Brian R Lawn

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.

138 papers	12,378 citations	57 h-index	110 g-index
140 ext. papers	13,290 ext. citations	4.3 avg, IF	6.6 L-index

#	Paper	IF	Citations
138	THRESHOLD DAMAGE MECHANISMS IN BRITTLE SOLIDS AND THEIR IMPACT ON ADVANCED TECHNOLOGIES. *Acta Materialia*, **2022**, 117921	8.4	2
137	Micromechanics of Machining and Wear in Hard and Brittle Materials. *Journal of the American Ceramic Society*, **2021**, 104, 5-22	3.8	31
136	Science and art of ductile grinding of brittle solids. *International Journal of Machine Tools and Manufacture*, **2021**, 161, 103675	9.4	39
135	Precipitous weakening of quartz at the ▥phase inversion. *Journal of the American Ceramic Society*, **2021**, 104, 23-26	3.8	2
134	Chipping: a pervasive presence in nature, science and technology. *Journal of Materials Science*, **2021** , 56, 8396-8405	4.3	1
133	Fundamental mechanics of tooth fracture and wear: implications for humans and other primates.. *Interface Focus*, **2021**, 11, 20200070	3.9	2
132	Critique of materials-based models of ductile machining in brittle solids. *Journal of the American Ceramic Society*, **2020**, 103, 6096-6100	3.8	20
131	Phytoliths can cause tooth wear. *Journal of the Royal Society Interface*, **2020**, 17, 20200613	4.1	7
130	On the vital role of enamel prism interfaces and graded properties in human tooth survival. *Biology Letters*, **2020**, 16, 20200498	3.6	2
129	Inverse correlations between wear and mechanical properties in biphasic dental materials with ceramic constituents. *Journal of the Mechanical Behavior of Biomedical Materials*, **2020**, 105, 103722	4.1	5
128	Evaluating dental zirconia. *Dental Materials*, **2019**, 35, 15-23	5.7	47
127	Wear of ceramic-based dental materials. *Journal of the Mechanical Behavior of Biomedical Materials*, **2019**, 92, 144-151	4.1	37
126	Role of particulate concentration in tooth wear. *Journal of the Mechanical Behavior of Biomedical Materials*, **2018**, 80, 77-80	4.1	17
125	Mechanisms of tooth damage and Paranthropus dietary reconstruction. *Biosurface and Biotribology*, **2018**, 4, 73-78	1	6
124	On the evolutionary advantage of multi-cusped teeth. *Journal of the Royal Society Interface*, **2016**, 13,	4.1	11
123	Fracture-resistant monolithic dental crowns. *Dental Materials*, **2016**, 32, 442-9	5.7	58
122	Simulation of enamel wear for reconstruction of diet and feeding behavior in fossil animals: A micromechanics approach. *BioEssays*, **2016**, 38, 89-99	4.1	22

121	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
120	Mechanics of microwear traces in tooth enamel. *Acta Biomaterialia*, **2015**, 14, 146-53	10.8	42
119	Mechanics analysis of molar tooth splitting. *Acta Biomaterialia*, **2015**, 15, 237-43	10.8	20
118	A model for predicting wear rates in tooth enamel. *Journal of the Mechanical Behavior of Biomedical Materials*, **2014**, 37, 226-34	4.1	35
117	Role of multiple cusps in tooth fracture. *Journal of the Mechanical Behavior of Biomedical Materials*, **2014**, 35, 85-92	4.1	9
116	Edge chipping and flexural resistance of monolithic ceramics. *Dental Materials*, **2013**, 29, 1201-8	5.7	146
115	Transverse fracture of canine teeth. *Journal of Biomechanics*, **2013**, 46, 1561-7	2.9	15
114	Inferring biological evolution from fracture patterns in teeth. *Journal of Theoretical Biology*, **2013**, 338, 59-65	2.3	27
113	Fatigue of dental ceramics. *Journal of Dentistry*, **2013**, 41, 1135-47	4.8	161
112	Fracture susceptibility of worn teeth. *Journal of the Mechanical Behavior of Biomedical Materials*, **2012**, 5, 247-56	4.1	21
111	Role of tooth elongation in promoting fracture resistance. *Journal of the Mechanical Behavior of Biomedical Materials*, **2012**, 8, 37-46	4.1	21
110	Probing material properties with sharp indenters: a retrospective. *Journal of Materials Science*, **2012**, 47, 1-22	4.3	63
109	Effect of property gradients on enamel fracture in human molar teeth. *Journal of the Mechanical Behavior of Biomedical Materials*, **2012**, 15, 121-30	4.1	37
108	Fracture in teeth: a diagnostic for inferring bite force and tooth function. *Biological Reviews*, **2011**, 86, 959-74	13.5	54
107	On the chipping and splitting of teeth. *Journal of the Mechanical Behavior of Biomedical Materials*, **2011**, 4, 315-21	4.1	58
106	Tooth chipping can reveal the diet and bite forces of fossil hominins. *Biology Letters*, **2010**, 6, 826-9	3.6	91
105	Teeth: Among Nature's Most Durable Biocomposites. *Annual Review of Materials Research*, **2010**, 40, 55-75	12.8	76
104	Properties of tooth enamel in great apes. *Acta Biomaterialia*, **2010**, 6, 4560-5	10.8	48

103	Remarkable resilience of teeth. *Proceedings of the National Academy of Sciences of the United States of America*, **2009**, 106, 7289-93	11.5	172
102	Morphology and fracture of enamel. *Journal of Biomechanics*, **2009**, 42, 1947-51	2.9	36
101	Predicting failure in mammalian enamel. *Journal of the Mechanical Behavior of Biomedical Materials*, **2009**, 2, 33-42	4.1	54
100	Analysis of fracture and deformation modes in teeth subjected to occlusal loading. *Acta Biomaterialia*, **2009**, 5, 2213-21	10.8	82
99	Contact fatigue of silicon. *Journal of Materials Research*, **2008**, 23, 1175-1184	2.5	5
98	Dental enamel as a dietary indicator in mammals. *BioEssays*, **2008**, 30, 374-85	4.1	219
97	Margin failures in brittle dome structures: relevance to failure of dental crowns. *Journal of Biomedical Materials Research - Part B Applied Biomaterials*, **2007**, 80, 78-85	3.5	55
96	A universal relation for edge chipping from sharp contacts in brittle materials: A simple means of toughness evaluation. *Acta Materialia*, **2007**, 55, 2555-2561	8.4	106
95	Application of Hertzian Tests to Measure Stress□Strain Characteristics of Ceramics at Elevated Temperatures. *Journal of the American Ceramic Society*, **2007**, 90, 149-153	3.8	23
94	Failure Modes in Ceramic-Based Layer Structures: A Basis for Materials Design of Dental Crowns. *Journal of the American Ceramic Society*, **2007**, 90, 1671-1683	3.8	64
93	Fatigue Damage in Ceramic Coatings From Cyclic Contact Loading With a Tangential Component. *Journal of the American Ceramic Society*, **2007**, 91, 071106232502001-???	3.8	1
92	Edge chipping of brittle materials: effect of side-wall inclination and loading angle. *International Journal of Fracture*, **2007**, 145, 159-165	2.3	39
91	Transverse fracture of brittle bilayers: relevance to failure of all-ceramic dental crowns. *Journal of Biomedical Materials Research - Part B Applied Biomaterials*, **2006**, 79, 58-65	3.5	49
90	Competing fracture modes in brittle materials subject to concentrated cyclic loading in liquid environments: Trilayer structures. *Journal of Materials Research*, **2006**, 21, 512-521	2.5	37
89	Study of Microstructural Effects in the Strength of Alumina Using Controlled Flaws. *Journal of the American Ceramic Society*, **2006**, 67, c67-c69	3.8	17
88	Hydraulically pumped cone fracture in brittle solids. *Acta Materialia*, **2005**, 53, 4237-4244	8.4	25
87	Crack Suppression in Strongly Bonded Homogeneous/Heterogeneous Laminates: A Study on Glass/Glass-Ceramic Bilayers. *Journal of the American Ceramic Society*, **2005**, 79, 634-640	3.8	67
86	Stress Analysis of Elastic-Plastic Contact Damage in Ceramic Coatings on Metal Substrates. *Journal of the American Ceramic Society*, **2005**, 79, 2619-2625	3.8	57

85	Hertzian Contact Damage in Porous Alumina Ceramics. *Journal of the American Ceramic Society*, **2005**, 80, 1027-1031	3.8	47
84	Role of Microstructure in Hertzian Contact Damage in Silicon Nitride: I, Mechanical Characterization. *Journal of the American Ceramic Society*, **2005**, 80, 2367-2381	3.8	80
83	Contact Damage Accumulation in Tic3SiC2. *Journal of the American Ceramic Society*, **2005**, 81, 225-228	3.8	134
82	Contact-Induced Transverse Fractures in Brittle Layers on Soft Substrates: A Study on Silicon Nitride Bilayers. *Journal of the American Ceramic Society*, **2005**, 81, 571-580	3.8	64
81	Role of Microstructure in Hertzian Contact Damage in Silicon Nitride: II, Strength Degradation. *Journal of the American Ceramic Society*, **2005**, 81, 997-1003	3.8	23
80	Effect of Starting Powder on Damage Resistance of Silicon Nitrides. *Journal of the American Ceramic Society*, **2005**, 81, 2061-2070	3.8	22
79	Contact Damage and Strength Degradation in Brittle/Quasi-Plastic Silicon Nitride Bilayers. *Journal of the American Ceramic Society*, **2005**, 81, 2394-2404	3.8	36
78	Stress Analysis of Contact Deformation in Quasi-Plastic Ceramics. *Journal of the American Ceramic Society*, **2005**, 79, 2609-2618	3.8	83
77	Model of Strength Degradation from Hertzian Contact Damage in Tough Ceramics. *Journal of the American Ceramic Society*, **2005**, 81, 1509-1520	3.8	51
76	Indentation of Ceramics with Spheres: A Century after Hertz. *Journal of the American Ceramic Society*, **2005**, 81, 1977-1994	3.8	498
75	Contact damage in brittle coating layers: influence of surface curvature. *Journal of Biomedical Materials Research - Part B Applied Biomaterials*, **2005**, 73, 179-85	3.5	69
74	Deep-penetrating conical cracks in brittle layers from hydraulic cyclic contact. *Journal of Biomedical Materials Research - Part B Applied Biomaterials*, **2005**, 73, 186-93	3.5	63
73	Failure of curved brittle layer systems from radial cracking in concentrated surface loading. *Journal of Materials Research*, **2005**, 20, 2812-2819	2.5	42
72	Competing fracture modes in brittle materials subject to concentrated cyclic loading in liquid environments: Monoliths. *Journal of Materials Research*, **2005**, 20, 2021-2029	2.5	42
71	Competing fracture modes in brittle materials subject to concentrated cyclic loading in liquid environments: Bilayer structures. *Journal of Materials Research*, **2005**, 20, 2792-2800	2.5	41
70	Effect of oxide and nitride films on strength of silicon: A study using controlled small-scale flaws. *Journal of Materials Research*, **2004**, 19, 3569-3575	2.5	10
69	Fracture and deformation in brittle solids: A perspective on the issue of scale. *Journal of Materials Research*, **2004**, 19, 22-29	2.5	72
68	Strength of silicon containing nanoscale flaws. *Journal of Materials Research*, **2004**, 19, 657-660	2.5	11

67	Evaluation of elastic modulus and hardness of thin films by nanoindentation. *Journal of Materials Research*, **2004**, 19, 3076-3080	2.5	181
66	Contact Fatigue in Silicon Nitride. *Journal of the American Ceramic Society*, **2004**, 82, 1281-1288	3.8	29
65	Scratch Damage in Zirconia Ceramics. *Journal of the American Ceramic Society*, **2004**, 83, 1428-1432	3.8	10
64	Model for Cyclic Fatigue of Quasi-Plastic Ceramics in Contact with Spheres. *Journal of the American Ceramic Society*, **2004**, 83, 2255-2262	3.8	37
63	Effect of Flaw State on the Strength of Brittle Coatings on Soft Substrates. *Journal of the American Ceramic Society*, **2004**, 84, 2377-2384	3.8	55
62	Thermal Shock Resistance of Silicon Nitrides Using an Indentation Quench Test. *Journal of the American Ceramic Society*, **2004**, 85, 279-281	3.8	22
61	Long-term strength of ceramics for biomedical applications. *Journal of Biomedical Materials Research Part B*, **2004**, 69, 166-72		60
60	Effect of sandblasting on the long-term performance of dental ceramics. *Journal of Biomedical Materials Research Part B*, **2004**, 71, 381-6		317
59	Materials design in the performance of all-ceramic crowns. *Biomaterials*, **2004**, 25, 2885-92	15.6	176
58	Crack opening profiles of indentation cracks in normal and anomalous glasses. *Acta Materialia*, **2004**, 52, 293-297	8.4	69
57	Strength of silicon, sapphire and glass in the subthreshold flaw region. *Acta Materialia*, **2004**, 52, 3459-3466	8.4	27
56	Fracture and deformation in brittle solids: A perspective on the issue of scale **2004**, 19, 22		1
55	Effect of an adhesive interlayer on the fracture of a brittle coating on a supporting substrate. *Journal of Materials Research*, **2003**, 18, 222-227	2.5	48
54	Rate Effects in Critical Loads for Radial Cracking in Ceramic Coatings. *Journal of the American Ceramic Society*, **2002**, 85, 2019-2024	3.8	67
53	Cracking in Ceramic/metal/polymer Trilayer Systems. *Journal of Materials Research*, **2002**, 17, 1102-1111	2.5	23
52	Overview: Damage in brittle layer structures from concentrated loads. *Journal of Materials Research*, **2002**, 17, 3019-3036	2.5	149
51	Brittle Fracture versus Quasi Plasticity in Ceramics: A Simple Predictive Index. *Journal of the American Ceramic Society*, **2001**, 84, 561-565	3.8	124
50	Contact-induced Damage in Ceramic Coatings on Compliant Substrates: Fracture Mechanics and Design. *Journal of the American Ceramic Society*, **2001**, 84, 1066-1072	3.8	96

49	Effect of Tangential Loading on Critical Conditions for Radial Cracking in Brittle Coatings. *Journal of the American Ceramic Society*, **2001**, 84, 2719-2721	3.8	22
48	Contact fracture of brittle bilayer coatings on soft substrates. *Journal of Materials Research*, **2001**, 16, 115-126	2.5	54
47	Role of Microstructure in Dynamic Fatigue of Glass-Ceramics after Contact with Spheres. *Journal of the American Ceramic Society*, **2000**, 83, 1545-1547	3.8	12
46	Contact damage in porcelain/Pd-alloy bilayers. *Journal of Materials Research*, **2000**, 15, 676-682	2.5	33
45	Cracking of brittle coatings adhesively bonded to substrates of unlike modulus. *Journal of Materials Research*, **2000**, 15, 1653-1656	2.5	21
44	Role of adhesive interlayer in transverse fracture of brittle layer structures. *Journal of Materials Research*, **2000**, 15, 1017-1024	2.5	49
43	Fracture modes in brittle coatings with large interlayer modulus mismatch. *Journal of Materials Research*, **1999**, 14, 3805-3817	2.5	159
42	Nonlinear stress-strain curves for solids containing closed cracks with friction. *Journal of the Mechanics and Physics of Solids*, **1998**, 46, 85-113	5	70
41	Role of microstructure on contact damage and strength degradation of micaceous glass-ceramics. *Dental Materials*, **1998**, 14, 80-9	5.7	93
40	Effect of mechanical damage on thermal conduction of plasma-sprayed coatings. *Journal of Materials Research*, **1996**, 11, 1329-1332	2.5	10
39	Damage-resistant alumina-based layer composites. *Journal of Materials Research*, **1996**, 11, 204-210	2.5	97
38	Mechanical characterization of plasma sprayed ceramic coatings on metal substrates by contact testing. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **1996**, 208, 158-165	5.3	73
37	Contact Damage in Plasma-Sprayed Alumina-Based Coatings. *Journal of the American Ceramic Society*, **1996**, 79, 1907-1914	3.8	51
36	Hertzian Contact Response of Tailored Silicon Nitride Multilayers. *Journal of the American Ceramic Society*, **1996**, 79, 1009-1014	3.8	56
35	Thermal wave analysis of contact damage in ceramics: Case study on alumina. *Journal of Materials Research*, **1996**, 11, 939-947	2.5	11
34	Enhanced Machinability of Silicon Carbide via Microstructural Design. *Journal of the American Ceramic Society*, **1995**, 78, 215-217	3.8	62
33	Hertzian Contact Damage in Magnesia-Partially-Stabilized Zirconia. *Journal of the American Ceramic Society*, **1995**, 78, 1083-1086	3.8	31
32	Contact Fatigue of a Silicon Carbide with a Heterogeneous Grain Structure. *Journal of the American Ceramic Society*, **1995**, 78, 1431-1438	3.8	86

31	In Situ Processing of Silicon Carbide Layer Structures. *Journal of the American Ceramic Society*, **1995**, 78, 3160-3162	3.8	26
30	Damage accumulation and cyclic fatigue in Mg-PSZ at Hertzian contacts. *Journal of Materials Research*, **1995**, 10, 2613-2625	2.5	33
29	Fatigue in ceramics with interconnecting weak interfaces: A study using cyclic Hertzian contacts. *Acta Metallurgica Et Materialia*, **1995**, 43, 1609-1617		49
28	Deformation and fracture of mica-containing glass-ceramics in Hertzian contacts. *Journal of Materials Research*, **1994**, 9, 762-770	2.5	168
27	Cyclic fatigue of a mica-containing glass-ceramic at Hertzian contacts. *Journal of Materials Research*, **1994**, 9, 2654-2661	2.5	65
26	Toughness Properties of a Silicon Carbide with an in Situ Induced Heterogeneous Grain Structure. *Journal of the American Ceramic Society*, **1994**, 77, 2518-2522	3.8	231
25	Effect of Grain Size on Hertzian Contact Damage in Alumina. *Journal of the American Ceramic Society*, **1994**, 77, 1825-1831	3.8	206
24	Indentation fatigue. *Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties*, **1993**, 68, 1003-1016		141
23	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
22	Model for Toughness Curves in Two-Phase Ceramics: I, Basic Fracture Mechanics. *Journal of the American Ceramic Society*, **1993**, 76, 2235-2240	3.8	61
21	Model for Toughness Curves in Two-Phase Ceramics: II, Microstructural Variables. *Journal of the American Ceramic Society*, **1993**, 76, 2241-2247	3.8	55
20	Fracture of Brittle Solids **1993**,		1669
19	Objective Evaluation of Short-Crack Toughness Curves Using Indentation Flaws: Case Study on Alumina-Based Ceramics. *Journal of the American Ceramic Society*, **1992**, 75, 3049-3057	3.8	127
18	Role of Grain Size in the Strength and R-Curve Properties of Alumina. *Journal of the American Ceramic Society*, **1990**, 73, 2419-2427	3.8	280
17	Grain-Size and R-Curve Effects in the Abrasive Wear of Alumina. *Journal of the American Ceramic Society*, **1989**, 72, 1249-1252	3.8	242
16	Indentation Deformation and Fracture of Sapphire. *Journal of the American Ceramic Society*, **1988**, 71, 29-35	3.8	70
15	Thresholds and reversibility in brittle cracks: An atomistic surface force model. *Journal of Materials Science*, **1987**, 22, 4036-4050	4.3	35
14	Crack-Interface Grain Bridging as a Fracture Resistance I, Mechanism in Ceramics: I, Experimental Study on Alumina. *Journal of the American Ceramic Society*, **1987**, 70, 279-289	3.8	471

13	Crack-Interface Grain Bridging as a Fracture Resistance Mechanism in Ceramics: II, Theoretical Fracture Mechanics Model. *Journal of the American Ceramic Society*, **1987**, 70, 289-294	3.8	331
12	Microstructural Effects on Grinding of Alumina and Glass-Ceramics. *Journal of the American Ceramic Society*, **1987**, 70, C-139-C-140	3.8	50
11	High-Pressure Transformation Toughening: A Case Study on Zirconia. *Journal of the American Ceramic Society*, **1986**, 69, C-125-C-126	3.8	7
10	Crack Stability and Toughness Characteristics in Brittle Materials. *Annual Review of Materials Research*, **1986**, 16, 415-439		97
9	Sharp vs Blunt Crack Hypotheses in the Strength of Glass: A Critical Study Using Indentation Flaws. *Journal of the American Ceramic Society*, **1985**, 68, 25-34	3.8	93
8	Strength and Fatigue Properties of Optical Glass Fibers Containing Microindentation Flaws. *Journal of the American Ceramic Society*, **1985**, 68, 563-569	3.8	47
7	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
6	Interfacial forces and the fundamental nature of brittle cracks. *Applied Physics Letters*, **1985**, 47, 809-811	3.4	28
5	Theory of Fatigue for Brittle Flaws Originating from Residual Stress Concentrations. *Journal of the American Ceramic Society*, **1983**, 66, 314-321	3.8	86
4	A Modified Indentation Toughness Technique. *Journal of the American Ceramic Society*, **1983**, 66, c200-c202	3.8	155
3	The Indentation Crack as a Model Surface Flaw **1983**, 1-25		22
2	Indentation fracture: principles and applications. *Journal of Materials Science*, **1975**, 10, 1049-1081	4.3	1040
1	Short-Crack T-Curves and Damage Tolerance in Alumina-Based Composites. *Ceramic Engineering and Science Proceedings*,156-163	0.1	1