current Osteoporosis Reports, 2016, 14, 138-150.	1.5	54
38	On the measurement of yield strength by spherical indentation. Philosophical Magazine, 2006, 86, 5521-5539.	0.7	53
39	A simple model for indentation creep. Journal of the Mechanics and Physics of Solids, 2018, 112, 552-562.	2.3	53
40	Measurement of hardness and elastic modulus by instrumented indentation: Advances in understanding and refinements to methodology. , 2004, 19, 3.		52
41	A review of directionally solidified intermetallic composites for high-temperature structural applications. Journal of Materials Science, 2004, 39, 3975-3984.	1.7	48
42	Mechanical properties and microstructures of metal/ceramic microlaminates: Part II. A Mo/Al₂O₃ system. Journal of Materials Research, 1992, 7, 2774-2784.	1.2	44
43	Mechanical properties and microstructures of metal/ceramic microlaminates: Part I. Nb/MoSi₂ systems. Journal of Materials Research, 1992, 7, 2765-2773.	1.2	43
44	A stochastic model for the size dependence of spherical indentation pop-in. Journal of Materials Research, 2013, 28, 2728-2739.	1.2	42
45	Instrumentation of a conventional hardness tester for load-displacement measurement during indentation. Journal of Materials Research, 1990, 5, 847-851.	1.2	41
46	Critical issues in conducting constant strain rate nanoindentation tests at higher strain rates. Journal of Materials Research, 2019, 34, 3495-3503.	1.2	41
47	Constitutive modeling of indentation cracking in fused silica. Journal of the American Ceramic Society, 2017, 100, 1928-1940.	1.9	39
48	An experimental evaluation of the constantÎ²relating the contact stiffness to the contact area in nanoindentation. Philosophical Magazine, 2006, 86, 5285-5298.	0.7	37
49	The Anomalous Behavior of Silicon During Nanoindentation. Materials Research Society Symposia Proceedings, 1991, 239, 301.	0.1	36
50	Effects of Residual Stress on the Measurement of Hardness and Elastic Modulus using Nanoindentation. Materials Research Society Symposia Proceedings, 1994, 338, 127.	0.1	36
51	Measurement of Residual Stresses by Load and Depth Sensing Spherical Indentation. Materials Research Society Symposia Proceedings, 1999, 594, 519.	0.1	35
52	Using the Ratio of Loading Slope and Elastic Stiffness to Predict Pile-Up and Constraint Factor During Indentation. Materials Research Society Symposia Proceedings, 1998, 522, 101.	0.1	34
53	Lattice Rotation Patterns and Strain Gradient Effects in Face-Centered-Cubic Single Crystals Under Spherical Indentation. Journal of Applied Mechanics, Transactions ASME, 2015, 82, .	1.1	34
54	Measurement of hardness and elastic modulus by load and depth sensing indentation: Improvements to the technique based on continuous stiffness measurement. Journal of Materials Research, 2021, 36, 2137-2153.	1.2	34

#	Article	IF	Citations
55	Elastic and Plastic Characteristics of Sodium Metal. ACS Applied Energy Materials, 2020, 3, 1759-1767.	2.5	33
56	A method for making substrate-independent hardness measurements of soft metallic films on hard substrates by nanoindentation. Journal of Materials Research, 2003, 18, 1383-1391.	1.2	32
57	Nanoindentation and Nanoscratching of Hard Coating Materials for Magnetic Disks. Materials Research Society Symposia Proceedings, 1994, 356, 767.	0.1	29
58	On the Measurement of Power Law Creep Parameters from Instrumented Indentation. Jom, 2017, 69, 2229-2236.	0.9	29
59	Exploring the origins of the indentation size effect at submicron scales. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	29
60	Finite Element Studies of the Influence of Pile-up on the Analysis of Nanoindentation Data. Materials Research Society Symposia Proceedings, 1996, 436, 141.	0.1	28
61	Nanoindentation of Soft Films on Hard Substrates:The Importance of Pile-Up. Materials Research Society Symposia Proceedings, 1996, 436, 207.	0.1	28
62	In-situ tensile testing of single-crystal molybdenum-alloy fibers with various dislocation densities in a scanning electron microscope. Journal of Materials Research, 2012, 27, 508-520.	1.2	28
63	Nanoscale Roughness of Natural Fault Surfaces Controlled by Scaleâ€Ðependent Yield Strength. Geophysical Research Letters, 2017, 44, 9299-9307.	1.5	27
64	An Explanation for the Shape of Nanoindentation Unloading Curves based on Finite Element Simulation. Materials Research Society Symposia Proceedings, 1994, 356, 675.	0.1	26
65	Indenter Geometry Effects on The Measurement of Mechanical Properties by Nanoindentation with Sharp Indenters. Materials Research Society Symposia Proceedings, 1996, 436, 147.	0.1	26
66	Tuning the deformation mechanisms of boron carbide via silicon doping. Science Advances, 2019, 5, eaay0352.	4.7	26
67	Surface mechanical properties of C implanted Ni. Journal of Materials Research, 1988, 3, 226-232.	1.2	24
68	Extending the range of constant strain rate nanoindentation testing. Journal of Materials Research, 2020, 35, 343-352.	1.2	24
69	Effects of wetting on the compression creep behaviour of metals containing low melting intergranular phases. Journal of Materials Science, 1989, 24, 784-792.	1.7	23
70	Experimental Investigations of the Sneddon Solution and an Improved Solution for the Analysis of Nanoindentation Data. Materials Research Society Symposia Proceedings, 1998, 522, 39.	0.1	22
71	Measuring the elastic modulus and residual stress of freestanding thin films using nanoindentation techniques. Journal of Materials Research, 2009, 24, 2974-2985.	1.2	21
72	Effects of Interlayers on the Scratch Adhesion Performance of Ultra-Thin Films of Copper and Gold on Silicon Substrates. Materials Research Society Symposia Proceedings, 1994, 356, 809.	0.1	20

#	Article	IF	Citations
73	Mechanical Properties of Amorphous Hard Carbon Films Prepared by Cathodic ARC Deposition. Materials Research Society Symposia Proceedings, 1995, 383, 453.	0.1	20
74	Inaccuracies in Sneddon's Solution for Elastic Indentation by a Rigid Cone and their Implications for Nanoindentation Data Analysis. Materials Research Society Symposia Proceedings, 1996, 436, 189.	0.1	19
75	Nanoindentation Hardness of Soft Films on Hard Substrates: Effects of the Substrate. Materials Research Society Symposia Proceedings, 1997, 473, 57.	0.1	19
76	Critical Issues In Measuring The Mechanical Properties Of Hard Films On Soft Substrates By Nanoindentation Techniques. Materials Research Society Symposia Proceedings, 1997, 505, 65.	0.1	18
77	Pile-up Behavior of Spherical Indentations in Engineering Materials. Materials Research Society Symposia Proceedings, 1998, 522, 33.	0.1	18
78	On the measurement of energy dissipation using nanoindentation and the continuous stiffness measurement technique. Journal of Materials Research, 2013, 28, 3029-3042.	1.2	18
79	Assessment of New Relation for the Elastic Compliance of a Film-Substrate System. Materials Research Society Symposia Proceedings, 2001, 695, 1.	0.1	17
80	Nanoindentation of Fused Quartz at Loads Near the Cracking Threshold. Experimental Mechanics, 2019, 59, 369-380.	1.1	17
81	Experimental Analysis of the Elasticâ€“Plastic Transition During Nanoindentation of Single Crystal Alphaâ€Silicon Nitride. Journal of the American Ceramic Society, 2012, 95, 2113-2115.	1.9	15
82	Single versus successive pop-in modes in nanoindentation tests of single crystals. Journal of Materials Research, 2016, 31, 2065-2075.	1.2	15
83	Increased tissue-level storage modulus and hardness with age in male cortical bone and its association with decreased fracture toughness. Bone, 2021, 148, 115949.	1.4	15
84	The Effects of Temperature, Stress and Salinity on the Creep of Frozen Saline Soil. Journal of Energy Resources Technology, Transactions of the ASME, 1984, 106, 344-348.	1.4	14
85	Plastic instability in amorphous selenium near its glass transition temperature. Journal of Materials Research, 2010, 25, 1015-1019.	1.2	12
86	Nanoindentation of Soft Films On Hard Substrates: Experiments And Finite Element Simulations. Materials Research Society Symposia Proceedings, 1997, 505, 109.	0.1	11
87	Nanoindentation of biodegradable cellulose diacetate-graft-poly(L-lactide) copolymers: Effect of molecular composition and thermal aging on mechanical properties. Journal of Polymer Science, Part B: Polymer Physics, 2007, 45, 1114-1121.	2.4	11
88	Stiffness of frictional contact of dissimilar elastic solids. Journal of the Mechanics and Physics of Solids, 2018, 112, 318-333.	2.3	11
89	Long-term oxidation of an as-cast Ni3Al alloy at 900 Â°C and 1100 Â°C. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2005, 36, 1855-1869.	1.1	10
90	Effects of Adhesion on the Measurement of Thin Film Mechanical Properties by Nanoindentation. Materials Research Society Symposia Proceedings, 1997, 473, 51.	0.1	8

#	Article	IF	Citations
91	Applicability of Sneddon Relationships to the Real Case of a Rigid Cone Penetrating an Infinite Half Space. Materials Research Society Symposia Proceedings, 1998, 522, 263.	0.1	8
92	Preparation of ternary alloy libraries for high-throughput screening of material properties by means of thick film deposition and interdiffusion: Benefits and limitations. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2004, 22, 1788-1792.	0.9	8
93	A Comparison of Coulomb Friction and Friction Stress Models Based on Multidimensional Nanocontact Experiments. Journal of Applied Mechanics, Transactions ASME, 2008, 75, .	1.1	8
94	Geometric effects on dislocation nucleation in strained electronics. Applied Physics Letters, 2009, 94, .	1.5	8
95	Strain-rate dependent deformation mechanisms in single-layered Cu, Mo, and multilayer Cu/Mo thin films. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2022, 838, 142776.	2.6	8
96	A Methodology for the Calibration of Spherical Indenters. Materials Research Society Symposia Proceedings, 1999, 594, 525.	0.1	7
97	A critical examination of the Berkovich vs. conical indentation based on 3D finite element calculation. Materials Research Society Symposia Proceedings, 2004, 841, R9.5.1.	0.1	7
98	Creep behavior of the solid acid fuel cell material CsHSO4. Scripta Materialia, 2017, 139, 119-121.	2.6	7
99	Corrections to the stiffness relationship in 3-sided and conical indentation problems. International Journal of Solids and Structures, 2019, 166, 154-166.	1.3	7
100	Characterization of power-law creep in the solid-acid CsHSO4 via nanoindentation. Journal of Materials Research, 2019, 34, 1130-1137.	1.2	7
101	On the effective load during nanoindentation creep testing with continuous stiffness measurement (CSM). Journal of Materials Research, 2021, 36, 1740-1750.	1.2	7
102	Deformation of an extruded nickel beryllide between room temperature and 820 Â°C. Journal of Materials Research, 1991, 6, 2653-2659.	1.2	6
103	Effect of Temperature on the Formation of Creep Substructure in Sodium Chloride Single Crystals. Journal of the American Ceramic Society, 1992, 75, 347-352.	1.9	6
104	Current trends in nanomechanical testing research. Journal of Materials Research, 2021, 36, 2133-2136.	1.2	5
105	A Technique for Producing Ice From NaCl Brine for Studying Fundamental Deformation Behavior. Journal of Energy Resources Technology, Transactions of the ASME, 1985, 107, 173-176.	1.4	4
106	Direct observation of partial interface slip in micrometre-scale single asperity contacts. Tribology International, 2021, 155, 106776.	3.0	4
107	Surface Mechanical Properties of Ti Alloys Produced by Excimer Laser Mixing of Ti on AiSi 304 Stainless Steel. Materials Research Society Symposia Proceedings, 1988, 140, 189.	0.1	2
108	Effects of Solidification Parameters on Lamellar Microstructures of Near Eutectic Cr-Cr3Si Alloys. Materials Research Society Symposia Proceedings, 2002, 753, 1.	0.1	2

#	Article	IF	Citations
109	Effects of crystal orientation on the indentation creep of Î²-tin. Journal of Materials Research, 2021, 36, 2434-2443.	1.2	2
110	UV Raman Scattering Analysis of Indented and Machined 6H-SiC and Î²-Si3N4 Surfaces. Materials Research Society Symposia Proceedings, 2004, 843, 4101.	0.1	1
111	Discussion on â€œInterfacial Residual Stress Analysis of Thermal Spray Coatings by Miniature Ring-Core Cutting Combined with DIC Methodâ€•by J.G. Zhu et al., Experimental Mechanics DOI:10.1007/s11340-012-9640-2. Experimental Mechanics, 2014, 54, 1305-1306.	1.1	1
112	Mechanical and morphological variation of the human lumbar vertebral cortical and trabecular bone. , 1999, 44, 191.		1
113	The contribution of plastic sink-in to the static friction of single asperity microscopic contacts. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2021, 477, .	1.0	1
114	Microstructures and mechanical properties of Vâ€“V₃Si eutectic composites. International Journal of Materials Research, 2022, 95, 505-512.	0.1	1
115	Surface Mechanical Properties of Ti Alloys Produced by Excimer Laser Mixing of Ti on AISI 304 Stainless Steel. Materials Research Society Symposia Proceedings, 1988, 128, 457.	0.1	0
116	Microstructure and Oxidation of a Cast Nickel Aluminide Alloy. Materials Research Society Symposia Proceedings, 2002, 753, 1.	0.1	0
117	Cross-Sectional TEM Studies of Indentation-Induced Phase Transformations in Si: Indenter Angle Effects. Materials Research Society Symposia Proceedings, 2004, 843, 641.	0.1	0