

# George M Pharr

## List of Publications by Citations

**Source:** <https://exaly.com/author-pdf/5570828/george-m-pharr-publications-by-citations.pdf>

**Version:** 2024-04-19

This document has been generated based on the publications and citations recorded by exaly.com. For the latest version of this publication list, visit the link given above.

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

116  
papers

33,230  
citations

39  
h-index

121  
g-index

121  
ext. papers

36,362  
ext. citations

3.5  
avg, IF

7.43  
L-index

#	Paper	IF	Citations
116	An improved technique for determining hardness and elastic modulus using load and displacement sensing indentation experiments. <i>Journal of Materials Research</i> , <b>1992</b> , 7, 1564-1583	2.5	18930
115	Measurement of hardness and elastic modulus by instrumented indentation: Advances in understanding and refinements to methodology. <i>Journal of Materials Research</i> , <b>2004</b> , 19, 3-20	2.5	5121
114	On the generality of the relationship among contact stiffness, contact area, and elastic modulus during indentation. <i>Journal of Materials Research</i> , <b>1992</b> , 7, 613-617	2.5	1167
113	Direct Observation and Analysis of Indentation Cracking in Glasses and Ceramics. <i>Journal of the American Ceramic Society</i> , <b>1990</b> , 73, 787-817	3.8	825
112	Influences of pileup on the measurement of mechanical properties by load and depth sensing indentation techniques. <i>Journal of Materials Research</i> , <b>1998</b> , 13, 1049-1058	2.5	711
111	Influences of stress on the measurement of mechanical properties using nanoindentation: Part I. Experimental studies in an aluminum alloy. <i>Journal of Materials Research</i> , <b>1996</b> , 11, 752-759	2.5	475
110	The Indentation Size Effect: A Critical Examination of Experimental Observations and Mechanistic Interpretations. <i>Annual Review of Materials Research</i> , <b>2010</b> , 40, 271-292	12.8	415
109	Influences of stress on the measurement of mechanical properties using nanoindentation: Part II. Finite element simulations. <i>Journal of Materials Research</i> , <b>1996</b> , 11, 760-768	2.5	397
108	Understanding nanoindentation unloading curves. <i>Journal of Materials Research</i> , <b>2002</b> , 17, 2660-2671	2.5	349
107	A critical examination of the fundamental relations used in the analysis of nanoindentation data. <i>Journal of Materials Research</i> , <b>1999</b> , 14, 2296-2305	2.5	337
106	Nanoindentation and Nanoscratching of Hard Carbon Coatings for Magnetic Disks. <i>Materials Research Society Symposia Proceedings</i> , <b>1995</b> , 383, 447		304
105	Substrate effects on nanoindentation mechanical property measurement of soft films on hard substrates. <i>Journal of Materials Research</i> , <b>1999</b> , 14, 292-301	2.5	279
104	Elastic properties of microstructural components of human bone tissue as measured by nanoindentation. <i>Journal of Biomedical Materials Research Part B</i> , <b>1999</b> , 45, 48-54		261
103	New evidence for a pressure-induced phase transformation during the indentation of silicon. <i>Journal of Materials Research</i> , <b>1991</b> , 6, 1129-1130	2.5	206
102	On the elastic moduli of nanocrystalline Fe, Cu, Ni, and CuNi alloys prepared by mechanical milling/alloying. <i>Journal of Materials Research</i> , <b>1995</b> , 10, 2892-2896	2.5	197
101	Critical issues in making small-depth mechanical property measurements by nanoindentation with continuous stiffness measurement. <i>Journal of Materials Research</i> , <b>2009</b> , 24, 653-666	2.5	168
100	Size effects and stochastic behavior of nanoindentation pop in. <i>Physical Review Letters</i> , <b>2011</b> , 106, 165502		155

99	Strength differences arising from homogeneous versus heterogeneous dislocation nucleation. <i>Physical Review B</i> , <b>2008</b> , 77,	3.3	152
98	Cracking During Nanoindentation and its Use in the Measurement of Fracture Toughness. <i>Materials Research Society Symposia Proceedings</i> , <b>1994</b> , 356, 663		135
97	Effects of focused ion beam milling on the nanomechanical behavior of a molybdenum-alloy single crystal. <i>Applied Physics Letters</i> , <b>2007</b> , 91, 111915	3.4	130
96	Indentation of elastically anisotropic half-spaces by cones and parabolae of revolution. <i>Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties</i> , <b>2001</b> , 81, 447-466		122
95	Mechanical and morphological variation of the human lumbar vertebral cortical and trabecular bone. <i>Journal of Biomedical Materials Research Part B</i> , <b>1999</b> , 44, 191-7		121
94	Electrical resistance of metallic contacts on silicon and germanium during indentation. <i>Journal of Materials Research</i> , <b>1992</b> , 7, 961-972	2.5	116
93	The mechanical behavior of silicon during small-scale indentation. <i>Journal of Electronic Materials</i> , <b>1990</b> , 19, 881-887	1.9	112
92	Measurement of power-law creep parameters by instrumented indentation methods. <i>Journal of the Mechanics and Physics of Solids</i> , <b>2013</b> , 61, 517-536	5	84
91	Nanoindentation of silver-relations between hardness and dislocation structure. <i>Journal of Materials Research</i> , <b>1989</b> , 4, 94-101	2.5	84
90	Time Dependent Deformation During Indentation Testing. <i>Materials Research Society Symposia Proceedings</i> , <b>1996</b> , 436, 233		83
89	The Role of Eta Phase Formation on the Creep Strength and Ductility of INCONEL Alloy 740 at 1023 K (750 °C). <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , <b>2012</b> , 43, 1902-1910	2.3	70
88	Elastic Anisotropy of Silicon Nitride Whiskers. <i>Journal of the American Ceramic Society</i> , <b>2005</b> , 81, 2661-2669		67
87	Measuring the constitutive behavior of viscoelastic solids in the time and frequency domain using flat punch nanoindentation. <i>Journal of Materials Research</i> , <b>2009</b> , 24, 626-637	2.5	62
86	Mechanical properties of blended single-wall carbon nanotube composites. <i>Journal of Materials Research</i> , <b>2003</b> , 18, 1849-1853	2.5	62
85	Measurement of Fracture Toughness in Thin Films and Small Volumes Using Nanoindentation Methods <b>1993</b> , 449-461		59
84	The Compelling Case for Indentation as a Functional Exploratory and Characterization Tool. <i>Journal of the American Ceramic Society</i> , <b>2015</b> , 98, 2671-2680	3.8	58
83	Effects of indenter angle on micro-scale fracture toughness measurement by pillar splitting. <i>Journal of the American Ceramic Society</i> , <b>2017</b> , 100, 5731-5738	3.8	47
82	Nanoindentation creep of quartz, with implications for rate- and state-variable friction laws relevant to earthquake mechanics. <i>Journal of Materials Research</i> , <b>2004</b> , 19, 357-365	2.5	47

81	On the measurement of yield strength by spherical indentation. <i>Philosophical Magazine</i> , <b>2006</b> , 86, 5521-5539	4.6	46
80	Mechanical properties of metallic lithium: from nano to bulk scales. <i>Acta Materialia</i> , <b>2020</b> , 186, 215-222	8.4	46
79	A review of directionally solidified intermetallic composites for high-temperature structural applications. <i>Journal of Materials Science</i> , <b>2004</b> , 39, 3975-3984	4.3	43
78	Measurement of hardness and elastic modulus by instrumented indentation: Advances in understanding and refinements to methodology <b>2004</b> , 19, 3		40
77	Tissue-Level Mechanical Properties of Bone Contributing to Fracture Risk. <i>Current Osteoporosis Reports</i> , <b>2016</b> , 14, 138-50	5.4	39
76	Mechanical properties and microstructures of metal/ceramic microlaminates: Part I. Nb/MoSi <sub>2</sub> systems. <i>Journal of Materials Research</i> , <b>1992</b> , 7, 2765-2773	2.5	38
75	A stochastic model for the size dependence of spherical indentation pop-in. <i>Journal of Materials Research</i> , <b>2013</b> , 28, 2728-2739	2.5	37
74	Instrumentation of a conventional hardness tester for load-displacement measurement during indentation. <i>Journal of Materials Research</i> , <b>1990</b> , 5, 847-851	2.5	37
73	The Anomalous Behavior of Silicon During Nanoindentation. <i>Materials Research Society Symposia Proceedings</i> , <b>1991</b> , 239, 301		35
72	Mechanical properties and microstructures of metal/ceramic microlaminates: Part II. A Mo/Al <sub>2</sub> O <sub>3</sub> system. <i>Journal of Materials Research</i> , <b>1992</b> , 7, 2774-2784	2.5	35
71	An experimental evaluation of the constant $\bar{\epsilon}$ relating the contact stiffness to the contact area in nanoindentation. <i>Philosophical Magazine</i> , <b>2006</b> , 86, 5285-5298	1.6	34
70	A simple model for indentation creep. <i>Journal of the Mechanics and Physics of Solids</i> , <b>2018</b> , 112, 552-562	5	29
69	A method for making substrate-independent hardness measurements of soft metallic films on hard substrates by nanoindentation. <i>Journal of Materials Research</i> , <b>2003</b> , 18, 1383-1391	2.5	29
68	Measurement of Residual Stresses by Load and Depth Sensing Spherical Indentation. <i>Materials Research Society Symposia Proceedings</i> , <b>1999</b> , 594, 519		29
67	Effects of Residual Stress on the Measurement of Hardness and Elastic Modulus Using Nanoindentation. <i>Materials Research Society Symposia Proceedings</i> , <b>1994</b> , 338, 127		28
66	In-situ tensile testing of single-crystal molybdenum-alloy fibers with various dislocation densities in a scanning electron microscope. <i>Journal of Materials Research</i> , <b>2012</b> , 27, 508-520	2.5	26
65	Nanoindentation of Soft Films on Hard Substrates: The Importance of Pile-Up. <i>Materials Research Society Symposia Proceedings</i> , <b>1996</b> , 436, 207		26
64	Lattice Rotation Patterns and Strain Gradient Effects in Face-Centered-Cubic Single Crystals Under Spherical Indentation. <i>Journal of Applied Mechanics, Transactions ASME</i> , <b>2015</b> , 82,	2.7	25

63	An Explanation for the Shape of Nanoindentation Unloading Curves based on Finite Element Simulation. <i>Materials Research Society Symposia Proceedings</i> , <b>1994</b> , 356, 675		25
62	Nanoindentation and Nanoscratching of Hard Coating Materials for Magnetic Disks. <i>Materials Research Society Symposia Proceedings</i> , <b>1994</b> , 356, 767		25
61	Constitutive modeling of indentation cracking in fused silica. <i>Journal of the American Ceramic Society</i> , <b>2017</b> , 100, 1928-1940	3.8	23
60	Critical issues in conducting constant strain rate nanoindentation tests at higher strain rates. <i>Journal of Materials Research</i> , <b>2019</b> , 34, 3495-3503	2.5	23
59	Using the Ratio of Loading Slope and Elastic Stiffness to Predict Pile-Up and Constraint Factor During Indentation. <i>Materials Research Society Symposia Proceedings</i> , <b>1998</b> , 522, 101		23
58	Indenter Geometry Effects on the Measurement of Mechanical Properties by Nanoindentation with Sharp Indenters. <i>Materials Research Society Symposia Proceedings</i> , <b>1996</b> , 436, 147		23
57	Effects of wetting on the compression creep behaviour of metals containing low melting intergranular phases. <i>Journal of Materials Science</i> , <b>1989</b> , 24, 784-792	4.3	23
56	On the Measurement of Power Law Creep Parameters from Instrumented Indentation. <i>Jom</i> , <b>2017</b> , 69, 2229-2236	2.1	22
55	Elastic and Plastic Characteristics of Sodium Metal. <i>ACS Applied Energy Materials</i> , <b>2020</b> , 3, 1759-1767	6.1	22
54	Nanoscale Roughness of Natural Fault Surfaces Controlled by Scale-Dependent Yield Strength. <i>Geophysical Research Letters</i> , <b>2017</b> , 44, 9299-9307	4.9	22
53	Finite Element Studies of the Influence of Pile-up on the Analysis of Nanoindentation Data. <i>Materials Research Society Symposia Proceedings</i> , <b>1996</b> , 436, 141		21
52	Surface mechanical properties of C implanted Ni. <i>Journal of Materials Research</i> , <b>1988</b> , 3, 226-232	2.5	19
51	Experimental Investigations of the Sneddon Solution and an Improved Solution for the Analysis of Nanoindentation Data. <i>Materials Research Society Symposia Proceedings</i> , <b>1998</b> , 522, 39		18
50	On the measurement of energy dissipation using nanoindentation and the continuous stiffness measurement technique. <i>Journal of Materials Research</i> , <b>2013</b> , 28, 3029-3042	2.5	17
49	Measuring the elastic modulus and residual stress of freestanding thin films using nanoindentation techniques. <i>Journal of Materials Research</i> , <b>2009</b> , 24, 2974-2985	2.5	17
48	Effects of Interlayers on the Scratch Adhesion Performance of Ultra-Thin Films of Copper and Gold on Silicon Substrates. <i>Materials Research Society Symposia Proceedings</i> , <b>1994</b> , 356, 809		17
47	Critical Issues in Measuring the Mechanical Properties of Hard Films on Soft Substrates by Nanoindentation Techniques. <i>Materials Research Society Symposia Proceedings</i> , <b>1997</b> , 505, 65		16
46	Nanoindentation Hardness of Soft Films on Hard Substrates: Effects of the Substrate. <i>Materials Research Society Symposia Proceedings</i> , <b>1997</b> , 473, 57		16

45	Mechanical Properties of Amorphous Hard Carbon Films Prepared by Cathodic ARC Deposition. <i>Materials Research Society Symposia Proceedings</i> , <b>1995</b> , 383, 453		16
44	Experimental Analysis of the Elastic-Plastic Transition During Nanoindentation of Single Crystal Alpha-Silicon Nitride. <i>Journal of the American Ceramic Society</i> , <b>2012</b> , 95, 2113-2115	3.8	15
43	Inaccuracies in Sneddon's Solution for Elastic Indentation by a Rigid Cone and their Implications for Nanoindentation Data Analysis. <i>Materials Research Society Symposia Proceedings</i> , <b>1996</b> , 436, 189		15
42	Pile-up Behavior of Spherical Indentations in Engineering Materials. <i>Materials Research Society Symposia Proceedings</i> , <b>1998</b> , 522, 33		14
41	Extending the range of constant strain rate nanoindentation testing. <i>Journal of Materials Research</i> , <b>2020</b> , 35, 343-352	2.5	13
40	Assessment of New Relation for the Elastic Compliance of a Film-Substrate System. <i>Materials Research Society Symposia Proceedings</i> , <b>2001</b> , 695, 1		13
39	The Effects of Temperature, Stress and Salinity on the Creep of Frozen Saline Soil. <i>Journal of Energy Resources Technology, Transactions of the ASME</i> , <b>1984</b> , 106, 344-348	2.6	13
38	Plastic instability in amorphous selenium near its glass transition temperature. <i>Journal of Materials Research</i> , <b>2010</b> , 25, 1015-1019	2.5	12
37	Tuning the deformation mechanisms of boron carbide via silicon doping. <i>Science Advances</i> , <b>2019</b> , 5, eaay0252	0.5	12
36	Nanoindentation of biodegradable cellulose diacetate-graft-poly(L-lactide) copolymers: Effect of molecular composition and thermal aging on mechanical properties. <i>Journal of Polymer Science, Part B: Polymer Physics</i> , <b>2007</b> , 45, 1114-1121	2.6	11
35	Nanoindentation of Soft Films on Hard Substrates: Experiments and Finite Element Simulations. <i>Materials Research Society Symposia Proceedings</i> , <b>1997</b> , 505, 109		10
34	Long-term oxidation of an as-cast Ni3Al alloy at 900 °C and 1100 °C. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , <b>2005</b> , 36, 1855-1869	2.3	10
33	Single versus successive pop-in modes in nanoindentation tests of single crystals. <i>Journal of Materials Research</i> , <b>2016</b> , 31, 2065-2075	2.5	10
32	Nanoindentation of Fused Quartz at Loads Near the Cracking Threshold. <i>Experimental Mechanics</i> , <b>2019</b> , 59, 369-380	2.6	9
31	Creep behavior of the solid acid fuel cell material CsHSO4. <i>Scripta Materialia</i> , <b>2017</b> , 139, 119-121	5.6	7
30	Geometric effects on dislocation nucleation in strained electronics. <i>Applied Physics Letters</i> , <b>2009</b> , 94, 171905	3.4	7
29	A Comparison of Coulomb Friction and Friction Stress Models Based on Multidimensional Nanocontact Experiments. <i>Journal of Applied Mechanics, Transactions ASME</i> , <b>2008</b> , 75,	2.7	7
28	Applicability of Sneddon Relationships to the Real Case of a Rigid Cone Penetrating an Infinite Half Space. <i>Materials Research Society Symposia Proceedings</i> , <b>1998</b> , 522, 263		7

27	Stiffness of frictional contact of dissimilar elastic solids. <i>Journal of the Mechanics and Physics of Solids</i> , <b>2018</b> , 112, 318-333	5	6
26	Preparation of ternary alloy libraries for high-throughput screening of material properties by means of thick film deposition and interdiffusion: Benefits and limitations. <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , <b>2004</b> , 22, 1788-1792	2.9	6
25	Effect of Temperature on the Formation of Creep Substructure in Sodium Chloride Single Crystals. <i>Journal of the American Ceramic Society</i> , <b>1992</b> , 75, 347-352	3.8	6
24	Measurement of hardness and elastic modulus by load and depth sensing indentation: Improvements to the technique based on continuous stiffness measurement. <i>Journal of Materials Research</i> , <b>2021</b> , 36, 2137-2153	2.5	6
23	Characterization of power-law creep in the solid-acid CsHSO <sub>4</sub> via nanoindentation. <i>Journal of Materials Research</i> , <b>2019</b> , 34, 1130-1137	2.5	6
22	Increased tissue-level storage modulus and hardness with age in male cortical bone and its association with decreased fracture toughness. <i>Bone</i> , <b>2021</b> , 148, 115949	4.7	6
21	Effects of Adhesion on the Measurement of Thin Film Mechanical Properties by Nanoindentation. <i>Materials Research Society Symposia Proceedings</i> , <b>1997</b> , 473, 51		5
20	A critical examination of the Berkovich vs. conical indentation based on 3D finite element calculation. <i>Materials Research Society Symposia Proceedings</i> , <b>2004</b> , 841, R9.5.1		5
19	Corrections to the stiffness relationship in 3-sided and conical indentation problems. <i>International Journal of Solids and Structures</i> , <b>2019</b> , 166, 154-166	3.1	4
18	A Methodology for the Calibration of Spherical Indenters. <i>Materials Research Society Symposia Proceedings</i> , <b>1999</b> , 594, 525		4
17	Deformation of an extruded nickel beryllide between room temperature and 820 °C. <i>Journal of Materials Research</i> , <b>1991</b> , 6, 2653-2659	2.5	4
16	A Technique for Producing Ice From NaCl Brine for Studying Fundamental Deformation Behavior. <i>Journal of Energy Resources Technology, Transactions of the ASME</i> , <b>1985</b> , 107, 173-176	2.6	4
15	Exploring the origins of the indentation size effect at submicron scales. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2021</b> , 118,	11.5	3
14	Effects of Solidification Parameters on Lamellar Microstructures of Near Eutectic Cr-Cr <sub>3</sub> Si Alloys. <i>Materials Research Society Symposia Proceedings</i> , <b>2002</b> , 753, 1		2
13	Surface Mechanical Properties of Ti Alloys Produced by Excimer Laser Mixing of Ti on AISI 304 Stainless Steel. <i>Materials Research Society Symposia Proceedings</i> , <b>1988</b> , 140, 189		2
12	Discussion on Interfacial Residual Stress Analysis of Thermal Spray Coatings by Miniature Ring-Core Cutting Combined with DIC Method by J.G. Zhu et al., <i>Experimental Mechanics</i> DOI:10.1007/s11340-012-9640-2. <i>Experimental Mechanics</i> , <b>2014</b> , 54, 1305-1306	2.6	1
11	UV Raman Scattering Analysis of Indented and Machined 6H-SiC and TiN Surfaces. <i>Materials Research Society Symposia Proceedings</i> , <b>2004</b> , 843, 4101		1
10	Effects of crystal orientation on the indentation creep of TiN. <i>Journal of Materials Research</i> , <b>2021</b> , 36, 2434-2443	2.5	1

9	Current trends in nanomechanical testing research. <i>Journal of Materials Research</i> , <b>2021</b> , 36, 2133-2136	2.5	1
8	Direct observation of partial interface slip in micrometre-scale single asperity contacts. <i>Tribology International</i> , <b>2021</b> , 155, 106776	4.9	1
7	Mechanical and morphological variation of the human lumbar vertebral cortical and trabecular bone <b>1999</b> , 44, 191		1
6	Microstructures and mechanical properties of V <sub>3</sub> Si eutectic composites. <i>International Journal of Materials Research</i> , <b>2022</b> , 95, 505-512	0.5	1
5	Strain-rate dependent deformation mechanisms in single-layered Cu, Mo, and multilayer Cu/Mo thin films. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2022</b> , 838, 142776	5.3	0
4	On the effective load during nanoindentation creep testing with continuous stiffness measurement (CSM). <i>Journal of Materials Research</i> , <b>2021</b> , 36, 1740-1750	2.5	0
3	Cross-Sectional TEM Studies of Indentation-Induced Phase Transformations in Si: Indenter Angle Effects. <i>Materials Research Society Symposia Proceedings</i> , <b>2004</b> , 843, 641		
2	Microstructure and Oxidation of a Cast Nickel Aluminide Alloy. <i>Materials Research Society Symposia Proceedings</i> , <b>2002</b> , 753, 1		
1	Surface Mechanical Properties of Ti Alloys Produced by Excimer Laser Mixing of Ti on AISI 304 Stainless Steel. <i>Materials Research Society Symposia Proceedings</i> , <b>1988</b> , 128, 457		