Carol A Handwerker

List of Publications by Year
in descending order

83 papers	2,727 citations	218677 26 h-index	182427 51 g-index
91 all docs	91 docs citations	91 times ranked	2174 citing authors

#	Article	IF	Citations
1	Overview No. 98 Iâ€"Geometric models of crystal growth. Acta Metallurgica Et Materialia, 1992, 40, 1443-1474.	1.8	283
2	Integrated Sustainable Life Cycle Design: A Review. Journal of Mechanical Design, Transactions of the ASME, 2010, 132, .	2.9	253
3	Effects of Chemical Inhomogeneities on Grain Growth and Microstructure in Al2O3. Journal of the American Ceramic Society, 1989, 72, 130-136.	3.8	188
4	Effect of a Liquid Phase on the Morphology of Grain Growth in Alumina. Journal of the American Ceramic Society, 1987, 70, 339-343.	3.8	186
5	Equilibrium Shape of Internal Cavities in Sapphire. Journal of the American Ceramic Society, 1997, 80, 62-68.	3.8	137
6	Dihedral Angles in Magnesia and Alumina: Distributions from Surface Thermal Grooves. Journal of the American Ceramic Society, 1990, 73, 1371-1377.	3.8	114
7	Intrinsic and Interdiffusion in Cu-Sn System. Journal of Phase Equilibria and Diffusion, 2011, 32, 309-319.	1.4	93
8	Stability and Surface Energies of Wetted Grain Boundaries in Aluminum Oxide. Journal of the American Ceramic Society, 1994, 77, 444-453.	3.8	81
9	A Versatile Solution Route to Efficient Cu₂ZnSn(S,Se)₄ Thin-Film Solar Cells. Chemistry of Materials, 2015, 27, 2114-2120.	6.7	80
10	Whisker and hillock growth via coupled localized Coble creep, grain boundary sliding, and shear induced grain boundary migration. Acta Materialia, 2013, 61, 1991-2003.	7.9	74
11	Fabrication of conductive interconnects by Ag migration in Cuâ€"Ag core-shell nanoparticles. Applied Physics Letters, 2010, 96, .	3.3	68
12	The effect of Pb contamination on the solidification behavior of Sn-Bi solders. Journal of Electronic Materials, 2001, 30, 45-52.	2.2	67
13	Metalâ€"metal chalcogenide molecular precursors to binary, ternary, and quaternary metal chalcogenide thin films for electronic devices. Chemical Communications, 2016, 52, 5007-5010.	4.1	59
14	The equilibrium crystal shape of strontium titanate and its relationship to the grain boundary plane distribution. Acta Materialia, 2015, 82, 32-40.	7.9	54
15	Kesterite Cu₂ZnSn(S,Se)₄ Absorbers Converted from Metastable, Wurtzite-Derived Cu₂ZnSnS₄ Nanoparticles. Chemistry of Materials, 2014, 26, 3530-3534.	6.7	53
16	Singular Grain Boundaries in Alumina and Their Roughening Transition. Journal of the American Ceramic Society, 2003, 86, 603-11.	3.8	50
17	Equilibrium geometries of anisotropic surfaces and interfaces. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 1993, 162, 83-95.	5.6	47
18	Jet mill grinding of portland cement, limestone, and fly ash: Impact on particle size, hydration rate, and strength. Cement and Concrete Composites, 2013, 44, 41-49.	10.7	42

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19	Growth of single crystalline seeds into polycrystalline strontium titanate: Anisotropy of the mobility, intrinsic drag effects and kinetic shape of grain boundaries. Acta Materialia, 2015, 95, 111-123.	7.9	41
20	Grain Growth and Twin Formation in 0.74PMNÂ·0.26PT. Journal of the American Ceramic Society, 2002, 85, 1581-1584.	3.8	39
21	Faceting and Wetting Transitions of Anisotropic Interfaces and Grain Boundaries. Journal of the American Ceramic Society, 1999, 82, 1889-1900.	3.8	37
22	Thermodynamics and kinetics of reactions at interfaces in composites. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 1990, 126, 173-189.	5.6	35
23	Nucleation kinetics of sodium disilicate. Journal of Crystal Growth, 1977, 42, 47-51.	1.5	34
24	Effect of chemical composition on sintering of ceramics. Journal of Crystal Growth, 1986, 75, 138-160.	1.5	34
25	Life cycle assessment of emerging technologies on value recovery from hard disk drives. Resources, Conservation and Recycling, 2020, 157, 104781.	10.8	30
26	Metal Reference Line Technique for Obtaining Dihedral Angles from Surface Thermal Grooves. Journal of the American Ceramic Society, 1990, 73, 1365-1370.	3.8	29
27	Defect Morphology and Texture in Sn, Snâ€“Cu, and Snâ€“Cuâ€“Pb Electroplated Films. IEEE Transactions on Electronics Packaging Manufacturing, 2010, 33, 159-164.	1.4	27
28	Observations on crystal defects associated with diffusion induced grain boundary migration in Cuî—¸Zn. Scripta Metallurgica, 1986, 20, 937-942.	1.2	25
29	Formation of the ST12 phase in nanocrystalline Ge at ambient pressure. Journal of Materials Chemistry, 2010, 20, 331-337.	6.7	23
30	Advances in Pb-free Solder Microstructure Control and Interconnect Design. Journal of Phase Equilibria and Diffusion, 2016, 37, 369-386.	1.4	23
31	Utilizing the thermodynamic nanoparticle size effects for low temperature Pb-free solder. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2012, 177, 197-204.	3.5	21
32	Evolution of tin whiskers and subsiding grains in thermal cycling. Journal of Materials Science, 2014, 49, 1099-1113.	3.7	21
33	Recrystallization as a nucleation mechanism for whiskers and hillocks on thermally cycled Sn-alloy solder films. Materials Letters, 2013, 99, 76-80.	2.6	20
34	Equilibrium Shape of Internal Cavities in Ruby and the Effect of Surface Energy Anisotropy on the Equilibrium Shape. Journal of the American Ceramic Society, 2002, 85, 1841-1844.	3.8	18
35	Silver layer instability in a SnO2/Ag/SnO2 trilayer on silicon. Thin Solid Films, 2012, 520, 6189-6195.	1.8	18
36	Effects of local grain misorientation and Î²-Sn elastic anisotropy on whisker and hillock formation. Journal of Materials Research, 2013, 28, 747-756.	2.6	16

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37	Effect of crystallographic texture, anisotropic elasticity, and thermal expansion on whisker formation in Î²-Sn thin films. Journal of Materials Research, 2014, 29, 197-206.	2.6	16
38	Fundamental Properties of Pb-Free Solder Alloys. , 2007, , 21-74.		15
39	Maximum entropy fracture model and its use for predicting cyclic hysteresis in Sn3.8Ag0.7Cu and Sn3.0Ag0.5 solder alloys. Microelectronics Reliability, 2014, 54, 2513-2522.	1.7	14
40	Solution-processed copper arsenic sulfide thin films for photovoltaic applications. Journal of Materials Chemistry C, 2017, 5, 6913-6916.	5.5	14
41	Composition control of the microstructure of Ba2YCu3O6+x. Journal of Crystal Growth, 1988, 89, 93-100.	1.5	13
42	Beta-Tin Grain Formation in Aluminum-Modified Lead-Free Solder Alloys. Journal of Electronic Materials, 2018, 47, 61-76.	2.2	12
43	Formation of alumina-chromia-chromium composites by a partial reduction reaction. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 1995, 195, 89-100.	5.6	11
44	Controlling growth rate anisotropy for formation of continuous ZnO thin films from seeded substrates. Nanotechnology, 2013, 24, 195603.	2.6	11
45	Morphology of grain growth in response to diffusion induced elastic stresses: cubic systems. Acta Metallurgica Et Materialia, 1993, 41, 1633-1642.	1.8	10
46	Microvoid Formation at Solderâ€“Copper Interfaces During Annealing: a Systematic Study of the Root Cause. Journal of Electronic Materials, 2011, 40, 2415-2424.	2.2	10
47	Nucleation and Growth of Cu-Al Intermetallics in Al-Modified Sn-Cu and Sn-Ag-Cu Lead-Free Solder Alloys. Journal of Electronic Materials, 2015, 44, 842-866.	2.2	10
48	Sintering of Ceramics. , 1989, , 3-37.		9
49	Comment on â€œSize-Dependent Melting Properties of Small Tin Particles: Nanocalorimetric Measurementsâ€. Physical Review Letters, 2010, 104, 189601.	7.8	9
50	Constitutive Behavior of Mixed Sn-Pb/Sn-3.0Ag-0.5Cu Solder Alloys. Journal of Electronic Materials, 2012, 41, 596-610.	2.2	9
51	Emerging Science and Research Opportunities for Metals and Metallic Nanostructures. Jom, 2014, 66, 1321-1341.	1.9	9
52	The use of decision support tools to accelerate the development of circular economic business models for hard disk drives and rare-earth magnets. MRS Energy & Sustainability, 2020, 7, 1.	3.0	9
53	Microstructural Control through Diffusion-Induced Grain Boundary Migration. Materials Research Society Symposia Proceedings, 1987, 106, 127.	0.1	8
54	Reaction pathways and optoelectronic characterization of single-phase Ag₂ZnSnS₄ nanoparticles. Journal of Materials Research, 2019, 34, 3810-3818.	2.6	8

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55	Guiding the environmental design of a novel solar absorber through life cycle assessment by identifying anticipated hot spots. Journal of Cleaner Production, 2020, 258, 120847.	9.3	8
56	Influence of Pad Surface Finish on the Microstructure Evolution and Intermetallic Compound Growth in Homogeneous Sn-Bi and Sn-Bi-Ag Solder Interconnects. Journal of Electronic Materials, 2021, 50, 6615-6628.	2.2	8
57	The Effect of Bi Contamination on the Solidification Behavior of Sn-Pb Solders. Journal of Electronic Materials, 2007, 36, 676-681.	2.2	7
58	A Predictive Model for Whisker Formation Based on Local Microstructure and Grain Boundary Properties. Jom, 2013, 65, 1350-1361.	1.9	7
59	Optimization of Cuâ€“Ag Coreâ€“Shell Solderless Interconnect Paste Technology. IEEE Transactions on Components, Packaging and Manufacturing Technology, 2015, 5, 910-920.	2.5	7
60	Fatigue Life of Sn3.0Ag0.5Cu Solder Alloy Under Combined Cyclic Shear and Constant Tensile/Compressive Loads. Journal of Electronic Packaging, Transactions of the ASME, 2020, 142, .	1.8	7
61	A synchrotron micro-diffraction investigation of crystallographic texture of high-Sn alloy films and its effects on whisker growth. , 2010, , .		6
62	Local variations in grain formation, grain boundary sliding, and whisker growth along grain boundaries in large-grain Sn films. Scripta Materialia, 2020, 187, 458-463.	5.2	6
63	Heterogeneous Stress Relaxation Processes at Grain Boundaries in High-Sn Solder Films: Effects of Sn Anisotropy and Grain Geometry During Thermal Cycling. Jom, 2016, 68, 2888-2899.	1.9	5
64	Shallow grain formation in Sn thin films. Acta Materialia, 2020, 192, 1-10.	7.9	5
65	Robert L. Coble: A Retrospective. Journal of the American Ceramic Society, 1994, 77, 293-297.	3.8	4
66	Rapid Solidification of Sn-Cu-Al Alloys for High-Reliability, Lead-Free Solder: Part II. Intermetallic Coarsening Behavior of Rapidly Solidified Solders After Multiple Reflows. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2016, 47, 6526-6541.	2.2	4
67	Texture Measurement of Sintered Alumina Using the Marchdollase Function. Advances in X-ray Analysis, 1993, 37, 473-478.	0.0	4
68	Alloy Selection. , 0, , 9-46.		3
69	The potential of amine-thiol based solution processing for chalcogenide photovoltaics. , 2016, , .		3
70	Rapid Solidification of Sn-Cu-Al Alloys for High-Reliability, Lead-Free Solder: Part I. Microstructural Characterization of Rapidly Solidified Solders. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2016, 47, 6507-6525.	2.2	3
71	Equilibrium and kinetic shapes of grains in polycrystals. Acta Materialia, 2020, 191, 101-110.	7.9	3
72	Crystallographicâ€Orientationâ€Dependent Dissolution Behavior of Sapphire in Anorthite Liquid Containing Chromia. Journal of the American Ceramic Society, 2003, 86, 1014-1018.	3.8	2

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73	Fabrication of Copper Arsenic Sulfide Thin Films from Nanoparticles for Application in Solar Cells. , 2017, , .		2
74	An Evaluation of Effects of Molding Compound Properties on the Reliability of Ag Wire Bonded Components. , 2017, , .		2
75	Analysis of enargite thin films synthesized from carbon-containing and novel carbon-free processing methods. Materials Science in Semiconductor Processing, 2022, 143, 106512.	4.0	2
76	Effects of local grain misorientation and Î²-Sn elastic anisotropy on whisker and hillock formation â€“ CORRIGENDUM. Journal of Materials Research, 2013, 28, 785-785.	2.6	1
77	Assessing the Potential Environmental Impact of Cu3AsS4 PV Systems. , 2019, , .		1
78	Interfacial and volumetric melting regimes of Sn nanoparticles. Acta Materialia, 2022, 235, 118084.	7.9	1
79	Determination of the prior austenitic grain size of selected steels using a molten glass etch. Journal of Heat Treating, 1991, 9, 37-47.	0.1	0
80	GreenTV: A project-based learning module on sustainable electronics. , 2011, , .		0
81	Thermodynamic and Kinetic Effects on Microstructure Evolution in Hybrid Low Temperature Solder/High-Sn Solder Joints. , 2019, , .		0
82	Orientation Relationships of Pure Tin on Single Crystal Germanium Substrates. Journal of Electronic Materials, 2020, 49, 140-151.	2.2	0
83	Hillock formation in Î²-Sn films during high frequency cyclic bending at low strains. Thin Solid Films, 2022, 741, 139027.	1.8	0