Robert F Cook

List of Publications by Citations

194 papers	7,627 citations	45 h-index	81 g-index
200 ext. papers	8,190 ext. citations	3.8 avg, IF	6.04 L-index

#	Paper	IF	Citations
194	Direct Observation and Analysis of Indentation Cracking in Glasses and Ceramics. *Journal of the American Ceramic Society*, **1990**, 73, 787-817	3.8	825
193	Amorphization and conductivity of silicon and germanium induced by indentation. *Physical Review Letters*, **1988**, 60, 2156-2159	7.4	359
192	Mechanical Behavior of Alumina/Silicon Carbide "Nanocomposites". *Journal of the American Ceramic Society*, **1993**, 76, 503-510	3.8	293
191	Load/displacement behavior during sharp indentation of viscous/elastic/plastic materials. *Journal of Materials Research*, **2003**, 18, 139-150	2.5	258
190	Diameter-Dependent Radial and Tangential Elastic Moduli of ZnO Nanowires. *Nano Letters*, **2007**, 7, 3691-3697	11.5	252
189	Microstructure-Strength Properties in Ceramics: I, Effect of Crack Size on Toughness. *Journal of the American Ceramic Society*, **1985**, 68, 604-615	3.8	217
188	Mechanical properties of block copolymer vesicle and micelle modified epoxies. *Journal of Polymer Science, Part B: Polymer Physics*, **2003**, 41, 2444-2456	2.6	188
187	Micellar structure and mechanical properties of block copolymer-modified epoxies. *Journal of Polymer Science, Part B: Polymer Physics*, **2001**, 39, 2996-3010	2.6	168
186	A Modified Indentation Toughness Technique. *Journal of the American Ceramic Society*, **1983**, 66, c200-c201	3.8	155
185	Strength and sharp contact fracture of silicon. *Journal of Materials Science*, **2006**, 41, 841-872	4.3	144
184	Microhardness, toughness, and modulus of Mohs scale minerals. *American Mineralogist*, **2006**, 91, 135-142	2.9	142
183	A practical guide for analysis of nanoindentation data. *Journal of the Mechanical Behavior of Biomedical Materials*, **2009**, 2, 396-407	4.1	141
182	Fracture toughness measurements of YBa2Cu3Ox single crystals. *Applied Physics Letters*, **1987**, 51, 454-456	3.4	126
181	Electrical resistance of metallic contacts on silicon and germanium during indentation. *Journal of Materials Research*, **1992**, 7, 961-972	2.5	116
180	Crack resistance by interfacial bridging: Its role in determining strength characteristics. *Journal of Materials Research*, **1987**, 2, 345-356	2.5	114
179	The effect of grain size on microstructure and stress relaxation in polycrystalline Y1Ba2Cu3O7 . *Journal of Materials Research*, **1989**, 4, 248-256	2.5	94
178	Theory of Fatigue for Brittle Flaws Originating from Residual Stress Concentrations. *Journal of the American Ceramic Society*, **1983**, 66, 314-321	3.8	86

177	Hardness, toughness, and modulus of some common metamorphic minerals. *American Mineralogist*, **2007**, 92, 281-288	2.9	83
176	Adhesion between Immiscible Polymers Correlated with Interfacial Entanglements. *Macromolecules* , **2003**, 36, 2808-2815	5.5	81
175	Stress-Corrosion Cracking of Low-Dielectric-Constant Spin-On-Glass Thin Films. *Journal of the Electrochemical Society*, **1999**, 146, 4439-4448	3.9	80
174	Kinetics of Indentation Cracking in Glass. *Journal of the American Ceramic Society*, **1993**, 76, 1096-1105	3.8	74
173	Influence of deposition conditions on mechanical properties of low-pressure chemical vapor deposited low-stress silicon nitride films. *Journal of Applied Physics*, **2003**, 94, 6915-6922	2.5	72
172	Comparison of nanoscale measurements of strain and stress using electron back scattered diffraction and confocal Raman microscopy. *Applied Physics Letters*, **2008**, 93, 193116	3.4	69
171	Simplified Area Function for Sharp Indenter Tips in Depth-sensing Indentation. *Journal of Materials Research*, **2002**, 17, 1143-1146	2.5	69
170	The effect of lateral crack growth on the strength of contact flaws in brittle materials. *Journal of Materials Research*, **1986**, 1, 589-600	2.5	69
169	Ultimate bending strength of Si nanowires. *Nano Letters*, **2012**, 12, 2599-604	11.5	68
168	Calcium Segregation to Grain Boundaries in Alumina. *Journal of the American Ceramic Society*, **1988**, 71, 50-58	3.8	68
167	Fracture strength of micro- and nano-scale silicon components. *Applied Physics Reviews*, **2015**, 2, 021303	17.3	66
166	Probing material properties with sharp indenters: a retrospective. *Journal of Materials Science*, **2012**, 47, 1-22	4.3	63
165	Elastic and adhesive properties of alkanethiol self-assembled monolayers on gold. *Applied Physics Letters*, **2009**, 94, 131909	3.4	62
164	Mapping the elastic properties of granular Au films by contact resonance atomic force microscopy. *Nanotechnology*, **2008**, 19, 235701	3.4	62
163	Lanthanide gallate perovskite-type substrates for epitaxial, high-Tc superconducting Ba2YCu3O7-□ films. *IBM Journal of Research and Development*, **1990**, 34, 916-926	2.5	61
162	Polymeric Organic□horganic Hybrid Nanocomposites:□Preparation of Polyimide-Modified Poly(silsesquioxane) Using Functionalized Poly(amic acid alkyl ester) Precursors. *Macromolecules*, **1997**, 30, 8512-8515	5.5	60
161	Stress hysteresis during thermal cycling of plasma-enhanced chemical vapor deposited silicon oxide films. *Journal of Applied Physics*, **2002**, 91, 1988-1992	2.5	59
160	The Compelling Case for Indentation as a Functional Exploratory and Characterization Tool. *Journal of the American Ceramic Society*, **2015**, 98, 2671-2680	3.8	58

159	Elastic moduli of faceted aluminum nitride nanotubes measured by contact resonance atomic force microscopy. *Nanotechnology*, **2009**, 20, 035706	3.4	58
158	Structural, Electrical, and Mechanical Properties Development during Curing of Low-k Hydrogen Silsesquioxane Films. *Journal of the Electrochemical Society*, **2002**, 149, F9	3.9	55
157	Fracture of ferroelectric ceramics. *Ferroelectrics*, **1983**, 50, 267-272	0.6	55
156	In situ observation of the indentation-induced phase transformation of silicon thin films. *Physical Review B*, **2012**, 85,	3.3	53
155	Sharp probes of varying acuity: Instrumented indentation and fracture behavior. *Journal of Materials Research*, **2004**, 19, 165-175	2.5	51
154	Massive stress changes in plasma-enhanced chemical vapor deposited silicon nitride films on thermal cycling. *Thin Solid Films*, **2004**, 460, 7-16	2.2	51
153	In Situ Cube-Corner Indentation of Soda□lime Glass and Fused Silica. *Journal of the American Ceramic Society*, **2004**, 87, 1494-1501	3.8	50
152	Microstructural Effects on Grinding of Alumina and Glass-Ceramics. *Journal of the American Ceramic Society*, **1987**, 70, C-139-C-140	3.8	50
151	Uniaxial and biaxial mechanical behavior of human amnion. *Journal of Materials Research*, **2005**, 20, 2902-2909	2.5	49
150	Nanoscale mapping of contact stiffness and damping by contact resonance atomic force microscopy. *Nanotechnology*, **2012**, 23, 215703	3.4	45
149	Mechanical failure of human fetal membrane tissues. *Journal of Materials Science: Materials in Medicine*, **2004**, 15, 651-8	4.5	45
148	Nanomechanical properties of thin films of type I collagen fibrils. *Langmuir*, **2010**, 26, 3629-36	4	42
147	Fracture Properties of Polycrystalline YBa2Cu3OX. *Advanced Ceramic Materials*, **1987**, 2, 606-614		41
146	Depth-sensing indentation at macroscopic dimensions. *Journal of Materials Research*, **2002**, 17, 2679-2690	2.5	40
145	Surface Stress Effects on Indentation Fracture Sequences. *Journal of the American Ceramic Society*, **1990**, 73, 2619-2627	3.8	40
144	Crack propagation thresholds: A measure of surface energy. *Journal of Materials Research*, **1986**, 1, 852-860	2.5	40
143	Effect of crystallographic orientation on phase transformations during indentation of silicon. *Journal of Materials Research*, **2009**, 24, 1172-1183	2.5	39
142	Force measurement using an ac atomic force microscope. *Journal of Applied Physics*, **1990**, 67, 4045-4052	2.5	37

141	Instrumentation of a conventional hardness tester for load-displacement measurement during indentation. *Journal of Materials Research*, **1990**, 5, 847-851	2.5	37
140	Compressive stress effect on the radial elastic modulus of oxidized Si nanowires. *Nano Letters*, **2010**, 10, 2031-7	11.5	36
139	Surface effects on the elastic modulus of Te nanowires. *Applied Physics Letters*, **2008**, 92, 241908	3.4	36
138	Depth-sensing indentation response of ordered silica foam. *Journal of Materials Research*, **2004**, 19, 260-271	2.5	36
137	Microstructure-Strength Properties in Ceramics: II, Fatigue Relations. *Journal of the American Ceramic Society*, **1985**, 68, 616-623	3.8	36
136	Indentation crack initiation in ion-exchanged aluminosilicate glass. *Journal of Materials Science*, **2004**, 39, 2399-2410	4.3	35
135	Four-point bend adhesion measurements of copper and permalloy systems. *Engineering Fracture Mechanics*, **2004**, 71, 245-261	4.2	35
134	Radial Fracture During Indentation by Acute Probes: I, Description by an Indentation Wedging Model. *International Journal of Fracture*, **2005**, 136, 237-264	2.3	35
133	Mechanical properties and structure of the biological multilayered material system, Atractosteus spatula scales. *Acta Biomaterialia*, **2013**, 9, 5289-96	10.8	34
132	Sigmoidal Indentation Strength Characteristics of Polycrystalline Alumina. *Journal of the American Ceramic Society*, **1994**, 77, 303-314	3.8	34
131	Organosilicate Spin-on Glasses. *Journal of the Electrochemical Society*, **2004**, 151, F37	3.9	33
130	Elastic modulus of low-k dielectric thin films measured by load-dependent contact-resonance atomic force microscopy. *Journal of Materials Research*, **2009**, 24, 2960-2964	2.5	32
129	Origin of adhesion in humid air. *Langmuir*, **2008**, 24, 1873-7	4	32
128	Indentation responses of time-dependent films on stiff substrates. *Journal of Materials Research*, **2004**, 19, 2487-2497	2.5	32
127	Stress hysteresis and mechanical properties of plasma-enhanced chemical vapor deposited dielectric films. *Journal of Applied Physics*, **2004**, 95, 967-976	2.5	32
126	Phase-Separated Inorganic-Organic Hybrids for Microelectronic Applications. *MRS Bulletin*, **1997**, 22, 44-48	3.2	32
125	Direct observation of phase transformation anisotropy in indented silicon studied by confocal Raman spectroscopy. *Physical Review B*, **2011**, 83,	3.3	30
124	Uniaxial stress-relaxation and stress-strain responses of human amnion. *Journal of Materials Science: Materials in Medicine*, **2004**, 15, 619-24	4.5	30

123	Rapid measurement of static and dynamic surface forces. *Applied Physics Letters*, **1990**, 56, 2408-2410	3.4	29
122	. *Journal of Microelectromechanical Systems*, **2013**, 22, 589-602	2.5	28
121	High resolution surface morphology measurements using EBSD cross-correlation techniques and AFM. *Ultramicroscopy*, **2011**, 111, 1206-13	3.1	27
120	Lateral Cracks and Microstructural Effects in the Indentation Fracture of Yttria. *Journal of the American Ceramic Society*, **1990**, 73, 1873-1878	3.8	27
119	Nanoindentation behavior and mechanical properties measurement of polymeric materials. *International Journal of Materials Research*, **2007**, 98, 370-378	0.5	26
118	Radial Fracture During Indentation by Acute Probes: II, Experimental Observations of Cube-corner and Vickers Indentation. *International Journal of Fracture*, **2005**, 136, 265-284	2.3	26
117	Stress development kinetics in plasma-enhanced chemical-vapor-deposited silicon nitride films. *Journal of Applied Physics*, **2005**, 97, 114914	2.5	26
116	Mechanical measurements of heterogeneity and length scale effects in PEG-based hydrogels. *Soft Matter*, **2015**, 11, 7191-200	3.6	25
115	Bending manipulation and measurements of fracture strength of silicon and oxidized silicon nanowires by atomic force microscopy. *Journal of Materials Research*, **2012**, 27, 562-570	2.5	25
114	Strength distribution of single-crystal silicon theta-like specimens. *Scripta Materialia*, **2010**, 63, 422-425	5.6	25
113	Measurement of residual stress field anisotropy at indentations in silicon. *Scripta Materialia*, **2010**, 63, 512-515	5.6	24
112	Mechanical and thermal properties of physical vapour deposited alumina films Part II Elastic, plastic, fracture, and adhesive behaviour. *Journal of Materials Science*, **2004**, 39, 4809-4819	4.3	24
111	Technique for estimating fracture resistance of cultured neocartilage. *Journal of Materials Science: Materials in Medicine*, **2001**, 12, 327-32	4.5	24
110	Trapped cracks at indentations. *Journal of Materials Science*, **1994**, 29, 2133-2142	4.3	24
109	Deformation and fracture of single-crystal silicon theta-like specimens. *Journal of Materials Research*, **2011**, 26, 2575-2589	2.5	23
108	Mechanism of nanoparticle manipulation by scanning tunnelling microscopy. *Nanotechnology*, **2006**, 17, 5519-5524	3.4	23
107	Microstructure and the Strength of Ceramics **1986**, 23-37		23
106	Mechanisms Active during Fracture under Constraint. *MRS Bulletin*, **2002**, 27, 45-51	3.2	22

105	Porous Organosilicates for On-Chip Dielectric Applications. *Materials Research Society Symposia Proceedings*, **1999**, 565, 3		22
104	Designing a standard for strain mapping: HR-EBSD analysis of SiGe thin film structures on Si. *Ultramicroscopy*, **2015**, 148, 94-104	3.1	20
103	Critique of materials-based models of ductile machining in brittle solids. *Journal of the American Ceramic Society*, **2020**, 103, 6096-6100	3.8	20
102	Surface-engineered nanomaterials as X-ray absorbing adjuvant agents for Auger-mediated chemo-radiation. *Nanoscale*, **2013**, 5, 5252-6	7.7	20
101	Elastic, adhesive, and charge transport properties of a metal-molecule-metal junction: the role of molecular orientation, order, and coverage. *Langmuir*, **2010**, 26, 1688-99	4	20
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99	Indentation device for in situ Raman spectroscopic and optical studies. *Review of Scientific Instruments*, **2012**, 83, 125106	1.7	19
98	Dynamic fatigue of brittle materials containing indentation line flaws. *Journal of Materials Science*, **1983**, 18, 1306-1314	4.3	19
97	Nanomechanical properties of polyethylene glycol brushes on gold substrates. *Journal of Physical Chemistry B*, **2012**, 116, 3138-47	3.4	18
96	Influence of crack velocity thresholds on stabilized nonequilibrium fracture. *Journal of Applied Physics*, **1989**, 65, 1902-1910	2.5	18
95	Stress-corrosion cracking in silicon. *Applied Physics Letters*, **1990**, 56, 1962-1964	3.4	18
94	spectroscopic study of the plastic deformation of amorphous silicon under non-hydrostatic conditions induced by indentation. *Physical Review B*, **2015**, 92,	3.3	17
93	Materials science. Probing the nanoscale. *Science*, **2010**, 328, 183-4	33.3	17
92	Indentation fracture of low-dielectric constant films: Part I. Experiments and observations. *Journal of Materials Research*, **2008**, 23, 2429-2442	2.5	17
91	In situ observation of the spatial distribution of crystalline phases during pressure-induced transformations of indented silicon thin films. *Journal of Materials Research*, **2015**, 30, 390-406	2.5	16
90	Stress mapping of micromachined polycrystalline silicon devices via confocal Raman microscopy. *Applied Physics Letters*, **2014**, 104, 191908	3.4	16
89	Multi-Scale Effects in the Strength of Ceramics. *Journal of the American Ceramic Society*, **2015**, 98, 2933-2947	3.8	16
88	Contact-resonance atomic force microscopy for nanoscale elastic property measurements: Spectroscopy and imaging. *Ultramicroscopy*, **2009**, 109, 929-36	3.1	16

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86	Assessing strain mapping by electron backscatter diffraction and confocal Raman microscopy using wedge-indented Si. *Ultramicroscopy*, **2016**, 163, 75-86	3.1	16
85	Orientation, stress, and strain in an (001) barium titanate single crystal with 90° lamellar domains determined using electron backscatter diffraction. *Journal of Materials Science*, **2014**, 49, 2213-2224	4.3	15
84	Toughness-Curve Behavior of an Alumina-Mullite Composite. *Journal of the American Ceramic Society*, **2005**, 81, 2613-2623	3.8	15
83	Rheological and mechanical behavior of blends of styrene-butadiene rubber with polypropylene. *Polymer Engineering and Science*, **2005**, 45, 1487-1497	2.3	15
82	Micro-scale measurement and modeling of stress in silicon surrounding a tungsten-filled through-silicon via. *Journal of Applied Physics*, **2011**, 110, 073517	2.5	14
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78	Trapped cracks at indentations. *Journal of Materials Science*, **1994**, 29, 2192-2204	4.3	13
77	Mapping Viscoelastic and Plastic Properties of Polymers and Polymer-Nanotube Composites using Instrumented Indentation. *Journal of Materials Research*, **2016**, 31, 2347-2360	2.5	12
76	Mechanical Properties of Low Dielectric-Constant Organic-Inorganic Hybrids. *Materials Research Society Symposia Proceedings*, **1999**, 576, 301		12
75	Fracture mechanics of sharp scratch strength of polycrystalline alumina. *Journal of the American Ceramic Society*, **2017**, 100, 1146-1160	3.8	11
74	Indentation-induced deformation at ultramicroscopic and macroscopic contacts. *Journal of Materials Research*, **2004**, 19, 124-130	2.5	11
73	Toughening of an Alumina/Mullite Composite by Unbroken Bridging Elements. *Journal of the American Ceramic Society*, **2004**, 83, 833-840	3.8	11
72	Deformation and Fracture by Sharp Rolling Contacts. *Journal of the American Ceramic Society*, **1994**, 77, 1263-1273	3.8	11
71	Determination of Residual Stress Distributions in Polycrystalline Alumina using Fluorescence Microscopy. *Materials and Design*, **2016**, 107, 478-490	8.1	11
70	Quantitative Mapping of Stress Heterogeneity in Polycrystalline Alumina using Hyperspectral Fluorescence Microscopy. *Acta Materialia*, **2016**, 106, 272-282	8.4	10

69	Toughening of a Cordierite Glass□Ceramic by Compressive Surface Layers. *Journal of the American Ceramic Society*, **2005**, 88, 2798-2808	3.8	10
68	Predicting strength distributions of MEMS structures using flaw size and spatial density. *Microsystems and Nanoengineering*, **2019**, 5, 49	7.7	10
67	Material Flaw Populations and Component Strength Distributions in the Context of the Weibull Function. *Experimental Mechanics*, **2019**, 59, 279	2.6	10
66	Accurate spring constant calibration for very stiff atomic force microscopy cantilevers. *Review of Scientific Instruments*, **2013**, 84, 113706	1.7	9
65	. *Journal of Microelectromechanical Systems*, **2013**, 22, 34-43	2.5	9
64	Mechanical and electrical coupling at metal-insulator-metal nanoscale contacts. *Applied Physics Letters*, **2008**, 93, 203102	3.4	9
63	Effective-medium theory for the fracture of fractal porous media. *Physical Review B*, **1989**, 39, 2811-2814	3.3	9
62	Fracture sequences during elastic□plastic indentation of brittle materials. *Journal of Materials Research*, **2019**, 34, 1633-1644	2.5	8
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60	Prototype cantilevers for quantitative lateral force microscopy. *Review of Scientific Instruments*, **2011**, 82, 093706	1.7	8
59	Near-theoretical fracture strengths in native and oxidized silicon nanowires. *Nanotechnology*, **2016**, 27, 31LT02	3.4	8
58	In situ observations of Berkovich indentation induced phase transitions in crystalline silicon films. *Scripta Materialia*, **2016**, 120, 19-22	5.6	7
57	Development of a precision nanoindentation platform. *Review of Scientific Instruments*, **2013**, 84, 075110	1.7	7
56	Strength of brittle materials in moderately corrosive environments. *Journal of the American Ceramic Society*, **2018**, 101, 1684-1695	3.8	7
55	Structure□property relationships for methyl-terminated alkyl self-assembled monolayers. *Chemical Physics Letters*, **2011**, 512, 243-246	2.5	6
54	Indentation Fracture Toughness Measurements of Low Dielectric Constant Materials. *Materials Research Society Symposia Proceedings*, **2003**, 766, 931		6
53	Mechanical and thermal properties of physical vapour deposited alumina films Part I Thermal stability. *Journal of Materials Science*, **2004**, 39, 4799-4807	4.3	6
52	Stress-Corrosion Cracking of Spin-On Glass Thin Films. *Materials Research Society Symposia Proceedings*, **1998**, 511, 171		6

51	Reply to Comment on Role of Grain Size in the Strength and R-Curve Properties of Alumina *Journal of the American Ceramic Society*, **1993**, 76, 1900-1901	3.8	6
50	Two-dimensional strain-mapping by electron backscatter diffraction and confocal Raman spectroscopy. *Journal of Applied Physics*, **2017**, 122, 205101	2.5	5
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48	Stress stability and thermo-mechanical properties of reactively sputtered alumina films. *Journal of Materials Science*, **2005**, 40, 6345-6355	4.3	5
47	Chemical vapor deposition of an aluminum nitride diamond composite in a triple torch plasma reactor. *Journal of Materials Research*, **2001**, 16, 469-477	2.5	5
46	Effects of Curing Temperature on the Mechanical Reliability of Low Dielectric-Constant Spin-on-Glasses. *Materials Research Society Symposia Proceedings*, **2000**, 612, 541		5
45	Alumina Agglomerate Effects on Toughness-Curve Behavior of Alumina Mullite Composites. *Journal of the American Ceramic Society*, **2000**, 83, 3089-3094	3.8	5
44	Cone Crack Nucleation at Sharp Contacts. *Journal of the American Ceramic Society*, **1992**, 75, 2877-2880	3.8	5
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42	A critical evaluation of indentation crack lengths in air. *Journal of the American Ceramic Society*, **2020**, 103, 2278-2295	3.8	4
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39	Decoupling small-scale roughness and long-range features on deep reactive ion etched silicon surfaces. *Journal of Applied Physics*, **2013**, 114, 113506	2.5	4
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34	Advances in metrology for the determination of Young's modulus for low-k dielectric thin films **2012**,		3

33	Stress Stability of PECVD Silicon Nitride Films During Device Fabrication. *Materials Research Society Symposia Proceedings*, **2003**, 766, 631		3
32	Effect of storage in aqueous environments on polymer–metal interfacial fracture. *Journal of Materials Research*, **2004**, 19, 557-567	2.5	3
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30	Residual stress in polycrystalline alumina: Comparison of two-dimensional maps and integrated scans in fluorescence-based measurements. *Acta Materialia*, **2018**, 159, 309-319	8.4	2
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24	In situ Analysis of Materials Under Mechanical Stress: A Novel Instrument for Simultaneous Nanoindentation and Raman Spectroscopy **2013**,		2
23	Mechanical Properties of One-Dimensional Nanostructures. *Nanoscience and Technology*, **2010**, 571-611	0.6	2
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21	On the failure and fracture of hydrogels for cartilage replacement. *JPhys Materials*, **2021**, 4, 021001	4.2	2
20	A simple method of short-term mechanical reliability prediction for ceramics in reactive environments. *Journal of the American Ceramic Society*, **2018**, 101, 2727-2731	3.8	1
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