

# Chih Chen

## List of Publications by Year in descending order

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236  
papers

5,047  
citations

76294

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253  
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253  
docs citations

253  
times ranked

1447  
citing authors

#	ARTICLE	IF	CITATIONS
1	Unidirectional Growth of Microbumps on (111)-Oriented and Nanotwinned Copper. <i>Science</i> , 2012, 336, 1007-1010.	6.0	291
2	Electromigration and Thermomigration in Pb-Free Flip-Chip Solder Joints. <i>Annual Review of Materials Research</i> , 2010, 40, 531-555.	4.3	239
3	Microstructure-electromigration correlation in a thin stripe of eutectic SnPb solder stressed between Cu electrodes. <i>Applied Physics Letters</i> , 1999, 75, 58-60.	1.5	159
4	Electromigration in Sn-Pb solder strips as a function of alloy composition. <i>Journal of Applied Physics</i> , 2000, 88, 5703-5709.	1.1	146
5	Transition from flip chip solder joint to 3D IC microbump: Its effect on microstructure anisotropy. <i>Microelectronics Reliability</i> , 2013, 53, 2-6.	0.9	144
6	Effect of current crowding on vacancy diffusion and void formation in electromigration. <i>Applied Physics Letters</i> , 2000, 76, 988-990.	1.5	141
7	Thermomigration in solder joints. <i>Materials Science and Engineering Reports</i> , 2012, 73, 85-100.	14.8	125
8	Low-temperature direct copper-to-copper bonding enabled by creep on (111) surfaces of nanotwinned Cu. <i>Scientific Reports</i> , 2015, 5, 9734.	1.6	120
9	Electromigration failure mechanisms for SnAg <sub>3.5</sub> solder bumps on Ti-Cr-Cu and Ni(P)-Au metallization pads. <i>Journal of Applied Physics</i> , 2004, 96, 4518-4524.	1.1	99
10	Low-temperature direct copper-to-copper bonding enabled by creep on highly (111)-oriented Cu surfaces. <i>Scripta Materialia</i> , 2014, 78-79, 65-68.	2.6	89
11	Eliminate Kirkendall voids in solder reactions on nanotwinned copper. <i>Scripta Materialia</i> , 2013, 68, 241-244.	2.6	87
12	Fabrication and Characterization of (111)-Oriented and Nanotwinned Cu by Dc Electrodeposition. <i>Crystal Growth and Design</i> , 2012, 12, 5012-5016.	1.4	86
13	Electromigration in eutectic SnPb solder lines. <i>Journal of Applied Physics</i> , 2001, 89, 4332-4335.	1.1	85
14	Infrared microscopy of hot spots induced by Joule heating in flip-chip SnAg solder joints under accelerated electromigration. <i>Applied Physics Letters</i> , 2006, 88, 022110.	1.5	84
15	Effect of Sn grain orientation on formation of Cu <sub>6</sub> Sn <sub>5</sub> intermetallic compounds during electromigration. <i>Scripta Materialia</i> , 2017, 128, 6-9.	2.6	69
16	Electromigration issues in lead-free solder joints. <i>Journal of Materials Science: Materials in Electronics</i> , 2006, 18, 259-268.	1.1	67
17	Copper-to-copper direct bonding on highly (111)-oriented nanotwinned copper in no-vacuum ambient. <i>Scientific Reports</i> , 2018, 8, 13910.	1.6	63
18	Study of void formation due to electromigration in flip-chip solder joints using Kelvin bump probes. <i>Applied Physics Letters</i> , 2006, 89, 032103.	1.5	61

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19	Thermomigration in Pb-free SnAg solder joint under alternating current stressing. Applied Physics Letters, 2009, 94, .	1.5	61
20	Stress analysis of spontaneous Sn whisker growth. Journal of Materials Science: Materials in Electronics, 2006, 18, 269-281.	1.1	60
21	Low-temperature growth of ZnO nanorods in anodic aluminum oxide on Si substrate by atomic layer deposition. Applied Physics Letters, 2007, 90, 033104.	1.5	60
22	Asymmetrical growth of Cu <sub>6</sub> Sn <sub>5</sub> intermetallic compounds due to rapid thermomigration of Cu in molten SnAg solder joints. Intermetallics, 2012, 29, 155-158.	1.8	59
23	Vertical interconnects of microbumps in 3D integration. MRS Bulletin, 2015, 40, 257-263.	1.7	59
24	Thermomigration in flip-chip SnPb solder joints under alternating current stressing. Applied Physics Letters, 2007, 90, 152105.	1.5	57
25	Failure induced by thermomigration of interstitial Cu in Pb-free flip chip solder joints. Applied Physics Letters, 2008, 93, 122103.	1.5	56
26	Effect of three-dimensional current and temperature distributions on void formation and propagation in flip-chip solder joints during electromigration. Applied Physics Letters, 2006, 89, 022117.	1.5	55
27	Study of electromigration-induced formation of discrete voids in flip-chip solder joints by in-situ 3D laminography observation and finite-element modeling. Acta Materialia, 2016, 117, 100-110.	3.8	54
28	Three-dimensional simulation on current-density distribution in flip-chip solder joints under electric current stressing. Journal of Applied Physics, 2005, 98, 044509.	1.1	52
29	Comparison of oxidation in uni-directionally and randomly oriented Cu films for low temperature Cu-to-Cu direct bonding. Scientific Reports, 2018, 8, 10671.	1.6	52
30	Direct probe of heterojunction effects upon photoconductive properties of TiO <sub>2</sub> nanotubes fabricated by atomic layer deposition. Nanotechnology, 2010, 21, 225602.	1.3	51
31	Extremely rapid grain growth in scallop-type Cu <sub>6</sub> Sn <sub>5</sub> during solid-liquid interdiffusion reactions in micro-bump solder joints. Scripta Materialia, 2020, 179, 45-48.	2.6	49
32	Effect of Al-trace dimension on Joule heating and current crowding in flip-chip solder joints under accelerated electromigration. Applied Physics Letters, 2006, 88, 172108.	1.5	48
33	The effect of a concentration gradient on interfacial reactions in microbumps of Ni/SnAg/Cu during liquid-state soldering. Scripta Materialia, 2012, 66, 741-744.	2.6	48
34	Electromigration in Sn-Cu intermetallic compounds. Journal of Applied Physics, 2009, 105, .	1.1	47
35	Formation of nearly void-free Cu <sub>3</sub> Sn intermetallic joints using nanotwinned Cu metallization. Applied Physics Letters, 2014, 104, .	1.5	47
36	Grain growth in electroplated (111)-oriented nanotwinned Cu. Scripta Materialia, 2014, 89, 5-8.	2.6	46

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37	Threshold current density of electromigration in eutectic SnPb solder. Applied Physics Letters, 2005, 86, 203504.	1.5	45
38	Microstructure control of unidirectional growth of $\lambda$ -Cu <sub>6</sub> Sn <sub>5</sub> in microbumps on $\sim 111$ oriented and nanotwinned Cu. Acta Materialia, 2013, 61, 4910-4919.	3.8	45
39	Electromigration in Pb-free SnAg <sub>3.8</sub> Cu <sub>0.7</sub> solder stripes. Journal of Applied Physics, 2005, 98, 033523.	1.1	43
40	Thermomigration of Cu-Sn and Ni-Sn intermetallic compounds during electromigration in Pb-free SnAg solder joints. Journal of Materials Research, 2011, 26, 983-991.	1.2	42
41	A new failure mechanism of electromigration by surface diffusion of Sn on Ni and Cu metallization in microbumps. Scientific Reports, 2018, 8, 5935.	1.6	37
42	Extremely anisotropic single-crystal growth in nanotwinned copper. NPG Asia Materials, 2014, 6, e135-e135.	3.8	35
43	Effect of thermal stress on anisotropic grain growth in nano-twinned and un-twinned copper films. Acta Materialia, 2021, 206, 116637.	3.8	35
44	Effect of void propagation on bump resistance due to electromigration in flip-chip solder joints using Kelvin structure. Applied Physics Letters, 2007, 91, 132113.	1.5	34
45	Electromigration failure mechanisms of $\sim 111$ -oriented nanotwinned Cu redistribution lines with polyimide capping. Results in Physics, 2021, 24, 104154.	2.0	33
46	A kinetic model of copper-to-copper direct bonding under thermal compression. Journal of Materials Research and Technology, 2021, 15, 2332-2344.	2.6	33
47	Thermal gradient in solder joints under electrical-current stressing. Journal of Electronic Materials, 2004, 33, 1350-1354.	1.0	32
48	Effect of deposition temperature on mechanical properties of nanotwinned Cu fabricated by rotary electroplating. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2021, 811, 141065.	2.6	31
49	The heterojunction effects of TiO <sub>2</sub> nanotubes fabricated by atomic layer deposition on photocarrier transportation direction. Nanoscale Research Letters, 2012, 7, 231.	3.1	30
50	Tensile Properties and Thermal Stability of Unidirectionally $\langle 111 \rangle$ -Oriented Nanotwinned and $\langle 110 \rangle$ -Oriented Microtwinned Copper. Materials, 2020, 13, 1211.	1.3	30
51	Electromigration study in SnAg <sub>3.8</sub> Cu <sub>0.7</sub> solder joints on Ti/Cr-Cu/Cu under-bump metallization. Journal of Electronic Materials, 2003, 32, 1222-1227.	1.0	29
52	Effect of bump size on current density and temperature distributions in flip-chip solder joints. Microelectronics Reliability, 2009, 49, 544-550.	0.9	29
53	Correlation between the Microstructures of Bonding Interfaces and the Shear Strength of Cu-to-Cu Joints Using $\langle 111 \rangle$ -Oriented and Nanotwinned Cu. Materials, 2018, 11, 2368.	1.3	29
54	Atomic-Scale Investigation of Electromigration with Different Directions of Electron Flow into High-Density Nanotwinned Copper through In Situ HRTEM. Acta Materialia, 2021, 219, 117250.	3.8	28

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55	Dopant activation of heavily doped silicon-on-insulator by high density currents. Journal of Applied Physics, 1999, 86, 1552-1557.	1.1	26
56	Effect of Sn grain orientation on growth of Cu-Sn intermetallic compounds during thermomigration in Cu-Sn2.3Ag-Ni microbumps. Materials Letters, 2019, 236, 190-193.	1.3	26
57	Relieving the current crowding effect in flip-chip solder joints during current stressing. Journal of Materials Research, 2006, 21, 137-146.	1.2	25
58	Electromigration Mechanism of Failure in Flip-Chip Solder Joints Based on Discrete Void Formation. Scientific Reports, 2017, 7, 17950.	1.6	25
59	Tensile Properties of <math>\langle 111 \rangle</math>-Oriented Nanotwinned Cu with Different Columnar Grain Structures. Materials, 2020, 13, 1310.	1.3	25
60	Cross interactions on interfacial compound formation of solder bumps and metallization layers during reflow. Journal of Materials Research, 2004, 19, 3654-3664.	1.2	24
61	Growth competition between layer-type and porous-type Cu <sub>3</sub> Sn in microbumps. Microelectronics Reliability, 2017, 79, 32-37.	0.9	24
62	Effect of anisotropic grain growth on improving the bonding strength of <math>\langle 111 \rangle</math>-oriented nanotwinned copper films. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2021, 804, 140754.	2.6	24
63	Electrodeposition of slanted nanotwinned Cu foils with high strength and ductility. Electrochimica Acta, 2021, 389, 138640.	2.6	24
64	Effect of under-bump-metallization structure on electromigration of Sn-Ag solder joints. Advances in Materials Research (South Korea), 2012, 1, 83-92.	0.6	24
65	Critical length of electromigration for eutectic SnPb solder stripe. Applied Physics Letters, 2006, 88, 182105.	1.5	23
66	Investigation of void nucleation and propagation during electromigration of flip-chip solder joints using x-ray microscopy. Applied Physics Letters, 2006, 89, 262106.	1.5	23
67	Effect of Al-trace degradation on Joule heating during electromigration in flip-chip solder joints. Applied Physics Letters, 2007, 90, 082103.	1.5	23
68	Precipitation of large Ag <sub>3</sub> Sn intermetallic compounds in SnAg <sub>2.5</sub> microbumps after multiple reflows in 3D-IC packaging. Materials Chemistry and Physics, 2012, 134, 340-344.	2.0	23
69	Formation Mechanism of Porous Cu <sub>3</sub> Sn Intermetallic Compounds by High Current Stressing at High Temperatures in Low-Bump-Height Solder Joints. Crystals, 2016, 6, 12.	1.0	23
70	Influence of Cu column under-bump-metallizations on current crowding and Joule heating effects of electromigration in flip-chip solder joints. Journal of Applied Physics, 2012, 111, .	1.1	22
71	Effect of Reverse Currents during Electroplating on the <math>\langle 111 \rangle</math>-Oriented and Nanotwinned Columnar Grain Growth of Copper Films. Crystal Growth and Design, 2020, 20, 3834-3841.	1.4	22
72	Instant Cu-to-Cu direct bonding enabled by <math>\langle 111 \rangle</math>-oriented nanotwinned Cu bumps. Japanese Journal of Applied Physics, 2020, 59, SBBA03.	0.8	22

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73	Relieving Hot-Spot Temperature and Current Crowding Effects During Electromigration in Solder Bumps by Using Cu Columns. <i>Journal of Electronic Materials</i> , 2007, 36, 1348-1354.	1.0	21
74	Effect of grain orientations of Cu seed layers on the growth of <math>\langle 111 \rangle</math>-oriented nanotwinned Cu. <i>Scientific Reports</i> , 2014, 4, 6123.	1.6	21
75	Effect of Cu Ion Concentration on Microstructures and Mechanical Properties of Nanotwinned Cu Foils Fabricated by Rotary Electroplating. <i>Nanomaterials</i> , 2021, 11, 2135.	1.9	21
76	Kinetic study of grain growth in highly (111)-preferred nanotwinned copper films. <i>Materials Characterization</i> , 2020, 168, 110545.	1.9	20
77	Metallurgical reactions of Sn-3.5Ag solder with various thicknesses of electroplated Ni/Cu under bump metallization. <i>Journal of Materials Research</i> , 2005, 20, 2772-2779.	1.2	19
78	Direct measurement of hot-spot temperature in flip-chip solder joints under current stressing using infrared microscopy. <i>Journal of Applied Physics</i> , 2008, 104, 033708.	1.1	19
79	Growth of Highly (111)-Oriented Nanotwinned Cu with the Addition of Sulfuric Acid in $\text{CuSO}_4$ Based Electrolyte. <i>Crystal Growth and Design</i> , 2019, 19, 81-89.	1.4	19
80	3-D simulation on current density distribution in flip-chip solder joints with thick Cu UBM under current stressing. , 2005, , .		18
81	Three-Dimensional Thermoelectrical Simulation in Flip-Chip Solder Joints with Thick Underbump Metallizations during Accelerated Electromigration Testing. <i>Journal of Electronic Materials</i> , 2007, 36, 159-167.	1.0	18
82	Failure Mechanisms of Cu-Cu Bumps under Thermal Cycling. <i>Materials</i> , 2021, 14, 5522.	1.3	18
83	Low-Temperature Cu/SiO <sub>2</sub> Hybrid Bonding with Low Contact Resistance Using (111)-Oriented Cu Surfaces. <i>Materials</i> , 2022, 15, 1888.	1.3	18
84	Growth Mechanism of TiO <sub>2</sub> Nanotube Arrays in Nanopores of Anodic Aluminum Oxide on Si Substrates by Atomic Layer Deposition. <i>Journal of the Electrochemical Society</i> , 2011, 158, K58.	1.3	17
85	Flux-driven cellular precipitation in open system to form porous Cu <sub>3</sub> Sn. <i>Philosophical Magazine</i> , 2016, 96, 1318-1331.	0.7	17
86	Enhancement of electromigration lifetime of copper lines by eliminating nanoscale grains in highly <math>\langle 111 \rangle</math>-oriented nanotwinned structures. <i>Journal of Materials Research and Technology</i> , 2021, 15, 6690-6699.	2.6	17
87	Enhanced green laser activation by antireflective gate structures in panel transistors. <i>Applied Physics Letters</i> , 2008, 92, 063503.	1.5	16
88	Effect of Geometric Nanostructures on the Absorption Edges of 1-D and 2-D TiO <sub>2</sub> Fabricated by Atomic Layer Deposition. <i>ACS Applied Materials &amp; Interfaces</i> , 2013, 5, 3549-3555.	4.0	16
89	Anisotropic grain growth to eliminate bonding interfaces in direct copper-to-copper joints using <math>\langle 111 \rangle</math>-oriented nanotwinned copper films. <i>Thin Solid Films</i> , 2018, 667, 55-58.	0.8	16
90	Study of electromigration in thin tin film using edge displacement method. <i>Journal of Applied Physics</i> , 2005, 98, 013540.	1.1	15

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91	Effect of Polyethylene Glycol Additives on Pulse Electroplating of SnAg Solder. Journal of Electronic Materials, 2008, 37, 224-230.	1.0	15
92	Electromigration-induced Pb and Sn whisker growth in SnPb solder stripes. Journal of Materials Research, 2008, 23, 2017-2022.	1.2	14
93	A solid state process to obtain high mechanical strength in Cu-to-Cu joints by surface creep on (111)-oriented nanotwins Cu. Journal of Materials Research and Technology, 2021, 14, 719-730.	2.6	14
94	Fast phase transformation due to electromigration of 18 $\frac{1}{4}$ $\mu$ m microbumps in three-dimensional integrated-circuit integration. Materials Letters, 2014, 137, 136-138.	1.3	13
95	Electromigration immortality of purely intermetallic micro -bump for 3D integration. , 2015, , .		13
96	Mechanism of electromigration-induced failure in flip-chip solder joints with a 10 $\frac{1}{4}$ $\mu$ m-thick Cu under-bump metallization. Journal of Materials Research, 2007, 22, 763-769.	1.2	12
97	Blocking hillock and whisker growth by intermetallic compound formation in Sn-0.7Cu flip chip solder joints under electromigration. Journal of Applied Physics, 2010, 107, 093715.	1.1	12
98	Kinetic study of the intermetallic compound formation between eutectic Sn $\frac{1}{3}$ Ag alloys and electroplated Ni metallization in flip-chip solder joints. Journal of Materials Research, 2012, 27, 1169-1177.	1.2	12
99	Effect of Sn grain orientation and strain distribution in 20 $\frac{1}{4}$ $\mu$ m-diameter microbumps on crack formation under thermal cycling tests. Electronic Materials Letters, 2017, 13, 457-462.	1.0	12
100	Deformation induced columnar grain rotation in nanotwinned metals. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2020, 797, 140045.	2.6	12
101	Hermetic Packaging Using Eutectic SnPb Solder and Cr/Ni/Cu Metallurgy Layer. IEEE Transactions on Advanced Packaging, 2006, 29, 760-765.	1.7	11
102	Generic rules to achieve bump electromigration immortality for 3D IC integration. , 2013, , .		11
103	Electromigration studies of flip chip Sn95/Sb5 solder bumps on Cr/Cr-Cu/Cu under-bump metallization. Journal of Electronic Materials, 2003, 32, 1278-1283.	1.0	10
104	Thermomigration of Ti in flip-chip solder joints. Scripta Materialia, 2012, 66, 694-697.	2.6	10
105	Effect of Intermetallic Compound Bridging on the Cracking Resistance of Sn2.3Ag Microbumps with Different UBM Structures under Thermal Cycling. Metals, 2021, 11, 1065.	1.0	10
106	Interfacial void ripening in Cu Cu joints. Materials Characterization, 2021, 181, 111459.	1.9	10
107	Microstructural Evolution During Electromigration in Eutectic SnAg Solder Bumps. Journal of Materials Research, 2005, 20, 2432-2442.	1.2	9
108	Temperature and current-density distributions in flip-chip solder joints with Cu traces. Journal of Electronic Materials, 2006, 35, 947-953.	1.0	9

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109	Effect of Si-die dimensions on electromigration failure time of flip-chip solder joints. <i>Materials Chemistry and Physics</i> , 2011, 127, 85-90.	2.0	9
110	Magnetostructural phase transition in electroless-plated Ni nanoarrays. <i>Journal of Applied Physics</i> , 2011, 109, .	1.1	9
111	Analysis of bump resistance and current distribution of ultra-fine-pitch microbumps. <i>Microelectronics Reliability</i> , 2013, 53, 41-46.	0.9	9
112	Low-temperature and low-pressure direct copper-to-copper bonding by highly (111)-oriented nanotwinned Cu. , 2016, , .		9
113	Shearing Characteristics of Cu-Cu Joints Fabricated by Two-Step Process Using Highly <math>\langle 111 \rangle</math>-Oriented Nanotwinned Cu. <i>Metals</i> , 2021, 11, 1864.	1.0	9
114	Effect of oxidation on electromigration in 2- $\mu\text{m}$ Cu redistribution lines capped with polyimide. <i>Results in Physics</i> , 2021, 31, 105048.	2.0	9
115	Hybrid Cu-to-Cu bonding with nano-twinned Cu and non-conductive paste. <i>Journal of Materials Research and Technology</i> , 2022, 18, 859-871.	2.6	9
116	Measurement of electromigration parameters of lead-free SnAg3.5 solder using U-groove lines. <i>Journal of Materials Research</i> , 2005, 20, 2831-2837.	1.2	8
117	Measurement of electromigration activation energy in eutectic SnPb and SnAg flip-chip solder joints with Cu and Ni under-bump metallization. <i>Journal of Materials Research</i> , 2010, 25, 1847-1853.	1.2	8
118	Electromigration Failure Mechanism in Sn-Cu Solder Alloys with OSP Cu Surface Finish. <i>Journal of Electronic Materials</i> , 2012, 41, 2502-2507.	1.0	8
119	Experimental and simulation analysis of concave-down resistance curve during electromigration in solder joints. <i>Journal of Applied Physics</i> , 2014, 115, .	1.1	8
120	High Electromigration Lifetimes of Nanotwinned Cu Redistribution Lines. , 2019, , .		8
121	Anisotropic Grain Growth in (111) Nanotwinned Cu Films by DC Electrodeposition. <i>Materials</i> , 2020, 13, 134.	1.3	8
122	Effect of Bonding Strength on Electromigration Failure in Cu-Cu Bumps. <i>Materials</i> , 2021, 14, 6394.	1.3	8
123	Joule Heating Effect under Accelerated Electromigration in Flip-Chip Solder Joints. , 0, , .		7
124	Enhanced Hole Mobility and Reliability of Panel Epi-Like Silicon Transistors Using Backside Green Laser Activation. <i>IEEE Electron Device Letters</i> , 2007, 28, 790-792.	2.2	7
125	Interfacial Reaction Between Eutectic Sn-Pb Solder and Electroplated-Ni as well as Electroless-Ni Metallization During Reflow. <i>Journal of Electronic Materials</i> , 2009, 38, 338-344.	1.0	7
126	Effect of joint shape controlled by thermocompression bonding on the reliability performance of 60Sn40Pb-pitch solder micro bump interconnections. , 2014, , .		7



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127	Hybrid Bonding of Nanotwinned Copper/organic Dielectrics with Low Thermal Budget. , 2021, , .		7
128	Twist-type silicon bicrystals and compliant substrates prepared from silicon-on-insulator wafers. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 2000, 80, 881-891.	0.7	6
129	Effect of current crowding on contact failure in heavily doped $n$ - and $p$ -silicon-on-insulator. Journal of Materials Research, 2000, 15, 2387-2392.	1.2	6
130	Enhanced dopant activation and elimination of end-of-range defects in $BF_2$ -implanted silicon-on-insulator by high-density current. Applied Physics Letters, 2001, 79, 3971-3973.	1.5	6
131	Fabrication of (111)-Oriented Nanotwinned Au Films for Au-to-Au Direct Bonding. Materials, 2018, 11, 2287.	1.3	6
132	Low-Resistance and high-Strength Copper Direct Bonding in no-Vacuum Ambient Using Highly (111)-Oriented Nano-Twinned Copper. , 2019, , .		6
133	Low Temperature Cu-to-Cu Bonding in Non-vacuum Atmosphere with Thin Gold Capping on Highly (111) Oriented Nanotwinned Copper. Journal of Electronic Materials, 2020, 49, 13-17.	1.0	6
134	Two-step fabrication process for die-to-die and die-to-wafer Cu-Cu bonds. , 2021, , .		6
135	Modeling of abnormal grain growth in (111) oriented and nanotwinned copper. Scientific Reports, 2021, 11, 20449.	1.6	6
136	Nanotwin orientation on history-dependent stress decay in Cu nanopillar under constant strain. Nanotechnology, 2022, 33, 155708.	1.3	6
137	Interfacial Characterization of Low-Temperature Cu-to-Cu Direct Bonding with Chemical Mechanical Planarized Nanotwinned Cu Films. Materials, 2022, 15, 937.	1.3	6
138	Effect of Al trace dimension on electromigration failure time of flip-chip solder joints. Journal of Electronic Materials, 2006, 35, 1740-1744.	1.0	5
139	The effect of pre-aging on the electromigration of flip-chip SnAg solder joints. Jom, 2008, 60, 77-80.	0.9	5
140	Nonuniform and Negative Marker Displacements Induced by Current Crowding During Electromigration in Flip-Chip Sn-0.7Cu Solder Joints. Journal of Electronic Materials, 2009, 38, 2443-2448.	1.0	5
141	Mechanical strengthening of nanotwinned Cu films with Ag solid solution. Materials Letters, 2022, 313, 131775.	1.3	5
142	Microstructure evolution during electromigration in eutectic SnPb solder bumps. Journal of Materials Research, 2004, 19, 2394-2401.	1.2	4
143	Fabrication of ordered Ta <sub>2</sub> O <sub>5</sub> nanodots using an anodic aluminum oxide template on Si substrate. Journal of Materials Research, 2007, 22, 1064-1071.	1.2	4
144	Fine pitch $\mu$ -NCF-type compliant-bumped COG, , 2007, , .		4

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145	Effect of Migration and Condensation of Pre-existing Voids on Increase in Bump Resistance of Flip Chips on Flexible Substrates during Electromigration. <i>Journal of Electronic Materials</i> , 2008, 37, 962-967.	1.0	4
146	Coupled microstructural and magnetic transition in Co-doped Ni nano-arrays. <i>Journal of Applied Physics</i> , 2011, 110, .	1.1	4
147	Innovative methodologies of circuit edit by focused ion beam (FIB) on wafer-level chip-scale-package (WLCSP) devices. <i>Journal of Materials Science: Materials in Electronics</i> , 2011, 22, 1536-1541.	1.1	4
148	Temperature-dependent failure mechanism of SnAg solder joints with Cu metallization after current stressing: Experimentation and analysis. <i>Journal of Applied Physics</i> , 2013, 114, .	1.1	4
149	Ultra-high annealing twin density in <math>\langle 111 \rangle</math>-oriented Cu films. <i>Scripta Materialia</i> , 2020, 184, 46-51.	2.6	4
150	Electromigration and Temperature Cycling Tests of Cu-Cu Joints Fabricated by Instant Copper Direct Bonding. , 2021, , .		4
151	Artificial intelligence deep learning for 3D IC reliability prediction. <i>Scientific Reports</i> , 2022, 12, 6711.	1.6	4
152	Evolution of interfacial voids in Cu-to-Cu joints. <i>Materials Characterization</i> , 2022, 190, 112085.	1.9	4
153	Electromigration failure mechanism of Sn96.5Ag3.5 flip-chip solder bumps. , 0, , .		3
154	Study of electromigration in eutectic SnPb solder stripes using the edge displacement method. <i>Journal of Electronic Materials</i> , 2006, 35, 1655-1659.	1.0	3
155	Investigation of Void Nucleation and Propagation in the Joule Heating Effect During Electromigration in Flip-Chip Solder Joints. <i>Journal of Electronic Materials</i> , 2010, 39, 2489-2494.	1.0	3
156	Communicationâ€™Formation of Porous Cu <sub>3</sub> Sn by High-Temperature Current Stressing. <i>ECS Journal of Solid State Science and Technology</i> , 2016, 5, P461-P463.	0.9	3
157	Fabrication and Characterization of <math>\langle 100 \rangle</math>-Oriented Quasi-single Crystalline Cu Lines. <i>Crystal Growth and Design</i> , 2020, 20, 1485-1490.	1.4	3
158	Effect of Electroplating Current Density on Tensile Properties of Nanotwinned Copper Foils. <i>Journal of the Electrochemical Society</i> , 2022, 169, 042503.	1.3	3
159	Electromigration at the high-Pbâ€™eutectic SnPb solder interface. <i>Journal of Materials Research</i> , 2004, 19, 550-556.	1.2	2
160	Gate-to-drain capacitance verifying the continuous-wave green laser crystallization n-TFT trapped charges distribution under dc voltage stress. <i>Applied Physics Letters</i> , 2009, 95, 253503.	1.5	2
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