Christopher M Gourlay

List of Publications by Year
in descending order

Source: https://exaly.com/author-pdf/4592221/publications.pdf

Version: 2024-02-01

130	3,818	87723 38	143772 57
papers	citations	h-index	g-index

130	130	130	1922
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	The role of side-branching in microstructure development in laser powder-bed fusion. Nature Communications, 2020, 11, 749.	5.8	262
2	Dilatant shear bands in solidifying metals. Nature, 2007, 445, 70-73.	13.7	192
3	Printability and microstructure of the CoCrFeMnNi high-entropy alloy fabricated by laser powder bed fusion. Materials Letters, 2018, 224, 22-25.	1.3	135
4	Cracking and phase stability in reaction layers between Sn-Cu-Ni solders and Cu substrates. Jom, 2009, 61, 45-51.	0.9	119
5	Defect Band Characteristics in Mg-Al and Al-Si High-Pressure Die Castings. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2007, 38, 1833-1844.	1.1	103
6	Revealing the micromechanisms behind semi-solid metal deformation with time-resolved X-ray tomography. Nature Communications, 2014, 5, 4464.	5.8	94
7	Granular deformation mechanisms in semi-solid alloys. Acta Materialia, 2011, 59, 4933-4943.	3.8	89
8	Direct observation of deformation in semi-solid carbon steel. Scripta Materialia, 2011, 64, 1129-1132.	2.6	81
9	Cu6Sn5 crystal growth mechanisms during solidification of electronic interconnections. Acta Materialia, 2017, 126, 540-551.	3.8	81
10	Migration of crystals during the filling of semi-solid castings. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2005, 36, 805-818.	1.1	79
11	Microstructure Formation in AlSi4MgMn and AlMg5Si2Mn High-Pressure Die Castings. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2009, 40, 1645-1659.	1.1	72
12	Kinetics of the Î·â€“Î·â€² transformation in Cu6Sn5. Scripta Materialia, 2011, 65, 922-925.	2.6	68
13	The Influence of 0â€“0.1 wt.% Ni on the Microstructure and Fluidity Length of Sn-0.7Cu-xNi. Journal of Electronic Materials, 2008, 37, 32-39.	1.0	67
14	Evidence of the hydrogen release mechanism in bulk MgH2. Scientific Reports, 2015, 5, 8450.	1.6	66
15	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
16	Engineering the Mgâ€“Mg2Ni eutectic transformation to produce improved hydrogen storage alloys. International Journal of Hydrogen Energy, 2009, 34, 7686-7691.	3.8	61
17	Shear mechanisms at 0â€“50% solid during equiaxed dendritic solidification of an AZ91 magnesium alloy. Acta Materialia, 2008, 56, 3403-3413.	3.8	59
18	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

#	ARTICLE	IF	CITATIONS
19	Anisotropic thermal expansion of Ni 3 Sn 4 , Ag 3 Sn, Cu 3 Sn, Cu 6 Sn 5 and Î²Sn. Intermetallics, 2017, 91, 50-64.	1.8	57
20	Nucleation and growth crystallography of Al8Mn5 on B2-Al(Mn,Fe) in AZ91 magnesium alloys. Acta Materialia, 2018, 153, 364-376.	3.8	57
21	In situ investigation of unidirectional solidification in Snâ€“0.7Cu and Snâ€“0.7Cuâ€“0.06Ni. Acta Materialia, 2011, 59, 4043-4054.	3.8	56
22	Nucleation of tin on the Cu6Sn5 layer in electronic interconnections. Acta Materialia, 2017, 123, 404-415.	3.8	56
23	The influence of Ni additions on the relative stability of Î· and Î·â€²â€˜Cu6Sn5. Applied Physics Letters, 2010, 96, .	1.5	54
24	Segregation band formation in Al-Si die castings. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2004, 35, 2881-2891.	1.1	52
25	Nucleation and Growth of Tin in Pb-Free Solder Joints. Jom, 2015, 67, 2383-2393.	0.9	52
26	Heterogeneous nucleation of Cu6Sn5 in Snâ€“Cuâ€“Al solders. Journal of Alloys and Compounds, 2015, 619, 345-355.	2.8	52
27	Effect of Ni on the Formation and Growth of Primary Cu6Sn5 Intermetallics in Sn-0.7Âwt.%Cu Solder Pastes on Cu Substrates During the Soldering Process. Journal of Electronic Materials, 2016, 45, 154-163.	1.0	51
28	Harnessing heterogeneous nucleation to control tin orientations in electronic interconnections. Nature Communications, 2017, 8, 1916.	5.8	50
29	Heterogeneous nucleation of Î²Sn on NiSn4, PdSn4 and PtSn4. Acta Materialia, 2014, 71, 56-68.	3.8	49
30	Effects of Si content on defect band formation in hypoeutectic Alâ€“Si die castings. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2005, 413-414, 92-97.	2.6	48
31	Intermetallic Formation and Fluidity in Sn-Rich Sn-Cu-Ni Alloys. Journal of Electronic Materials, 2010, 39, 56-69.	1.0	46
32	The thickness of defect bands in high-pressure die castings. Materials Characterization, 2009, 60, 1432-1441.	1.9	44
33	Feeding Mechanisms in High-Pressure Die Castings. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2010, 41, 1836-1846.	1.1	43
34	Exploring dendrite coherency with the discrete element method. Acta Materialia, 2012, 60, 1334-1345.	3.8	43
35	In situ imaging of microstructure formation in electronic interconnections. Scientific Reports, 2017, 7, 40010.	1.6	43
36	Influence of bismuth on the solidification of Sn-0.7Cu-0.05Ni-xBi/Cu joints. Journal of Alloys and Compounds, 2017, 701, 321-334.	2.8	42

#	Article	IF	Citations
37	NiSn4 formation during the solidification of Snâ€"Ni alloys. Intermetallics, 2012, 25, 48-59.	1.8	40
38	Dilatancy in semi-solid steels at high solid fraction. Acta Materialia, 2017, 125, 187-195.	3.8	40
39	The Maximum Fluidity Length of Solidifying Sn-Cu-Ag-Ni Solder Alloys. Journal of Electronic Materials, 2008, 37, 51-60.	1.0	39
40	AlSi2Sc2 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
41	Nucleation, grain orientations, and microstructure of Sn-3Ag-0.5Cu soldered on cobalt substrates. Journal of Alloys and Compounds, 2017, 706, 596-608.	2.8	36
42	Nucleation and twinning in tin droplet solidification on single crystal intermetallic compounds. Acta Materialia, 2018, 150, 281-294.	3.8	36
43	In situ study of granular micromechanics in semi-solid carbon steels. Acta Materialia, 2013, 61, 4169-4179.	3.8	34
44	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
45	Grain refinement of electronic solders: The potential of combining solute with nucleant particles. Journal of Alloys and Compounds, 2017, 715, 471-485.	2.8	33
46	A multi-scale approach to microstructure-sensitive thermal fatigue in solder joints. International Journal of Plasticity, 2022, 155, 103308.	4.1	31
47	XRD study of the kinetics of Î²â€‰â†"â€‰Î± transformations in tin. Philosophical Magazine, 2013, 93, 3627-3647.	0.7	27
48	Influence of Ni on the refinement and twinning of primary Cu6Sn5 in Sn-0.7Cu-0.05Ni. Intermetallics, 2018, 102, 34-45.	1.8	27
49	Dilatancy and rheology at 0â€"60% solid during equiaxed solidification. Acta Materialia, 2011, 59, 3091-3101.	3.8	26
50	Effects of Phosphorus on Microstructure and Fluidity of Sn-0.7Cu-0.05Ni Lead-Free Solder. Materials Transactions, 2008, 49, 443-448.	0.4	24
51	Formation of the surface layer in hypoeutectic Al-alloy high-pressure die castings. Materials Chemistry and Physics, 2011, 130, 251-258.	2.0	23
52	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
53	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
54	Recommended values for the Î²Sn solidus line in Sn-Bi alloys. Thermochimica Acta, 2017, 654, 65-69.	1.2	22

#	Article	IF	Citations
55	A rheological assessment of the effect of trace level Ni additions on the solidification of Snâ€“0.7Cu. Scripta Materialia, 2006, 54, 1557-1562.	2.6	21
56	Development of shear bands during deformation of partially solid alloys. Scripta Materialia, 2010, 63, 1185-1188.	2.6	21
57	Characterization of Shear Deformation Based on In-situ Observation of Deformation in Semi-solid Alâ€“Cu Alloys and Water-particle Mixture. ISIJ International, 2013, 53, 1195-1201.	0.6	21
58	Solidification orientation relationships between Al3Ti and TiB2. Acta Materialia, 2020, 186, 149-161.	3.8	21
59	In-situ X-ray radiography of twinned crystal growth of primary Al13Fe4. Scripta Materialia, 2020, 184, 57-62.	2.6	21
60	Al8Mn5 Particle Settling and Interactions with Oxide Films in Liquid AZ91 Magnesium Alloys. Jom, 2019, 71, 2235-2244.	0.9	20
61	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
62	NiSn4 Formation in As-Soldered Ni-Sn and ENIG-Sn Couples. Journal of Electronic Materials, 2012, 41, 3331-3341.	1.0	19
63	Controlling Bulk Cu6Sn5 Nucleation in Sn0.7Cu/Cu Joints with Al Micro-alloying. Journal of Electronic Materials, 2016, 45, 69-78.	1.0	19
64	Precipitation and coarsening of bismuth plates in Snâ€“Agâ€“Cuâ€“Bi and Snâ€“Cuâ€“Niâ€“Bi solder joints. Journal of Materials Science: Materials in Electronics, 2019, 30, 378-390.	1.1	19
65	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
66	Intermetallic size and morphology effects on creep rate of Sn-3Ag-0.5Cu solder. International Journal of Plasticity, 2021, 137, 102904.	4.1	18
67	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
68	Competition between stable and metastable eutectic growth in Sn-Ni alloys. Acta Materialia, 2018, 149, 119-131.	3.8	17
69	Rheological transitions in semi-solid alloys: In-situ imaging and LBM-DEM simulations. Acta Materialia, 2020, 191, 24-42.	3.8	17
70	Al11Mn4 formation on Al8Mn5 during the solidification and heat treatment of AZ-series magnesium alloys. Materialia, 2021, 19, 101192.	1.3	17
71	Agglomeration and bending of equiaxed crystals during solidification of hypoeutectic Al and Mg alloys. Acta Materialia, 2010, 58, 261-271.	3.8	16
72	Pore behaviour during semi-solid alloy compression: Insights into defect creation under pressure. Scripta Materialia, 2014, 89, 73-76.	2.6	16

#	Article	IF	Citations
73	Metastable eutectic in Pb-free joints between Snâ€“3.5Ag and Ni-based substrates. Materials Letters, 2015, 148, 91-95.	1.3	16
74	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
75	Role of Fe impurities in the nucleation of metastable NiSn4. Intermetallics, 2013, 37, 32-41.	1.8	13
76	Synchrotron Radiography Studies of Shear-Induced Dilation in Semisolid Al Alloys and Steels. Jom, 2014, 66, 1415-1424.	0.9	13
77	In-situ study of creep in Sn-3Ag-0.5Cu solder. Acta Materialia, 2020, 196, 31-43.	3.8	13
78	Alâ€“Mnâ€“Fe intermetallic formation in AZ91 magnesium alloys: Effects of impurity iron. Intermetallics, 2022, 142, 107465.	1.8	12
79	The Influence of Cu on Metastable NiSn4 in Sn-3.5Ag-xCu/ENIG Joints. Journal of Electronic Materials, 2016, 45, 12-20.	1.0	11
80	Time-Lapse Imaging of Ag3Sn Thermal Coarsening in Sn-3Ag-0.5Cu Solder Joints. Journal of Electronic Materials, 2021, 50, 786-795.	1.0	11
81	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
82	Microstructure formation in high pressure die casting. Transactions of the Indian Institute of Metals, 2009, 62, 499-503.	0.7	10
83	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
84	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
85	Synchrotron radiography of direct-shear in semi-solid alloys. IOP Conference Series: Materials Science and Engineering, 2012, 27, 012086.	0.3	9
86	Rapid fabrication of tin-copper anodes for lithium-ion battery applications. Journal of Alloys and Compounds, 2021, 867, 159031.	2.8	9
87	The Influence of Primary Cu6Sn5 Size on the Shear Impact Properties of Sn-Cu/Cu BGA Joints. Journal of Electronic Materials, 2018, 47, 84-95.	1.0	8
88	Al8Mn5 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
89	Al2MgC2 and AlFe3C formation in AZ91 Mg alloy melted in Fe-C crucibles. Journal of Alloys and Compounds, 2021, 854, 156415.	2.8	7
90	Growth twinning and morphology of Al45Cr7 and Al13Fe4. Journal of Alloys and Compounds, 2022, 893, 162318.	2.8	7

#	ARTICLE	IF	CITATIONS
91	Shear deformation at 29% solid during solidification of magnesium alloy AZ91 and aluminium alloy A356. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2005, 413-414, 180-185.	2.6	6
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	Evaluating Creep Deformation in Controlled Microstructures of Sn-3Ag-0.5Cu Solder. Journal of Electronic Materials, 2019, 48, 107-121.	1.0	6
94	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
95	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
96	Triaxial Compression on Semi-solid Alloys. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2021, 52, 2010-2023.	1.1	5
97	Eutectic intermetallic formation during solidification of a Mg-Sn-Al-Zn-Mn alloy. Materials Characterization, 2022, 186, 111807.	1.9	5
98	Thermal etching of silver: Influence of rolling defects. Materials Characterization, 2016, 118, 112-121.	1.9	4
99	Optimization of Ni and Bi levels in Sn-0.7Cu-xNi-yBi solders for improved interconnection reliability. , 2018, , .		4
100	Growth of Al8Mn5 Intermetallic in AZ91. Minerals, Metals and Materials Series, 2017, , 85-92.	0.3	4
101	Rheological Transitions at Low Solid Fraction in Solidifying Magnesium Alloy AZ91. Materials Science Forum, 2007, 561-565, 1067-1070.	0.3	3
102	The Influence of Intensification Pressure on the Gate Microstructure of AlSi3MgMn High Pressure Die Castings. Materials Science Forum, 2009, 618-619, 607-610.	0.3	3
103	Dissolution in service of the copper substrate of solder joints. , 2016, , .		3
104	Influence of Bi additions on the distinct Î²Sn grain structure of Sn-0.7Cu-0.05Ni-xBi (x = 0â€“4wt%). , 2016, , .		3
105	Reynoldsâ€™ Dilatancy and Shear Bands in Semi-Solid Alloys. Solid State Phenomena, 2008, 141-143, 337-342.	0.3	2
106	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
107	NiSn<inf>4</inf> in solder joints between Sn-3.5Ag and Ni, ENIG or ENEPIG. , 2015, , .		2
108	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

#	Article	IF	Citations
109	Synchrotron Radiography of Sn-0.7Cu-0.05Ni Solder Solidification. Solid State Phenomena, 2018, 273, 66-71.	0.3	2
110	Role of Bi, Sb and In in microstructure formation and properties of Sn-0.7Cu-0.05Ni-X BGA interconnections. , 2019, , .		2
111	Advances in Electronic Interconnection Materials. Jom, 2019, 71, 131-132.	0.9	2
112	Real-Time Observation of AZ91 Solidification by Synchrotron Radiography. Minerals, Metals and Materials Series, 2017, , 597-603.	0.3	2
113	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
114	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
115	Etch pitting and subsurface pore growth during the thermal etching of silver. Philosophical Magazine Letters, 2015, 95, 547-554.	0.5	1
116	The influence of alloying elements on metastable NiSn4 in Sn-Ag solders on Ni-containing metallizations. , 2015, , .		1
117	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
118	Solidification of Sn-3Ag-0.5Cu and Sn-0.7Cu-0.05Ni Solders. Materials Science Forum, 0, 857, 44-48.	0.3	1
119	Reaction-induced surface reconstruction of silver in contact with zirconium. Journal of Alloys and Compounds, 2017, 691, 624-633.	2.8	1
120	Al-Mn Intermetallics in High Pressure Die Cast AZ91 and Direct Chill Cast AZ80. Metals, 2022, 12, 266.	1.0	1
121	The Influence of External Mechanical Stresses on Agglomeration and Bending of Solidifying Crystals. Materials Science Forum, 2010, 654-656, 1367-1372.	0.3	0
122	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
123	<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
124	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
125	Heterogeneous nucleation of bulk Cu<inf>6</inf>Sn<inf>5</inf> in Sn-Ag-Cu-Al and Sn-Cu-Al solders. , 2015, , .		0
126	Reply to â€˜Comments on â€œEvidence of the hydrogen release mechanism in bulk MgH2â€â€™. Scientific Reports, 2017, 7, 43720.	1.6	0

#	Article	IF	Citations
127	Real time X-ray imaging of soldering processes at the SPring-8 synchrotron. , 2017, , .		0
128	Controlling BGA joint microstructures using seed crystals. , 2018, , .		0
129	Tailoring the Cu<inf>6</inf>Sn<inf>5</inf> layer texture with Ni additions in Sn-Ag-Cu based solder joints. , 2018, , .		0
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