

# Thomas Connolley

## List of Publications by Year in descending order

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102  
papers

3,589  
citations

147726

31  
h-index

143943

57  
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107  
all docs

107  
docs citations

107  
times ranked

3188  
citing authors

#	ARTICLE	IF	CITATIONS
1	I12: the Joint Engineering, Environment and Processing (JEEP) beamline at Diamond Light Source. <i>Journal of Synchrotron Radiation</i> , 2015, 22, 828-838.	1.0	219
2	A synchrotron X-ray radiography study of dendrite fragmentation induced by a pulsed electromagnetic field in an Al-Cu alloy. <i>Acta Materialia</i> , 2014, 70, 228-239.	3.8	174
3	Revealing internal flow behaviour in arc welding and additive manufacturing of metals. <i>Nature Communications</i> , 2018, 9, 5414.	5.8	158
4	GigaFRoST: the gigabit fast readout system for tomography. <i>Journal of Synchrotron Radiation</i> , 2017, 24, 1250-1259.	1.0	139
5	A synchrotron X-radiography study of the fragmentation and refinement of primary intermetallic particles in an Al-35 Cu alloy induced by ultrasonic melt processing. <i>Acta Materialia</i> , 2017, 141, 142-153.	3.8	131
6	Influence of Fe-rich intermetallics on solidification defects in Al-Si-Cu alloys. <i>Acta Materialia</i> , 2014, 68, 42-51.	3.8	127
7	Ultrafast synchrotron X-ray imaging studies of microstructure fragmentation in solidification under ultrasound. <i>Acta Materialia</i> , 2018, 144, 505-515.	3.8	112
8	A refining mechanism of primary Al <sub>3</sub> Ti intermetallic particles by ultrasonic treatment in the liquid state. <i>Acta Materialia</i> , 2016, 116, 354-363.	3.8	109
9	Assessment of the fatigue crack closure phenomenon in damage-tolerant aluminium alloy by in-situ high-resolution synchrotron X-ray microtomography. <i>Philosophical Magazine</i> , 2003, 83, 2429-2448.	0.7	108
10	Short crack initiation and growth at 600°C in notched specimens of Inconel 718. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2003, 340, 139-154.	2.6	98
11	Revealing the micromechanisms behind semi-solid metal deformation with time-resolved X-ray tomography. <i>Nature Communications</i> , 2014, 5, 4464.	5.8	94
12	Mapping the Inhomogeneous Electrochemical Reaction Through Porous LiFePO <sub>4</sub> Electrodes in a Standard Coin Cell Battery. <i>Chemistry of Materials</i> , 2015, 27, 2374-2386.	3.2	93
13	A review of deformation and fatigue of metals at small size scales. <i>Fatigue and Fracture of Engineering Materials and Structures</i> , 2005, 28, 1119-1152.	1.7	87
14	In situ observation of ultrasonic cavitation-induced fragmentation of the primary crystals formed in Al alloys. <i>Ultrasonics Sonochemistry</i> , 2017, 39, 66-76.	3.8	86
15	In situ synchrotron tomographic quantification of granular and intragranular deformation during semi-solid compression of an equiaxed dendritic Al-Cu alloy. <i>Acta Materialia</i> , 2014, 76, 371-380.	3.8	84
16	Region-of-interest tomography using filtered backprojection: assessing the practical limits. <i>Journal of Microscopy</i> , 2011, 241, 69-82.	0.8	83
17	In situ X-ray observation of semi-solid deformation and failure in Al-Cu alloys. <i>Acta Materialia</i> , 2011, 59, 1436-1444.	3.8	72
18	Transgranular liquation cracking of grains in the semi-solid state. <i>Nature Communications</i> , 2015, 6, 8300.	5.8	72

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19	The spatial and temporal distribution of dendrite fragmentation in solidifying Al-Cu alloys under different conditions. <i>Acta Materialia</i> , 2016, 121, 384-395.	3.8	69
20	Residual stresses in Linear Friction Welding of aluminium alloys. <i>Materials &amp; Design</i> , 2013, 50, 360-369.	5.1	60
21	Complete elliptical ring geometry provides energy and instrument calibration for synchrotron-based two-dimensional X-ray diffraction. <i>Journal of Applied Crystallography</i> , 2013, 46, 1249-1260.	1.9	54
22	High-Speed Synchrotron X-ray Imaging Studies of the Ultrasound Shockwave and Enhanced Flow during Metal Solidification Processes. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2015, 46, 2851-2861.	1.1	53
23	Effect of ultrasonic melt treatment on the refinement of primary Al <sub>3</sub> Ti intermetallic in an Al-0.4Ti alloy. <i>Journal of Crystal Growth</i> , 2016, 435, 24-30.	0.7	53
24	The onset of plasticity of a Zr-based bulk metallic glass. <i>International Journal of Plasticity</i> , 2014, 60, 87-100.	4.1	52
25	3D characterisation of the Fe-rich intermetallic phases in recycled Al alloys by synchrotron X-ray microtomography and skeletonisation. <i>Scripta Materialia</i> , 2018, 146, 321-326.	2.6	52
26	A synchrotron X-ray diffraction study of in situ biaxial deformation. <i>Acta Materialia</i> , 2015, 90, 46-58.	3.8	48
27	Correlative Synchrotron X-ray Imaging and Diffraction of Directed Energy Deposition Additive Manufacturing. <i>Acta Materialia</i> , 2021, 209, 116777.	3.8	47
28	Characterisation of short fatigue cracks in titanium alloy IMI 834 using X-ray microtomography. <i>Acta Materialia</i> , 2015, 99, 49-62.	3.8	44
29	Time-resolved synchrotron tomographic quantification of deformation during indentation of an equiaxed semi-solid granular alloy. <i>Acta Materialia</i> , 2016, 105, 338-346.	3.8	40
30	Synchrotron X-ray imaging and ultrafast tomography in situ study of the fragmentation and growth dynamics of dendritic microstructures in solidification under ultrasound. <i>Acta Materialia</i> , 2021, 209, 116796.	3.8	36
31	Time-resolved synchrotron diffractometry of phase transformations in high strength nickel-based superalloys. <i>Acta Materialia</i> , 2015, 94, 244-256.	3.8	33
32	Residual stresses and microstructure in Powder Bed Direct Laser Deposition (PB DLD) samples. <i>International Journal of Material Forming</i> , 2015, 8, 245-254.	0.9	33
33	In-situ X-ray radiography of primary Fe-rich intermetallic compound formation. <i>Acta Materialia</i> , 2020, 196, 759-769.	3.8	32
34	<i>In-situ</i> Observation of Cracks in Frozen Soil using Synchrotron Tomography. <i>Permafrost and Periglacial Processes</i> , 2012, 23, 170-176.	1.5	31
35	Synchrotron Tomographic Characterization of Damage Evolution During Aluminum Alloy Solidification. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2013, 44, 5389-5395.	1.1	31
36	Influence of ultrasonic treatment on formation of primary Al <sub>3</sub> Zr in Al-0.4Zr alloy. <i>Transactions of Nonferrous Metals Society of China</i> , 2017, 27, 977-985.	1.7	30

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37	A synchrotron X-ray diffraction study of non-proportional strain-path effects. <i>Acta Materialia</i> , 2017, 124, 290-304.	3.8	30
38	Correlative acoustic time-of-flight spectroscopy and X-ray imaging to investigate gas-induced delamination in lithium-ion pouch cells during thermal runaway. <i>Journal of Power Sources</i> , 2020, 470, 228039.	4.0	30
39	In situ X-ray quantification of melt pool behaviour during directed energy deposition additive manufacturing of stainless steel. <i>Materials Letters</i> , 2021, 286, 129205.	1.3	28
40	The effect of cell geometry and trigger method on the risks associated with thermal runaway of lithium-ion batteries. <i>Journal of Power Sources</i> , 2022, 524, 230645.	4.0	28
41	In situ characterization of work hardening and springback in grade 2 $\hat{\pm}$ -titanium under tensile load. <i>Acta Materialia</i> , 2019, 181, 87-98.	3.8	26
42	Time-resolved synchrotron tomographic quantification of deformation-induced flow in a semi-solid equiaxed dendritic Al-Cu alloy. <i>Scripta Materialia</i> , 2015, 103, 69-72.	2.6	23
43	Visualization of membrane protein crystals in lipid cubic phase using X-ray imaging. <i>Acta Crystallographica Section D: Biological Crystallography</i> , 2013, 69, 1252-1259.	2.5	22
44	The influence of grain size on the ductility of micro-scale stainless steel stent struts. <i>Journal of Materials Science: Materials in Medicine</i> , 2006, 17, 1-6.	1.7	21
45	Data processing methods and data acquisition for samples larger than the field of view in parallel-beam tomography. <i>Optics Express</i> , 2021, 29, 17849.	1.7	21
46	Unifying the effects of in and out-of-plane constraint on the fracture of ductile materials. <i>Journal of the Mechanics and Physics of Solids</i> , 2020, 141, 103956.	2.3	21
47	Finite element comparison of performance related characteristics of balloon expandable stents. <i>Computer Methods in Biomechanics and Biomedical Engineering</i> , 2007, 10, 103-110.	0.9	20
48	On the occurrence of a eutectic-type structure in solidification of Al-Zr alloys. <i>Scripta Materialia</i> , 2017, 133, 75-78.	2.6	20
49	Development of an X-ray imaging system to prevent scintillator degradation for white synchrotron radiation. <i>Journal of Synchrotron Radiation</i> , 2018, 25, 801-807.	1.0	20
50	A combined experimental and computational study of deformation in grains of biomedical grade 316LVM stainless steel. <i>Acta Materialia</i> , 2006, 54, 4825-4840.	3.8	19
51	A new parameter for modelling three-dimensional damage evolution validated by synchrotron tomography. <i>Acta Materialia</i> , 2013, 61, 7616-7623.	3.8	19
52	Dark-field hyperspectral X-ray imaging. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 2014, 470, 20130629.	1.0	19
53	In-situ synchrotron X-ray radiography observation of primary Al <sub>2</sub> Cu intermetallic growth on fragments of aluminium oxide film. <i>Materials Letters</i> , 2018, 213, 303-305.	1.3	19
54	Application of neutron imaging to detect and quantify fatigue cracking. <i>International Journal of Mechanical Sciences</i> , 2019, 159, 182-194.	3.6	19

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55	In situ study of the evolution of atomic strain of bulk metallic glass and its effects on shear band formation. <i>Scripta Materialia</i> , 2013, 69, 207-210.	2.6	18
56	Understanding the deformation mechanism of individual phases of a ZrTi-based bulk metallic glass matrix composite using <i>in situ</i> diffraction and imaging methods. <i>Applied Physics Letters</i> , 2014, 104, 031912.	1.5	18
57	Dynamic contact strain measurement by time-resolved stroboscopic energy dispersive synchrotron X-ray diffraction. <i>Strain</i> , 2017, 53, e12221.	1.4	18
58	Mapping of multi-elements during melting and solidification using synchrotron X-rays and pixel-based spectroscopy. <i>Scientific Reports</i> , 2015, 5, 15988.	1.6	17
59	Polycrystal deformation analysis by high energy synchrotron X-ray diffraction on the I12 JEEP beamline at Diamond Light Source. <i>Materials Letters</i> , 2010, 64, 1724-1727.	1.3	16
60	Pore behaviour during semi-solid alloy compression: Insights into defect creation under pressure. <i>Scripta Materialia</i> , 2014, 89, 73-76.	2.6	16
61	In situ measurement of elastic and total strains during ambient and high temperature deformation of a polygranular graphite. <i>Carbon</i> , 2020, 163, 308-323.	5.4	15
62	X-ray micro-tomography of a coronary stent deployed in a model artery. <i>Medical Engineering and Physics</i> , 2007, 29, 1132-1141.	0.8	14
63	A feasibility study of dynamic stress analysis inside a running internal combustion engine using synchrotron X-ray beams. <i>Journal of Synchrotron Radiation</i> , 2013, 20, 316-323.	1.0	14
64	Nonuniqueness of hydrodynamic dispersion revealed using fast 4D synchrotron x-ray imaging. <i>Science Advances</i> , 2021, 7, eabj0960.	4.7	14
65	Experimental investigation into the size effect on the microscale fatigue behaviour of 316L stainless steel. <i>International Journal of Fatigue</i> , 2017, 95, 1-7.	2.8	11
66	Quantifying Microstructural Evolution in Moving Magma. <i>Frontiers in Earth Science</i> , 2020, 8, .	0.8	11
67	Quantification of passivation layer growth in inert anodes for molten salt electrochemistry by <i>in situ</i> energy-dispersive diffraction. <i>Journal of Applied Crystallography</i> , 2012, 45, 28-37.	1.9	10
68	Mapping of axial plastic zone for roller bearing overloads using neutron transmission imaging. <i>Materials and Design</i> , 2018, 156, 103-112.	3.3	10
69	Measurement of strain evolution in overloaded roller bearings using energy dispersive X-ray diffraction. <i>Tribology International</i> , 2019, 140, 105893.	3.0	8
70	Characterization of Ultrasonic Bubble Clouds in A Liquid Metal by Synchrotron X-ray High Speed Imaging and Statistical Analysis. <i>Materials</i> , 2020, 13, 44.	1.3	8
71	A novel technique combining high-resolution synchrotron x-ray microtomography and x-ray diffraction for characterization of micro particulates. <i>Measurement Science and Technology</i> , 2011, 22, 115703.	1.4	7
72	Quantifying damage accumulation during the hot deformation of free-cutting steels using ultra-fast synchrotron tomography. <i>IOP Conference Series: Materials Science and Engineering</i> , 2012, 33, 012038.	0.3	7

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73	On the possibility of using X-ray Compton scattering to study magnetoelectrical properties of crystals. <i>Acta Crystallographica Section A: Foundations and Advances</i> , 2016, 72, 197-205.	0.0	7
74	Measurement of strain evolution in overloaded roller bearings using time-of-flight neutron diffraction. <i>Materials and Design</i> , 2020, 190, 108571.	3.3	7
75	Direct observation of the dynamic evolution of precipitates in aluminium alloy 7021 at high strain rates via high energy synchrotron X-rays. <i>Acta Materialia</i> , 2021, 205, 116532.	3.8	7
76	In situ mapping of normal strains in the field of a growing fatigue crack in a steel weld using digital image correlation and energy dispersive synchrotron X-ray diffraction. <i>International Journal of Fatigue</i> , 2018, 115, 11-19.	2.8	6
77	Obtaining local reciprocal lattice vectors from finite-element analysis. <i>Journal of Synchrotron Radiation</i> , 2008, 15, 584-592.	1.0	5
78	Ray traces of an arbitrarily deformed double-crystal Laue x-ray monochromator. <i>Proceedings of SPIE</i> , 2008, , .	0.8	5
79	A Synchrotron X-Ray Radiography Investigation of Induced Dendrite Fragmentation in Al-15wt%Cu. <i>Materials Science Forum</i> , 0, 765, 210-214.	0.3	5
80	Data and videos for ultrafast synchrotron X-ray imaging studies of metal solidification under ultrasound. <i>Data in Brief</i> , 2018, 17, 837-841.	0.5	5
81	Estimating single-crystal elastic constants of polycrystalline $\hat{I}^2$ metastable titanium alloy: A Bayesian inference analysis based on high energy X-ray diffraction and micromechanical modeling. <i>Acta Materialia</i> , 2021, 208, 116762.	3.8	5
82	High-Energy Adventures at Diamond Light Source. <i>Synchrotron Radiation News</i> , 2020, 33, 31-36.	0.2	5
83	Bonding of single crystal silicon to Cu and AlN: Trial results. <i>Science and Technology of Welding and Joining</i> , 2009, 14, 1-3.	1.5	4
84	Synchrotron X-ray Tomographic Quantification of Deformation Induced Strain Localisation in Semi-solid Al- 15wt.%Cu. <i>IOP Conference Series: Materials Science and Engineering</i> , 2015, 84, 012079.	0.3	4
85	Localised prior strain-hardening increases the tearing resistance of ductile steel. <i>International Journal of Mechanical Sciences</i> , 2019, 150, 103-111.	3.6	4
86	A novel electromagnetic apparatus for in-situ synchrotron X-ray imaging study of the separation of phases in metal solidification. <i>HardwareX</i> , 2020, 7, e00104.	1.1	4
87	Mechanistic insights into the initial explosion in the deflagration-to-detonation transition. <i>Combustion and Flame</i> , 2022, 242, 112175.	2.8	4
88	Comparison of EM-CCD and scientific CMOS based camera systems for high resolution X-ray imaging and tomography applications. <i>Journal of Instrumentation</i> , 2014, 9, P06017-P06017.	0.5	3
89	Energy dispersive detector for white beam synchrotron x-ray fluorescence imaging. <i>AIP Conference Proceedings</i> , 2016, , .	0.3	3
90	Validating 3D two-parameter fracture mechanics models for structural integrity assessments. <i>Theoretical and Applied Fracture Mechanics</i> , 2019, 103, 102281.	2.1	3

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91	Mechanisms controlling ductility loss from abrupt Strain Path Changes in a low carbon steel. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2022, 843, 143091.	2.6	3
92	Mechanical characterisation of V-4Cr-4Ti alloy: Tensile tests under high energy synchrotron diffraction. <i>Journal of Nuclear Materials</i> , 2022, 569, 153911.	1.3	3
93	An Experimental Procedure to Determine the Interaction between Applied Loads and Residual Stresses. <i>Materials Science Forum</i> , 0, 768-769, 733-740.	0.3	2
94	Development of EMCCD-based X-ray detector for synchrotron applications. <i>Electronics Letters</i> , 2014, 50, 1224-1226.	0.5	2
95	Preliminary paleohistological observations of the StW 573 (â€˜Little Footâ€™) skull. <i>ELife</i> , 2021, 10, .	2.8	2
96	An <i>in operando</i> spatially resolved study of alkaline battery discharge using a novel hyperspectral detector and X-ray tomography. <i>Journal of Applied Crystallography</i> , 2020, 53, 1434-1443.	1.9	2
97	Implementing and evaluating far-field 3D X-ray diffraction at the I12 JEEP beamline, Diamond Light Source. <i>Journal of Synchrotron Radiation</i> , 2022, 29, 1043-1053.	1.0	2
98	Direct Observation of Elastic and Plastic Strain Fields During Ductile Tearing of a Ferritic Steel. , 2016, , .		1
99	The transit to detonation in high explosives. <i>AIP Conference Proceedings</i> , 2020, , .	0.3	1
100	High speed synchrotron X-ray imaging of ultrasonic bubble cloud in liquid metal. <i>Journal of Physics: Conference Series</i> , 2015, 656, 012178.	0.3	0
101	In Situ Observation of Fragmentation of Primary Crystals by Ultrasonic Cavitation in Water. <i>Minerals, Metals and Materials Series</i> , 2017, , 213-219.	0.3	0
102	Understanding the Highly Dynamic Phenomena in Ultrasonic Melt Processing by Ultrafast Synchrotron X-ray Imaging. <i>Minerals, Metals and Materials Series</i> , 2019, , 1539-1544.	0.3	0