

# Chih Chen

## 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.

181  
papers

3,363  
citations

32  
h-index

51  
g-index

253  
ext. papers

4,447  
ext. citations

3.8  
avg, IF

5.63  
L-index

#	Paper	IF	Citations
181	Mechanical strengthening of nanotwinned Cu films with Ag solid solution. <i>Materials Letters</i> , <b>2022</b> , 313, 131775	3.3	
180	Effect of Electroplating Current Density on Tensile Properties of Nanotwinned Copper Foils. <i>Journal of the Electrochemical Society</i> , <b>2022</b> , 169, 042503	3.9	0
179	Hybrid Cu-to-Cu bonding with nano-twinned Cu and non-conductive paste. <i>Journal of Materials Research and Technology</i> , <b>2022</b> , 18, 859-871	5.5	0
178	Artificial intelligence deep learning for 3D IC reliability prediction.. <i>Scientific Reports</i> , <b>2022</b> , 12, 6711	4.9	
177	Microstructure analysis and tensile strength of low temperature Cu bonds using highly- Cu <b>2021</b> ,		1
176	Enhancement of electromigration lifetime of copper lines by eliminating nanoscale grains in highly -oriented nanotwinned structures. <i>Journal of Materials Research and Technology</i> , <b>2021</b> , 15, 6690-6699	5.5	1
175	Shearing Characteristics of Cu-Cu Joints Fabricated by Two-Step Process Using Highly -Oriented Nanotwinned Cu. <i>Metals</i> , <b>2021</b> , 11, 1864	2.3	1
174	Effect of oxidation on electromigration in 2- $\mu$ m Cu redistribution lines capped with polyimide. <i>Results in Physics</i> , <b>2021</b> , 31, 105048	3.7	1
173	Modeling of abnormal grain growth in (111) oriented and nanotwinned copper. <i>Scientific Reports</i> , <b>2021</b> , 11, 20449	4.9	0
172	Effect of Bonding Strength on Electromigration Failure in Cu-Cu Bumps. <i>Materials</i> , <b>2021</b> , 14,	3.5	1
171	Effect of thermal stress on anisotropic grain growth in nano-twinned and un-twinned copper films. <i>Acta Materialia</i> , <b>2021</b> , 206, 116637	8.4	6
170	Effect of deposition temperature on mechanical properties of nanotwinned Cu fabricated by rotary electroplating. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2021</b> , 811, 141065	5.3	11
169	Electromigration failure mechanisms of <1 1 1> -oriented nanotwinned Cu redistribution lines with polyimide capping. <i>Results in Physics</i> , <b>2021</b> , 24, 104154	3.7	8
168	Electromigration and Temperature Cycling Tests of Cu-Cu Joints Fabricated by Instant Copper Direct Bonding <b>2021</b> ,		2
167	Hybrid Bonding of Nanotwinned Copper/organic Dielectrics with Low Thermal Budget <b>2021</b> ,		2
166	Effect of anisotropic grain growth on improving the bonding strength of -oriented nanotwinned copper films. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , <b>2021</b> , 804, 140754	5.3	4
165	Effect of Intermetallic Compound Bridging on the Cracking Resistance of Sn <sub>2.3</sub> Ag Microbumps with Different UBM Structures under Thermal Cycling. <i>Metals</i> , <b>2021</b> , 11, 1065	2.3	4

164	Effect of Cu Ion Concentration on Microstructures and Mechanical Properties of Nanotwinned Cu Foils Fabricated by Rotary Electroplating. <i>Nanomaterials</i> , <b>2021</b> , 11,	5.4	9
163	Electrodeposition of slanted nanotwinned Cu foils with high strength and ductility. <i>Electrochimica Acta</i> , <b>2021</b> , 389, 138640	6.7	10
162	Interfacial void ripening in Cu Cu joints. <i>Materials Characterization</i> , <b>2021</b> , 111459	3.9	1
161	A solid state process to obtain high mechanical strength in Cu-to-Cu joints by surface creep on (111)-oriented nanotwins Cu. <i>Journal of Materials Research and Technology</i> , <b>2021</b> , 14, 719-730	5.5	2
160	Failure Mechanisms of Cu-Cu Bumps under Thermal Cycling. <i>Materials</i> , <b>2021</b> , 14,	3.5	5
159	Atomic-Scale Investigation of Electromigration with Different Directions of Electron Flow into High-Density Nanotwinned Copper through In Situ HRTEM. <i>Acta Materialia</i> , <b>2021</b> , 219, 117250	8.4	3
158	A kinetic model of copper-to-copper direct bonding under thermal compression. <i>Journal of Materials Research and Technology</i> , <b>2021</b> , 15, 2332-2344	5.5	3
157	Electromigration <b>2021</b> , 221-247		
156	Solid-State Reactions Between Copper and Solder <b>2021</b> , 105-125		
155	2.5D/3D System-in-Packaging Integration <b>2021</b> , 173-190		
154	Artificial Intelligence in Electronic Packaging Reliability <b>2021</b> , 303-306		
153	Essence of Integrated Circuits and Packaging Design <b>2021</b> , 127-147		
152	Randomly-Oriented and (111) Uni-directionally-Oriented Nanotwin Copper <b>2021</b> , 61-90		
151	Stress-Migration <b>2021</b> , 257-280		
150	Cu-to-Cu and Other Bonding Technologies in Electronic Packaging <b>2021</b> , 17-60		
149	Irreversible Processes in Electronic Packaging Technology <b>2021</b> , 191-219		
148	Thermomigration <b>2021</b> , 249-256		
147	Performance, Power, Thermal, and Reliability <b>2021</b> , 149-172		

146 Failure Analysis **2021**, 281-302

145 Effect of Reverse Currents during Electroplating on the <111>-Oriented and Nanotwinned Columnar Grain Growth of Copper Films. *Crystal Growth and Design*, **2020**, 20, 3834-3841 3.5 3

144 Tensile Properties and Thermal Stability of Unidirectionally -Oriented Nanotwinned and -Oriented Microtwinning Copper. *Materials*, **2020**, 13,

143 Tensile Properties of -Oriented Nanotwinned Cu with Different Columnar Grain Structures. *Materials*, **2020**, 13,

142 Fabrication and Characterization of <100>-Oriented Quasi-single Crystalline Cu Lines. *Crystal Growth and Design*, **2020**, 20, 1485-1490 3.5 2

141 Instant Cu-to-Cu direct bonding enabled by <111>-oriented nanotwinned Cu bumps. *Japanese Journal of Applied Physics*, **2020**, 59, SBBA03 1.4 11

140 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 5.6 14

139 Hybrid Cu-Cu Bonding with Non-Conductive Paste and Highly (111)-Oriented Nanotwinned Copper **2020**, 1

138 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 1.9 2

137 Tuning Stress in Cu Thin Films by Developing Highly (111)-Oriented Nanotwinned Structure. *Journal of Electronic Materials*, **2020**, 49, 109-115 1.9 1

136 Deformation induced columnar grain rotation in nanotwinned metals. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2020**, 797, 140045 5.3 7

135 Fabrication and characteristics of highly [Formula: see text]-oriented nanotwinned Au films. *Scientific Reports*, **2020**, 10, 16566 4.9 1

134 Kinetic study of grain growth in highly (111)-preferred nanotwinned copper films. *Materials Characterization*, **2020**, 168, 110545 3.9 8

133 Ultra-high annealing twin density in -oriented Cu films. *Scripta Materialia*, **2020**, 184, 46-51 5.6 2

132 High Electromigration Lifetimes of Nanotwinned Cu Redistribution Lines **2019**, 4

131 Low-Resistance and high-Strength Copper Direct Bonding in no-Vacuum Ambient Using Highly (111)-Oriented Nano-Twinned Copper **2019**, 4

130 Low-temperature Cu-to-Cu direct bonding enabled by highly (111)- oriented and nanotwinned Cu **2019**, 1

129 Anisotropic Grain Growth in (111) Nanotwinned Cu Films by DC Electrodeposition. *Materials*, **2019**, 13,

128	Growth of Highly (111)-Oriented Nanotwinned Cu with the Addition of Sulfuric Acid in CuSO <sub>4</sub> Based Electrolyte. <i>Crystal Growth and Design</i> , <b>2019</b> , 19, 81-89	3.5	10
127	Effect of Sn grain orientation on growth of Cu-Sn intermetallic compounds during thermomigration in Cu-Sn <sub>2.3</sub> Ag-Ni microbumps. <i>Materials Letters</i> , <b>2019</b> , 236, 190-193	3.3	20
126	A new failure mechanism of electromigration by surface diffusion of Sn on Ni and Cu metallization in microbumps. <i>Scientific Reports</i> , <b>2018</b> , 8, 5935	4.9	17
125	Comparison of oxidation in uni-directionally and randomly oriented Cu films for low temperature Cu-to-Cu direct bonding. <i>Scientific Reports</i> , <b>2018</b> , 8, 10671	4.9	25
124	Correlation between the Microstructures of Bonding Interfaces and the Shear Strength of Cu-to-Cu Joints Using (111)-Oriented and Nanotwinned Cu. <i>Materials</i> , <b>2018</b> , 11,	3.5	14
123	Fabrication of (111)-Oriented Nanotwinned Au Films for Au-to-Au Direct Bonding. <i>Materials</i> , <b>2018</b> , 11,	3.5	3
122	Copper-to-copper direct bonding on highly (111)-oriented nanotwinned copper in no-vacuum ambient. <i>Scientific Reports</i> , <b>2018</b> , 8, 13910	4.9	29
121	Anisotropic grain growth to eliminate bonding interfaces in direct copper-to-copper joints using -oriented nanotwinned copper films. <i>Thin Solid Films</i> , <b>2018</b> , 667, 55-58	2.2	7
120	Effect of Sn Grain Orientation on Formation of Cu <sub>6</sub> Sn <sub>5</sub> Intermetallic Compound Under Current Stressing. <i>Journal of Electronic Materials</i> , <b>2017</b> , 46, 2179-2184	1.9	2
119	Growth competition between layer-type and porous-type Cu <sub>3</sub> Sn in microbumps. <i>Microelectronics Reliability</i> , <b>2017</b> , 79, 32-37	1.2	16
118	Effect of Sn grain orientation and strain distribution in 20- $\mu$ m-diameter microbumps on crack formation under thermal cycling tests. <i>Electronic Materials Letters</i> , <b>2017</b> , 13, 457-462	2.9	8
117	Effect of Sn grain orientation on formation of Cu <sub>6</sub> Sn <sub>5</sub> intermetallic compounds during electromigration. <i>Scripta Materialia</i> , <b>2017</b> , 128, 6-9	5.6	46
116	Electromigration Mechanism of Failure in Flip-Chip Solder Joints Based on Discrete Void Formation. <i>Scientific Reports</i> , <b>2017</b> , 7, 17950	4.9	17
115	Study of electromigration-induced formation of discrete voids in flip-chip solder joints by in-situ 3D laminography observation and finite-element modeling. <i>Acta Materialia</i> , <b>2016</b> , 117, 100-110	8.4	31
114	Formation of Porous Cu <sub>3</sub> Sn by High-Temperature Current Stressing. <i>ECS Journal of Solid State Science and Technology</i> , <b>2016</b> , 5, P461-P463	2	2
113	Flux-driven cellular precipitation in open system to form porous Cu <sub>3</sub> Sn. <i>Philosophical Magazine</i> , <b>2016</b> , 96, 1318-1331	1.6	14
112	Formation Mechanism of Porous Cu <sub>3</sub> Sn Intermetallic Compounds by High Current Stressing at High Temperatures in Low-Bump-Height Solder Joints. <i>Crystals</i> , <b>2016</b> , 6, 12	2.3	17
111	Electromigration in reduced-height solder joints with Cu pillars. <i>Journal of Materials Science: Materials in Electronics</i> , <b>2016</b> , 27, 3715-3722	2.1	1

110	Low-temperature and low-pressure direct copper-to-copper bonding by highly (111)-oriented nanotwinned Cu <b>2016</b> ,		3
109	Vertical interconnects of microbumps in 3D integration. <i>MRS Bulletin</i> , <b>2015</b> , 40, 257-263	3.2	41
108	Electromigration immortality of purely intermetallic micro -bump for 3D integration <b>2015</b> ,		9
107	Low-temperature direct copper-to-copper bonding enabled by creep on (111) surfaces of nanotwinned Cu. <i>Scientific Reports</i> , <b>2015</b> , 5, 9734	4.9	71
106	Grain growth in electroplated (111)-oriented nanotwinned Cu. <i>Scripta Materialia</i> , <b>2014</b> , 89, 5-8	5.6	30
105	Formation of nearly void-free Cu <sub>3</sub> Sn intermetallic joints using nanotwinned Cu metallization. <i>Applied Physics Letters</i> , <b>2014</b> , 104, 171902	3.4	35
104	Fast phase transformation due to electromigration of 18 $\mu$ m microbumps in three-dimensional integrated-circuit integration. <i>Materials Letters</i> , <b>2014</b> , 137, 136-138	3.3	12
103	Low-temperature direct copper-to-copper bonding enabled by creep on highly (111)-oriented Cu surfaces. <i>Scripta Materialia</i> , <b>2014</b> , 78-79, 65-68	5.6	59
102	Effect of grain orientations of Cu seed layers on the growth of -oriented nanotwinned Cu. <i>Scientific Reports</i> , <b>2014</b> , 4, 6123	4.9	14
101	Extremely anisotropic single-crystal growth in nanotwinned copper. <i>NPG Asia Materials</i> , <b>2014</b> , 6, e135-e135	3.3	21
100	Experimental and simulation analysis of concave-down resistance curve during electromigration in solder joints. <i>Journal of Applied Physics</i> , <b>2014</b> , 115, 083707	2.5	4
99	Effect of joint shape controlled by thermocompression bonding on the reliability performance of 60 $\mu$ m-pitch solder micro bump interconnections <b>2014</b> ,		3
98	Generic rules to achieve bump electromigration immortality for 3D IC integration <b>2013</b> ,		8
97	Analysis of bump resistance and current distribution of ultra-fine-pitch microbumps. <i>Microelectronics Reliability</i> , <b>2013</b> , 53, 41-46	1.2	5
96	Transition from flip chip solder joint to 3D IC microbump: Its effect on microstructure anisotropy. <i>Microelectronics Reliability</i> , <b>2013</b> , 53, 2-6	1.2	97
95	Microstructure control of unidirectional growth of ECu <sub>6</sub> Sn <sub>5</sub> in microbumps on <111> oriented and nanotwinned Cu. <i>Acta Materialia</i> , <b>2013</b> , 61, 4910-4919	8.4	27
94	Eliminate Kirkendall voids in solder reactions on nanotwinned copper. <i>Scripta Materialia</i> , <b>2013</b> , 68, 241-244	3.4	58
93	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> , <b>2013</b> , 5, 3549-55	9.5	16

92	Temperature-dependent failure mechanism of SnAg solder joints with Cu metallization after current stressing: Experimentation and analysis. <i>Journal of Applied Physics</i> , <b>2013</b> , 114, 113711	2.5	3
91	Precipitation of large Ag <sub>3</sub> Sn intermetallic compounds in SnAg <sub>2.5</sub> microbumps after multiple reflows in 3D-IC packaging. <i>Materials Chemistry and Physics</i> , <b>2012</b> , 134, 340-344	4.4	18
90	Thermomigration of Ti in flip-chip solder joints. <i>Scripta Materialia</i> , <b>2012</b> , 66, 694-697	5.6	8
89	The effect of a concentration gradient on interfacial reactions in microbumps of Ni/SnAg/Cu during liquid-state soldering. <i>Scripta Materialia</i> , <b>2012</b> , 66, 741-744	5.6	34
88	Asymmetrical growth of Cu <sub>6</sub> Sn <sub>5</sub> intermetallic compounds due to rapid thermomigration of Cu in molten SnAg solder joints. <i>Intermetallics</i> , <b>2012</b> , 29, 155-158	3.5	45
87	Thermomigration in solder joints. <i>Materials Science and Engineering Reports</i> , <b>2012</b> , 73, 85-100	30.9	82
86	The heterojunction effects of TiO <sub>2</sub> nanotubes fabricated by atomic layer deposition on photocarrier transportation direction. <i>Nanoscale Research Letters</i> , <b>2012</b> , 7, 231	5	25
85	Kinetic study of the intermetallic compound formation between eutectic Sn <sub>8.5</sub> Ag alloys and electroplated Ni metallization in flip-chip solder joints. <i>Journal of Materials Research</i> , <b>2012</b> , 27, 1169-1177	7.5	8
84	Electromigration Failure Mechanism in Sn-Cu Solder Alloys with OSP Cu Surface Finish. <i>Journal of Electronic Materials</i> , <b>2012</b> , 41, 2502-2507	1.9	4
83	Fabrication and Characterization of (111)-Oriented and Nanotwinned Cu by Dc Electrodeposition. <i>Crystal Growth and Design</i> , <b>2012</b> , 12, 5012-5016	3.5	49
82	Unidirectional growth of microbumps on (111)-oriented and nanotwinned copper. <i>Science</i> , <b>2012</b> , 336, 1007-10	33.3	204
81	Influence of Cu column under-bump-metallizations on current crowding and Joule heating effects of electromigration in flip-chip solder joints. <i>Journal of Applied Physics</i> , <b>2012</b> , 111, 043705	2.5	17
80	Effect of under-bump-metallization structure on electromigration of Sn-Ag solder joints. <i>Advances in Materials Research (South Korea)</i> , <b>2012</b> , 1, 83-92		17
79	Coupled microstructural and magnetic transition in Co-doped Ni nano-arrays. <i>Journal of Applied Physics</i> , <b>2011</b> , 110, 073913	2.5	4
78	Effect of Si-die dimensions on electromigration failure time of flip-chip solder joints. <i>Materials Chemistry and Physics</i> , <b>2011</b> , 127, 85-90	4.4	6
77	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> , <b>2011</b> , 22, 1536-1541	2.1	2
76	Magnetostructural phase transition in electroless-plated Ni nanoarrays. <i>Journal of Applied Physics</i> , <b>2011</b> , 109, 113905	2.5	8
75	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> , <b>2011</b> , 158, K58	3.9	17



74	Thermomigration of Cu <sub>3</sub> Sn and Ni <sub>3</sub> Sn intermetallic compounds during electromigration in Pb-free SnAg solder joints. <i>Journal of Materials Research</i> , <b>2011</b> , 26, 983-991	2.5	30
73	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> , <b>2010</b> , 25, 1847-1853	2.5	5
72	Direct measurement of hot-spot temperature in flip-chip solder joints with Cu columns under current stressing using infrared microscopy. <i>Materials Research Society Symposia Proceedings</i> , <b>2010</b> , 1249, 1		
71	Investigation of Joule heating effect in various stages of electromigration in flip-chip solder joints by infrared microscopy. <i>Materials Research Society Symposia Proceedings</i> , <b>2010</b> , 1249, 1		
70	Direct probe of heterojunction effects upon photoconductive properties of TiO <sub>2</sub> nanotubes fabricated by atomic layer deposition. <i>Nanotechnology</i> , <b>2010</b> , 21, 225602	3.4	50
69	Blocking hillock and whisker growth by intermetallic compound formation in Sn-0.7Cu flip chip solder joints under electromigration. <i>Journal of Applied Physics</i> , <b>2010</b> , 107, 093715	2.5	11
68	Investigation of Joule heating effect in various stages of electromigration in flip-chip solder joints by infrared microscopy <b>2010</b> ,		1
67	Electromigration and Thermomigration in Pb-Free Flip-Chip Solder Joints. <i>Annual Review of Materials Research</i> , <b>2010</b> , 40, 531-555	12.8	179
66	Effect of Al-Trace Width on the Electromigration Failure Time of Flip-Chip Solder Joints. <i>Journal of Electronic Materials</i> , <b>2010</b> , 39, 2316-2323	1.9	
65	Investigation of Void Nucleation and Propagation in the Joule Heating Effect During Electromigration in Flip-Chip Solder Joints. <i>Journal of Electronic Materials</i> , <b>2010</b> , 39, 2489-2494	1.9	3
64	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> , <b>2009</b> , 95, 253503	3.4	2
63	Thermomigration in Pb-free SnAg solder joint under alternating current stressing. <i>Applied Physics Letters</i> , <b>2009</b> , 94, 092107	3.4	49
62	Effect of bump size on current density and temperature distributions in flip-chip solder joints. <i>Microelectronics Reliability</i> , <b>2009</b> , 49, 544-550	1.2	17
61	Interfacial Reaction Between Eutectic Sn-Pb Solder and Electroplated-Ni as well as Electroless-Ni Metallization During Reflow. <i>Journal of Electronic Materials</i> , <b>2009</b> , 38, 338-344	1.9	6
60	Nonuniform and Negative Marker Displacements Induced by Current Crowding During Electromigration in Flip-Chip Sn-0.7Cu Solder Joints. <i>Journal of Electronic Materials</i> , <b>2009</b> , 38, 2443-2448 <sup>1.9</sup>		5
59	Direct measurement of hot-spot temperature in flip-chip solder joints with Cu columns under current stressing using infrared microscopy <b>2009</b> ,		1
58	Electromigration in Sn <sub>3</sub> Cu intermetallic compounds. <i>Journal of Applied Physics</i> , <b>2009</b> , 105, 023715	2.5	34
57	Electromigration-induced Pb and Sn whisker growth in SnPb solder stripes. <i>Journal of Materials Research</i> , <b>2008</b> , 23, 2017-2022	2.5	12



56	Failure induced by thermomigration of interstitial Cu in Pb-free flip chip solder joints. <i>Applied Physics Letters</i> , <b>2008</b> , 93, 122103	3.4	42
55	Enhanced green laser activation by antireflective gate structures in panel transistors. <i>Applied Physics Letters</i> , <b>2008</b> , 92, 063503	3.4	15
54	Direct measurement of hot-spot temperature in flip-chip solder joints under current stressing using infrared microscopy. <i>Journal of Applied Physics</i> , <b>2008</b> , 104, 033708	2.5	18
53	The effect of pre-aging on the electromigration of flip-chip SnAg solder joints. <i>Jom</i> , <b>2008</b> , 60, 77-80	2.1	2
52	Effect of Polyethylene Glycol Additives on Pulse Electroplating of SnAg Solder. <i>Journal of Electronic Materials</i> , <b>2008</b> , 37, 224-230	1.9	12
51	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> , <b>2008</b> , 37, 962-967	1.9	2
50	Three-Dimensional Thermoelectrical Simulation in Flip-Chip Solder Joints with Thick Underbump Metallizations during Accelerated Electromigration Testing. <i>Journal of Electronic Materials</i> , <b>2007</b> , 36, 159-167	1.9	15
49	Relieving Hot-Spot Temperature and Current Crowding Effects During Electromigration in Solder Bumps by Using Cu Columns. <i>Journal of Electronic Materials</i> , <b>2007</b> , 36, 1348-1354	1.9	15
48	Thermomigration in flip-chip SnPb solder joints under alternating current stressing. <i>Applied Physics Letters</i> , <b>2007</b> , 90, 152105	3.4	40
47	Effect of void propagation on bump resistance due to electromigration in flip-chip solder joints using Kelvin structure. <i>Applied Physics Letters</i> , <b>2007</b> , 91, 132113	3.4	25
46	Effect of Al-trace degradation on Joule heating during electromigration in flip-chip solder joints. <i>Applied Physics Letters</i> , <b>2007</b> , 90, 082103	3.4	15
45	Fabrication of ordered Ta2O5 nanodots using an anodic aluminum oxide template on Si substrate. <i>Journal of Materials Research</i> , <b>2007</b> , 22, 1064-1071	2.5	4
44	Mechanism of electromigration-induced failure in flip-chip solder joints with a 10-nm-thick Cu under-bump metallization. <i>Journal of Materials Research</i> , <b>2007</b> , 22, 763-769	2.5	10
43	Enhanced Hole Mobility and Reliability of Panel Epi-Like Silicon Transistors Using Backside Green Laser Activation. <i>IEEE Electron Device Letters</i> , <b>2007</b> , 28, 790-792	4.4	7
42	Low-temperature growth of ZnO nanorods in anodic aluminum oxide on Si substrate by atomic layer deposition. <i>Applied Physics Letters</i> , <b>2007</b> , 90, 033104	3.4	56
41	Study of electromigration in eutectic SnPb solder stripes using the edge displacement method. <i>Journal of Electronic Materials</i> , <b>2006</b> , 35, 1655-1659	1.9	3
40	Effect of Al trace dimension on electromigration failure time of flip-chip solder joints. <i>Journal of Electronic Materials</i> , <b>2006</b> , 35, 1740-1744	1.9	2
39	Temperature and current-density distributions in flip-chip solder joints with Cu traces. <i>Journal of Electronic Materials</i> , <b>2006</b> , 35, 947-953	1.9	7

38	Study of void formation due to electromigration in flip-chip solder joints using Kelvin bump probes. <i>Applied Physics Letters</i> , <b>2006</b> , 89, 032103	3-4	45
37	Hermetic Packaging Using Eutectic SnPb Solder and Cr/Ni/Cu Metallurgy Layer. <i>IEEE Transactions on Advanced Packaging</i> , <b>2006</b> , 29, 760-765		7
36	Effect of Al-trace dimension on Joule heating and current crowding in flip-chip solder joints under accelerated electromigration. <i>Applied Physics Letters</i> , <b>2006</b> , 88, 172108	3-4	35
35	Investigation of void nucleation and propagation during electromigration of flip-chip solder joints using x-ray microscopy. <i>Applied Physics Letters</i> , <b>2006</b> , 89, 262106	3-4	20
34	Infrared microscopy of hot spots induced by Joule heating in flip-chip SnAg solder joints under accelerated electromigration. <i>Applied Physics Letters</i> , <b>2006</b> , 88, 022110	3-4	63
33	Relieving the current crowding effect in flip-chip solder joints during current stressing. <i>Journal of Materials Research</i> , <b>2006</b> , 21, 137-146	2.5	18
32	Effect of three-dimensional current and temperature distributions on void formation and propagation in flip-chip solder joints during electromigration. <i>Applied Physics Letters</i> , <b>2006</b> , 89, 022117	3-4	38
31	Critical length of electromigration for eutectic SnPb solder stripe. <i>Applied Physics Letters</i> , <b>2006</b> , 88, 182105	3-4	18
30	Electromigration issues in lead-free solder joints. <i>Journal of Materials Science: Materials in Electronics</i> , <b>2006</b> , 18, 259-268	2.1	40
29	Stress analysis of spontaneous Sn whisker growth. <i>Journal of Materials Science: Materials in Electronics</i> , <b>2006</b> , 18, 269-281	2.1	55
28	Three-dimensional simulation on current-density distribution in flip-chip solder joints under electric current stressing. <i>Journal of Applied Physics</i> , <b>2005</b> , 98, 044509	2.5	32
27	Microstructural Evolution During Electromigration in Eutectic SnAg Solder Bumps. <i>Journal of Materials Research</i> , <b>2005</b> , 20, 2432-2442	2.5	8
26	3-D simulation on current density distribution in flip-chip solder joints with thick Cu UBM under current stressing <b>2005</b> ,		13
25	Study of electromigration in thin tin film using edge displacement method. <i>Journal of Applied Physics</i> , <b>2005</b> , 98, 013540	2.5	14
24	Threshold current density of electromigration in eutectic SnPb solder. <i>Applied Physics Letters</i> , <b>2005</b> , 86, 203504	3-4	37
23	Electromigration in Pb-free SnAg <sub>3.8</sub> Cu <sub>0.7</sub> solder stripes. <i>Journal of Applied Physics</i> , <b>2005</b> , 98, 033523	2.5	34
22	Metallurgical reactions of Sn-3.5Ag solder with various thicknesses of electroplated Ni/Cu under bump metallization. <i>Journal of Materials Research</i> , <b>2005</b> , 20, 2772-2779	2.5	15
21	Measurement of electromigration parameters of lead-free SnAg <sub>3.5</sub> solder using U-groove lines. <i>Journal of Materials Research</i> , <b>2005</b> , 20, 2831-2837	2.5	7

20	Electromigration failure mechanisms for SnAg3.5 solder bumps on Ti/Cr-Cu/Cu and Ni(P)/Au metallization pads. <i>Journal of Applied Physics</i> , <b>2004</b> , 96, 4518-4524	2.5	77
19	Electromigration at the high-Pb eutectic SnPb solder interface. <i>Journal of Materials Research</i> , <b>2004</b> , 19, 550-556	2.5	2
18	Cross interactions on interfacial compound formation of solder bumps and metallization layers during reflow. <i>Journal of Materials Research</i> , <b>2004</b> , 19, 3654-3664	2.5	20
17	Microstructure evolution during electromigration in eutectic SnPb solder bumps. <i>Journal of Materials Research</i> , <b>2004</b> , 19, 2394-2401	2.5	4
16	Thermal gradient in solder joints under electrical-current stressing. <i>Journal of Electronic Materials</i> , <b>2004</b> , 33, 1350-1354	1.9	30
15	Electromigration study in SnAg3.8Cu0.7 solder joints on Ti/Cr-Cu/Cu under-bump metallization. <i>Journal of Electronic Materials</i> , <b>2003</b> , 32, 1222-1227	1.9	25
14	Electromigration studies of flip chip Sn95/Sb5 solder bumps on Cr/Cr-Cu/Cu under-bump metallization. <i>Journal of Electronic Materials</i> , <b>2003</b> , 32, 1278-1283	1.9	10
13	Enhanced dopant activation and elimination of end-of-range defects in BF <sub>2</sub> <sup>+</sup> -implanted silicon-on-insulator by high-density current. <i>Applied Physics Letters</i> , <b>2001</b> , 79, 3971-3973	3.4	5
12	Electromigration in eutectic SnPb solder lines. <i>Journal of Applied Physics</i> , <b>2001</b> , 89, 4332-4335	2.5	74
11	Twist-type silicon bicrystals and compliant substrates prepared from silicon-on-insulator wafers. <i>Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties</i> , <b>2000</b> , 80, 881-891		5
10	Effect of current crowding on vacancy diffusion and void formation in electromigration. <i>Applied Physics Letters</i> , <b>2000</b> , 76, 988-990	3.4	109
9	Effect of current crowding on contact failure in heavily doped n <sup>+</sup> - and p <sup>+</sup> -silicon-on-insulator. <i>Journal of Materials Research</i> , <b>2000</b> , 15, 2387-2392	2.5	6
8	Electromigration in SnPb solder strips as a function of alloy composition. <i>Journal of Applied Physics</i> , <b>2000</b> , 88, 5703-5709	2.5	123
7	Dopant activation of heavily doped silicon-on-insulator by high density currents. <i>Journal of Applied Physics</i> , <b>1999</b> , 86, 1552-1557	2.5	24
6	Microstructure-electromigration correlation in a thin stripe of eutectic SnPb solder stressed between Cu electrodes. <i>Applied Physics Letters</i> , <b>1999</b> , 75, 58-60	3.4	132
5	Joule heating effect under accelerated electromigration in flip-chip solder joints		4
4	Electromigration failure mechanism of Sn96.5Ag3.5 flip-chip solder bumps		2
3	Electromigration induced failure in SnAg/sub 3.8/Cu/sub 0.7/ solder joints for flip chip technology		1

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