

Christopher M Gourlay

List of Publications by Year in descending order

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docs citations

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#	ARTICLE	IF	CITATIONS
1	Growth twinning and morphology of Al ₄₅ Cr ₇ and Al ₁₃ Fe ₄ . Journal of Alloys and Compounds, 2022, 893, 162318.	2.8	7
2	Al-Mn Intermetallics in High Pressure Die Cast AZ91 and Direct Chill Cast AZ80. Metals, 2022, 12, 266.	1.0	1
3	Al-Mn-Fe intermetallic formation in AZ91 magnesium alloys: Effects of impurity iron. Intermetallics, 2022, 142, 107465.	1.8	12
4	Eutectic intermetallic formation during solidification of a Mg-Sn-Al-Zn-Mn alloy. Materials Characterization, 2022, 186, 111807.	1.9	5
5	A multi-scale approach to microstructure-sensitive thermal fatigue in solder joints. International Journal of Plasticity, 2022, 155, 103308.	4.1	31
6	Time-Lapse Imaging of Ag ₃ Sn Thermal Coarsening in Sn-3Ag-0.5Cu Solder Joints. Journal of Electronic Materials, 2021, 50, 786-795.	1.0	11
7	Microstructure and Damage Evolution During Thermal Cycling of Sn-Ag-Cu Solders Containing Antimony. Journal of Electronic Materials, 2021, 50, 825-841.	1.0	10
8	Al ₂ MgC ₂ and AlFe ₃ C formation in AZ91 Mg alloy melted in Fe-C crucibles. Journal of Alloys and Compounds, 2021, 854, 156415.	2.8	7
9	Intermetallic size and morphology effects on creep rate of Sn-3Ag-0.5Cu solder. International Journal of Plasticity, 2021, 137, 102904.	4.1	18
10	On the 3-D Shape of Interlaced Regions in Sn-3Ag-0.5Cu Solder Balls. Journal of Electronic Materials, 2021, 50, 808-817.	1.0	6
11	The Role of Lengthscale in the Creep of Sn-3Ag-0.5Cu Solder Microstructures. Journal of Electronic Materials, 2021, 50, 926-938.	1.0	10
12	Triaxial Compression on Semi-solid Alloys. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2021, 52, 2010-2023.	1.1	5
13	Rapid fabrication of tin-copper anodes for lithium-ion battery applications. Journal of Alloys and Compounds, 2021, 867, 159031.	2.8	9
14	Al ₁₁ Mn ₄ formation on Al ₈ Mn ₅ during the solidification and heat treatment of AZ-series magnesium alloys. Materialia, 2021, 19, 101192.	1.3	17
15	In-situ electron backscatter diffraction of thermal cycling in a single grain Cu/Sn-3Ag-0.5Cu/Cu solder joint. Scripta Materialia, 2020, 175, 55-60.	2.6	20
16	Solidification orientation relationships between Al ₃ Ti and TiB ₂ . Acta Materialia, 2020, 186, 149-161.	3.8	21
17	In-situ study of creep in Sn-3Ag-0.5Cu solder. Acta Materialia, 2020, 196, 31-43.	3.8	13
18	Rheological transitions in semi-solid alloys: In-situ imaging and LBM-DEM simulations. Acta Materialia, 2020, 191, 24-42.	3.8	17

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19	Al ₈ Mn ₅ in High-Pressure Die Cast AZ91: Twinning, Morphology and Size Distributions. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2020, 51, 2523-2535.	1.1	8
20	The role of side-branching in microstructure development in laser powder-bed fusion. Nature Communications, 2020, 11, 749.	5.8	262
21	In-situ X-ray radiography of twinned crystal growth of primary Al ₁₃ Fe ₄ . Scripta Materialia, 2020, 184, 57-62.	2.6	21
22	Role of Bi, Sb and In in microstructure formation and properties of Sn-0.7Cu-0.05Ni-X BGA interconnections. , 2019, , .		2
23	Evaluating Creep Deformation in Controlled Microstructures of Sn-3Ag-0.5Cu Solder. Journal of Electronic Materials, 2019, 48, 107-121.	1.0	6
24	Al ₈ Mn ₅ Particle Settling and Interactions with Oxide Films in Liquid AZ91 Magnesium Alloys. Jom, 2019, 71, 2235-2244.	0.9	20
25	Advances in Electronic Interconnection Materials. Jom, 2019, 71, 131-132.	0.9	2
26	Precipitation and coarsening of bismuth plates in Sn-Ag-Cu-Bi and Sn-Cu-Ni-Bi solder joints. Journal of Materials Science: Materials in Electronics, 2019, 30, 378-390.	1.1	19
27	Mechanisms of beta-Sn nucleation and microstructure evolution in Sn-Ag-Cu solders containing titanium. Journal of Alloys and Compounds, 2019, 777, 1357-1366.	2.8	18
28	Semi-solid deformation of Al-Cu alloys: A quantitative comparison between real-time imaging and coupled LBM-DEM simulations. Acta Materialia, 2019, 163, 208-225.	3.8	23
29	Nucleation and twinning in tin droplet solidification on single crystal intermetallic compounds. Acta Materialia, 2018, 150, 281-294.	3.8	36
30	Competition between stable and metastable eutectic growth in Sn-Ni alloys. Acta Materialia, 2018, 149, 119-131.	3.8	17
31	Nucleation and growth crystallography of Al ₈ Mn ₅ on B ₂ -Al(Mn,Fe) in AZ91 magnesium alloys. Acta Materialia, 2018, 153, 364-376.	3.8	57
32	Printability and microstructure of the CoCrFeMnNi high-entropy alloy fabricated by laser powder bed fusion. Materials Letters, 2018, 224, 22-25.	1.3	135
33	AlSi ₂ Sc ₂ intermetallic formation in Al-7Si-0.3Mg-xSc alloys and their effects on as-cast properties. Journal of Alloys and Compounds, 2018, 731, 1159-1170.	2.8	37
34	The Influence of Primary Cu ₆ Sn ₅ Size on the Shear Impact Properties of Sn-Cu/Cu BGA Joints. Journal of Electronic Materials, 2018, 47, 84-95.	1.0	8
35	Controlling BGA joint microstructures using seed crystals. , 2018, , .		0
36	Tailoring the Cu ₆ Sn ₅ layer texture with Ni additions in Sn-Ag-Cu based solder joints. , 2018, , .		0

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37	Influence of Ni on the refinement and twinning of primary Cu ₆ Sn ₅ in Sn-0.7Cu-0.05Ni. <i>Intermetallics</i> , 2018, 102, 34-45.	1.8	27
38	Optimization of Ni and Bi levels in Sn-0.7Cu-xNi-yBi solders for improved interconnection reliability. , 2018, , .		4
39	Synchrotron Radiography of Sn-0.7Cu-0.05Ni Solder Solidification. <i>Solid State Phenomena</i> , 2018, 273, 66-71.	0.3	2
40	In situ imaging of microstructure formation in electronic interconnections. <i>Scientific Reports</i> , 2017, 7, 40010.	1.6	43
41	Cu ₆ Sn ₅ crystal growth mechanisms during solidification of electronic interconnections. <i>Acta Materialia</i> , 2017, 126, 540-551.	3.8	81
42	Nucleation, grain orientations, and microstructure of Sn-3Ag-0.5Cu soldered on cobalt substrates. <i>Journal of Alloys and Compounds</i> , 2017, 706, 596-608.	2.8	36
43	Reply to "Comments on "Evidence of the hydrogen release mechanism in bulk MgH ₂ "™. <i>Scientific Reports</i> , 2017, 7, 43720.	1.6	0
44	Grain refinement of electronic solders: The potential of combining solute with nucleant particles. <i>Journal of Alloys and Compounds</i> , 2017, 715, 471-485.	2.8	33
45	Recommended values for the $\hat{\text{I}}^2\text{Sn}$ solidus line in Sn-Bi alloys. <i>Thermochimica Acta</i> , 2017, 654, 65-69.	1.2	22
46	Real time X-ray imaging of soldering processes at the SPring-8 synchrotron. , 2017, , .		0
47	Influence of bismuth on the solidification of Sn-0.7Cu-0.05Ni-xBi/Cu joints. <i>Journal of Alloys and Compounds</i> , 2017, 701, 321-334.	2.8	42
48	Dilatancy in semi-solid steels at high solid fraction. <i>Acta Materialia</i> , 2017, 125, 187-195.	3.8	40
49	Anisotropic thermal expansion of Ni ₃ Sn ₄ , Ag ₃ Sn, Cu ₃ Sn, Cu ₆ Sn ₅ and $\hat{\text{I}}^2\text{Sn}$. <i>Intermetallics</i> , 2017, 91, 50-64.	1.8	57
50	Harnessing heterogeneous nucleation to control tin orientations in electronic interconnections. <i>Nature Communications</i> , 2017, 8, 1916.	5.8	50
51	Nucleation of tin on the Cu ₆ Sn ₅ layer in electronic interconnections. <i>Acta Materialia</i> , 2017, 123, 404-415.	3.8	56
52	Reaction-induced surface reconstruction of silver in contact with zirconium. <i>Journal of Alloys and Compounds</i> , 2017, 691, 624-633.	2.8	1
53	Growth of Al ₈ Mn ₅ Intermetallic in AZ91. <i>Minerals, Metals and Materials Series</i> , 2017, , 85-92.	0.3	4
54	Real-Time Observation of AZ91 Solidification by Synchrotron Radiography. <i>Minerals, Metals and Materials Series</i> , 2017, , 597-603.	0.3	2

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55	Suppression of Cu ₆ Sn ₅ in TiO ₂ reinforced solder joints after multiple reflow cycles. Materials and Design, 2016, 108, 418-428.	3.3	57
56	Dissolution in service of the copper substrate of solder joints. , 2016, , .		3
57	Effects of cobalt on the nucleation and grain refinement of Sn-3Ag-0.5Cu solders. Journal of Alloys and Compounds, 2016, 682, 326-337.	2.8	66
58	Effect of Bi and In on Microstructure Formation in Sn-3Ag-3Bi-3In/Cu and /Ni Solder Joints. Key Engineering Materials, 2016, 700, 142-151.	0.4	2
59	Thermal etching of silver: Influence of rolling defects. Materials Characterization, 2016, 118, 112-121.	1.9	4
60	Influence of Bi additions on the distinct β Sn grain structure of Sn-0.7Cu-0.05Ni-xBi ($x = 0 \leq 4$ wt%). , 2016, , .		3
61	Effect of Ni on the Formation and Growth of Primary Cu ₆ Sn ₅ Intermetallics in Sn-0.7wt.%Cu Solder Pastes on Cu Substrates During the Soldering Process. Journal of Electronic Materials, 2016, 45, 154-163.	1.0	51
62	Controlling Bulk Cu ₆ Sn ₅ Nucleation in Sn0.7Cu/Cu Joints with Al Micro-alloying. Journal of Electronic Materials, 2016, 45, 69-78.	1.0	19
63	The Influence of Cu on Metastable NiSn ₄ in Sn-3.5Ag-xCu/ENIG Joints. Journal of Electronic Materials, 2016, 45, 12-20.	1.0	11
64	Etch pitting and subsurface pore growth during the thermal etching of silver. Philosophical Magazine Letters, 2015, 95, 547-554.	0.5	1
65	The influence of alloying elements on metastable NiSn ₄ in Sn-Ag solders on Ni-containing metallizations. , 2015, , .		1
66	Nucleation and Growth of Tin in Pb-Free Solder Joints. Jom, 2015, 67, 2383-2393.	0.9	52
67	Application of a macroscopic model to predict the band segregation induced by shear deformation of semisolid. IOP Conference Series: Materials Science and Engineering, 2015, 84, 012011.	0.3	0
68	Heterogeneous nucleation of bulk Cu ₆ Sn ₅ in Sn-Ag-Cu-Al and Sn-Cu-Al solders. , 2015, , .		0
69	Evidence of the hydrogen release mechanism in bulk MgH ₂ . Scientific Reports, 2015, 5, 8450.	1.6	66
70	Metastable eutectic in Pb-free joints between Sn \leq 3.5Ag and Ni-based substrates. Materials Letters, 2015, 148, 91-95.	1.3	16
71	Localization of shear strain and shear band formation induced by deformation in semi-solid Al-Cu alloys. IOP Conference Series: Materials Science and Engineering, 2015, 84, 012078.	0.3	1
72	NiSn ₄ in solder joints between Sn-3.5Ag and Ni, ENIG or ENEPIG. , 2015, , .		2

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73	Heterogeneous nucleation of Cu ₆ Sn ₅ in Sn-Cu-Al solders. Journal of Alloys and Compounds, 2015, 619, 345-355.	2.8	52
74	In Situ Observation of Deformation in Semi-solid Fe-C Alloys at High Shear Rate. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2014, 45, 5613-5623.	1.1	17
75	Heterogeneous nucleation of β -Sn on NiSn ₄ , PdSn ₄ and PtSn ₄ . Acta Materialia, 2014, 71, 56-68.	3.8	49
76	Solidification of Sn-0.7Cu-0.15Zn Solder: In Situ Observation. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2014, 45, 918-926.	1.1	23
77	Revealing the micromechanisms behind semi-solid metal deformation with time-resolved X-ray tomography. Nature Communications, 2014, 5, 4464.	5.8	94
78	Pore behaviour during semi-solid alloy compression: Insights into defect creation under pressure. Scripta Materialia, 2014, 89, 73-76.	2.6	16
79	Eutectic Morphology of Al-7Si-0.3Mg Alloys with Scandium Additions. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2014, 45, 4549-4560.	1.1	34
80	Synchrotron Radiography Studies of Shear-Induced Dilation in Semisolid Al Alloys and Steels. Jom, 2014, 66, 1415-1424.	0.9	13
81	In situ study of granular micromechanics in semi-solid carbon steels. Acta Materialia, 2013, 61, 4169-4179.	3.8	34
82	Role of Fe impurities in the nucleation of metastable NiSn ₄ . Intermetallics, 2013, 37, 32-41.	1.8	13
83	XRD study of the kinetics of β -Sn transformations in tin. Philosophical Magazine, 2013, 93, 3627-3647.	0.7	27
84	Characterization of Shear Deformation Based on In-situ Observation of Deformation in Semi-solid Al-Cu Alloys and Water-particle Mixture. ISIJ International, 2013, 53, 1195-1201.	0.6	21
85	Characterization of Shear Deformation Based on In-situ Observation of Deformation in Semi-Solid Al-Cu Alloys and Water-Particle Mixture. Tetsu-To-Hagane/Journal of the Iron and Steel Institute of Japan, 2013, 99, 141-148.	0.1	2
86	Macroscopic modelling of semisolid deformation for considering segregation bands induced by shear deformation. IOP Conference Series: Materials Science and Engineering, 2012, 33, 012053.	0.3	5
87	NiSn ₄ formation during the solidification of Sn-Ni alloys. Intermetallics, 2012, 25, 48-59.	1.8	40
88	NiSn ₄ Formation in As-Soldered Ni-Sn and ENIG-Sn Couples. Journal of Electronic Materials, 2012, 41, 3331-3341.	1.0	19
89	Globule-Globule Interactions during Deformation in Semi-Solid Al-Cu Using Time-Resolved X-Ray Tomography. Solid State Phenomena, 2012, 192-193, 179-184.	0.3	0
90	Numerical study of dendrite coherency during equiaxed solidification by the Discrete Element Method. IOP Conference Series: Materials Science and Engineering, 2012, 33, 012071.	0.3	1

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91	Synchrotron radiography of direct-shear in semi-solid alloys. IOP Conference Series: Materials Science and Engineering, 2012, 27, 012086.	0.3	9
92	In situ, time-resolved tomography for validating models of deformation in semi-solid alloys. IOP Conference Series: Materials Science and Engineering, 2012, 33, 012037.	0.3	6
93	Exploring dendrite coherency with the discrete element method. Acta Materialia, 2012, 60, 1334-1345.	3.8	43
94	Direct observation of deformation in semi-solid carbon steel. Scripta Materialia, 2011, 64, 1129-1132.	2.6	81
95	Kinetics of the $\beta \rightarrow \beta'$ transformation in Cu ₆ Sn ₅ . Scripta Materialia, 2011, 65, 922-925.	2.6	68
96	Formation of the surface layer in hypoeutectic Al-alloy high-pressure die castings. Materials Chemistry and Physics, 2011, 130, 251-258.	2.0	23
97	Granular deformation mechanisms in semi-solid alloys. Acta Materialia, 2011, 59, 4933-4943.	3.8	89
98	Dilatancy and rheology at $\sim 60\%$ solid during equiaxed solidification. Acta Materialia, 2011, 59, 3091-3101.	3.8	26
99	In situ investigation of unidirectional solidification in Sn ~ 0.7 Cu and Sn ~ 0.7 Cu ~ 0.06 Ni. Acta Materialia, 2011, 59, 4043-4054.	3.8	56
100	Agglomeration and bending of equiaxed crystals during solidification of hypoeutectic Al and Mg alloys. Acta Materialia, 2010, 58, 261-271.	3.8	16
101	Feeding Mechanisms in High-Pressure Die Castings. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2010, 41, 1836-1846.	1.1	43
102	Intermetallic Formation and Fluidity in Sn-Rich Sn-Cu-Ni Alloys. Journal of Electronic Materials, 2010, 39, 56-69.	1.0	46
103	Development of shear bands during deformation of partially solid alloys. Scripta Materialia, 2010, 63, 1185-1188.	2.6	21
104	Synchrotron Micro-XRF Measurements of Trace Element Distributions in BGA Type Solders and Solder Joints. Transactions of the Japan Institute of Electronics Packaging, 2010, 3, 40-46.	0.3	14
105	The Influence of External Mechanical Stresses on Agglomeration and Bending of Solidifying Crystals. Materials Science Forum, 2010, 654-656, 1367-1372.	0.3	0
106	The influence of Ni additions on the relative stability of β and β' in Cu ₆ Sn ₅ . Applied Physics Letters, 2010, 96, .	1.5	54
107	In-situ Observation of Sn alloy solidification at SPring-8. Yosetsu Gakkai Shi/Journal of the Japan Welding Society, 2009, 78, 600-603.	0.0	2
108	The Influence of Intensification Pressure on the Gate Microstructure of AlSi ₃ MgMn High Pressure Die Castings. Materials Science Forum, 2009, 618-619, 607-610.	0.3	3

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109	The thickness of defect bands in high-pressure die castings. <i>Materials Characterization</i> , 2009, 60, 1432-1441.	1.9	44
110	Cracking and phase stability in reaction layers between Sn-Cu-Ni solders and Cu substrates. <i>Jom</i> , 2009, 61, 45-51.	0.9	119
111	Microstructure Formation in AlSi4MgMn and AlMg5Si2Mn High-Pressure Die Castings. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2009, 40, 1645-1659.	1.1	72
112	Microstructure formation in high pressure die casting. <i>Transactions of the Indian Institute of Metals</i> , 2009, 62, 499-503.	0.7	10
113	Engineering the Mg-Mg ₂ Ni eutectic transformation to produce improved hydrogen storage alloys. <i>International Journal of Hydrogen Energy</i> , 2009, 34, 7686-7691.	3.8	61
114	The Maximum Fluidity Length of Solidifying Sn-Cu-Ag-Ni Solder Alloys. <i>Journal of Electronic Materials</i> , 2008, 37, 51-60.	1.0	39
115	The Influence of 0.1 wt.% Ni on the Microstructure and Fluidity Length of Sn-0.7Cu-xNi. <i>Journal of Electronic Materials</i> , 2008, 37, 32-39.	1.0	67
116	Shear mechanisms at 50% solid during equiaxed dendritic solidification of an AZ91 magnesium alloy. <i>Acta Materialia</i> , 2008, 56, 3403-3413.	3.8	59
117	Reynolds' Dilatancy and Shear Bands in Semi-Solid Alloys. <i>Solid State Phenomena</i> , 2008, 141-143, 337-342.	0.3	2
118	Effects of Phosphorus on Microstructure and Fluidity of Sn-0.7Cu-0.05Ni Lead-Free Solder. <i>Materials Transactions</i> , 2008, 49, 443-448.	0.4	24
119	Rheological Transitions at Low Solid Fraction in Solidifying Magnesium Alloy AZ91. <i>Materials Science Forum</i> , 2007, 561-565, 1067-1070.	0.3	3
120	Dilatant shear bands in solidifying metals. <i>Nature</i> , 2007, 445, 70-73.	13.7	192
121	Defect Band Characteristics in Mg-Al and Al-Si High-Pressure Die Castings. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2007, 38, 1833-1844.	1.1	103
122	A rheological assessment of the effect of trace level Ni additions on the solidification of Sn-0.7Cu. <i>Scripta Materialia</i> , 2006, 54, 1557-1562.	2.6	21
123	Effects of Si content on defect band formation in hypoeutectic Al-Si die castings. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2005, 413-414, 92-97.	2.6	48
124	Shear deformation at 29% solid during solidification of magnesium alloy AZ91 and aluminium alloy A356. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2005, 413-414, 180-185.	2.6	6
125	Migration of crystals during the filling of semi-solid castings. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2005, 36, 805-818.	1.1	79
126	Segregation band formation in Al-Si die castings. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2004, 35, 2881-2891.	1.1	52

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127	SEMIPERMEABLE MEMBRANE DEVICE-AVAILABILITY OF POLYCYCLIC AROMATIC HYDROCARBONS IN RIVER WATERS AND WASTEWATER TREATMENT PLANT EFFLUENTS. Polycyclic Aromatic Compounds, 2004, 24, 805-825.	1.4	10
128	<i>In Situ</i>; Study of the Altering Globule Packing-Density during Semisolid Alloy Deformation. Solid State Phenomena, 0, 192-193, 185-190.	0.3	0
129	Solidification of Sn-3Ag-0.5Cu and Sn-0.7Cu-0.05Ni Solders. Materials Science Forum, 0, 857, 44-48.	0.3	1
130	Understanding the Rheological Transitions in Semi-Solid Alloys by a Combined <i>In Situ</i>; Imaging and Granular Micromechanics Modeling Approach. Solid State Phenomena, 0, 327, 127-132.	0.3	0