Phil Withers

List of Publications by Citations

690 papers	24,851 citations	72 h-index	128 g-index
739 ext. papers	28,502 ext. citations	4 avg, IF	7.54 L-index

#	Paper	IF	Citations
690	Residual stress. Part 1 Measurement techniques. *Materials Science and Technology*, **2001**, 17, 355-365	1.5	972
689	Friction stir welding of aluminium alloys. *International Materials Reviews*, **2009**, 54, 49-93	16.1	782
688	Quantitative X-ray tomography. *International Materials Reviews*, **2014**, 59, 1-43	16.1	767
687	An Introduction to Metal Matrix Composites **1993**,		625
686	Residual stress. Part 2 Nature and origins. *Materials Science and Technology*, **2001**, 17, 366-375	1.5	580
685	Microstructure, mechanical properties and residual stresses as a function of welding speed in aluminium AA5083 friction stir welds. *Acta Materialia*, **2003**, 51, 4791-4801	8.4	549
684	Residual stress and its role in failure. *Reports on Progress in Physics*, **2007**, 70, 2211-2264	14.4	456
683	The influence of the laser scan strategy on grain structure and cracking behaviour in SLM powder-bed fabricated nickel superalloy. *Journal of Alloys and Compounds*, **2014**, 615, 338-347	5.7	401
682	The application of the eshelby method of internal stress determination to short fibre metal matrix composites. *Acta Metallurgica*, **1989**, 37, 3061-3084		336
681	Introduction to the Characterization of Residual Stress by Neutron Diffraction		322
680	In situ X-ray imaging of defect and molten pool dynamics in laser additive manufacturing. *Nature Communications*, **2018**, 9, 1355	17.4	315
679	X-ray computed tomography of polymer composites. *Composites Science and Technology*, **2018**, 156, 305-319	8.6	287
678	Influence of processing conditions on strut structure and compressive properties of cellular lattice structures fabricated by selective laser melting. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2015**, 628, 188-197	5.3	218
677	Two-dimensional X-ray CT image based meso-scale fracture modelling of concrete. *Engineering Fracture Mechanics*, **2015**, 133, 24-39	4.2	206
676	The Influence of Porosity on Fatigue Crack Initiation in Additively Manufactured Titanium Components. *Scientific Reports*, **2017**, 7, 7308	4.9	186
675	X-ray nanotomography. *Materials Today*, **2007**, 10, 26-34	21.8	186
674	Large volume serial section tomography by Xe Plasma FIB dual beam microscopy. *Ultramicroscopy*, **2016**, 161, 119-129	3.1	173

673	Recent advances in residual stress measurement. *International Journal of Pressure Vessels and Piping*, **2008**, 85, 118-127	2.4	170
672	Methods for obtaining the strain-free lattice parameter when using diffraction to determine residual stress. *Journal of Applied Crystallography*, **2007**, 40, 891-904	3.8	156
671	Friction stir welding/processing of metals and alloys: A comprehensive review on microstructural evolution. *Progress in Materials Science*, **2021**, 117, 100752	42.2	154
670	The Effectiveness of Hot Isostatic Pressing for Closing Porosity in Titanium Parts Manufactured by Selective Electron Beam Melting. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science*, **2016**, 47, 1939-1946	2.3	153
669	Welding residual stresses in ferritic power plant steels. *Materials Science and Technology*, **2007**, 23, 1009-1020	1.9	149
668	Porosity regrowth during heat treatment of hot isostatically pressed additively manufactured titanium components. *Scripta Materialia*, **2016**, 122, 72-76	5.6	148
667	High-temperature strain field measurement using digital image correlation. *Journal of Strain Analysis for Engineering Design*, **2009**, 44, 263-271	1.3	148
666	Interphase and intergranular stress generation in carbon steels. *Acta Materialia*, **2004**, 52, 1937-1951	8.4	142
665	Dissimilar friction stir welds in AA5083–AA6082: The effect of process parameters on residual stress. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2006**, 441, 187-196	5.3	138
664	Full-field strain mapping by optical correlation of micrographs acquired during deformation. *Journal of Microscopy*, **2005**, 218, 9-21	1.9	127
663	Image based modelling of microstructural heterogeneity in LiFePO 4 electrodes for Li-ion batteries. *Journal of Power Sources*, **2014**, 247, 1033-1039	8.9	125
662	A high energy synchrotron x-ray study of crystallographic texture and lattice strain in soft lead zirconate titanate ceramics. *Journal of Applied Physics*, **2004**, 96, 4245-4252	2.5	122
661	Dissimilar friction stir welds in AA5083-AA6082. Part I: Process parameter effects on thermal history and weld properties. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science*, **2006**, 37, 2183-2193	2.3	118
660	Fatigue and Damage in Structural Materials Studied by X-Ray Tomography. *Annual Review of Materials Research*, **2012**, 42, 81-103	12.8	117
659	Residual stresses in laser direct metal deposited Waspaloy. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2011**, 528, 2288-2298	5.3	116
658	The effect of powder oxidation on defect formation in laser additive manufacturing. *Acta Materialia*, **2019**, 166, 294-305	8.4	116
657	Time-of-flight neutron transmission diffraction. *Journal of Applied Crystallography*, **2001**, 34, 289-297	3.8	115
656	The imaging of failure in structural materials by synchrotron radiation X-ray microtomography. *Engineering Fracture Mechanics*, **2017**, 182, 127-156	4.2	114

655	SALSA□A new instrument for strain imaging in engineering materials and components. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2006**, 437, 139-144	5.3	113
654	Texture development in Ti□Al□V linear friction welds. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2007**, 459, 182-191	5.3	110
653	Three-dimensional characterization of electrodeposited lithium microstructures using synchrotron X-ray phase contrast imaging. *Chemical Communications*, **2015**, 51, 266-8	5.8	108
652	The effect of manufacturing defects on the fatigue life of selective laser melted Ti-6Al-4V structures. *Materials and Design*, **2020**, 192, 108708	8.1	104
651	Multi Length Scale Microstructural Investigations of a Commercially Available Li-Ion Battery Electrode. *Journal of the Electrochemical Society*, **2012**, 159, A1023-A1027	3.9	102
650	Strain imaging by Bragg edge neutron transmission. *Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, **2002**, 481, 765-768	1.2	99
649	Characterizing Phase Transformations and Their Effects on Ferritic Weld Residual Stresses with X-Rays and Neutrons. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science*, **2008**, 39, 3070-3078	2.3	98
648	Correlative tomography. *Scientific Reports*, **2014**, 4, 4711	4.9	97
647	Three dimensional observations and modelling of intergranular stress corrosion cracking in austenitic stainless steel. *Journal of Nuclear Materials*, **2006**, 352, 62-74	3.3	96
646	The analysis of internal strains measured by neutron diffraction in Al/SiC metal matrix composites. *Acta Metallurgica Et Materialia*, **1992**, 40, 2361-2373		96
645	A combined approach to microstructure mapping of an Al□i AA2199 friction stir weld. *Acta Materialia*, **2011**, 59, 3002-3011	8.4	93
644	Separation of macroscopic, elastic mismatch and thermal expansion misfit stresses in metal matrix composite quenched plates from neutron diffraction measurements. *Acta Materialia*, **1997**, 45, 4867-4876	8.4	92
643	The determination of the elastic field of an ellipsoidal inclusion in a transversely isotropic medium, and its relevance to composite materials. *Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties*, **1989**, 59, 759-781		92
642	The stress intensity of mixed mode cracks determined by digital image correlation. *Journal of Strain Analysis for Engineering Design*, **2008**, 43, 769-780	1.3	91
641	Residual stress of as-deposited and rolled wire+arc additive manufacturing Ti□Al□V components. *Materials Science and Technology*, **2016**, 32, 1439-1448	1.5	91
640	Microstructure mapping in friction stir welds of 7449 aluminium alloy using SAXS. *Acta Materialia*, **2006**, 54, 4793-4801	8.4	90
639	The effect of defects on the mechanical response of Ti-6Al-4V cubic lattice structures fabricated by electron beam melting. *Acta Materialia*, **2016**, 108, 279-292	8.4	90
638	2D and 3D imaging of fatigue failure mechanisms of 3D woven composites. *Composites Part A: Applied Science and Manufacturing*, **2015**, 77, 37-49	8.4	89

637	Residual stress driven creep cracking in AISI Type 316 stainless steel. *Acta Materialia*, **2008**, 56, 3598-3612	2.4	89
636	On the deformation twinning of Mg AZ31B: A three-dimensional synchrotron X-ray diffraction experiment and crystal plasticity finite element model. *International Journal of Plasticity*, **2015**, 70, 77-97	7.6	88
635	Weibull modelling of particle cracking in metal matrix composites. *Acta Metallurgica Et Materialia*, **1995**, 43, 3685-3699		87
634	Non-destructive mapping of grain orientations in 3D by laboratory X-ray microscopy. *Scientific Reports*, **2015**, 5, 14665	4.9	86
633	Ablation-resistant carbide ZrTiCB for oxidizing environments up to 3,000 ℃. *Nature Communications*, **2017**, 8, 15836	17.4	85
632	Synchrotron X-ray studies of austenite and bainitic ferrite. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2008**, 464, 1009-1027	2.4	82
631	High resolution X-ray tomography of short fatigue crack nucleation in austempered ductile cast iron. *International Journal of Fatigue*, **2004**, 26, 717-725	5	82
630	Application of micro-computed tomography with iodine staining to cardiac imaging, segmentation, and computational model development. *IEEE Transactions on Medical Imaging*, **2013**, 32, 8-17	11.7	80
629	Residual stress engineering in friction stir welds by roller tensioning. *Science and Technology of Welding and Joining*, **2009**, 14, 185-192	3.7	79
628	The effect of particle distribution on damage formation in particulate reinforced metal matrix composites deformed in compression. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **1996**, 220, 41-56	5.3	79
627	X-ray microtomographic observation of intergranular stress corrosion cracking in sensitised austenitic stainless steel. *Materials Science and Technology*, **2006**, 22, 1068-1075	1.5	78
626	Deformation twinning in Ti-6Al-4V during low strain rate deformation to moderate strains at room temperature. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2010**, 527, 5734-5744	5.3	77
625	Importance of crystal orientation in linear friction joining of single crystal to polycrystalline nickel-based superalloys. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2008**, 491, 446-453	5.3	77
624	Engineering applications of Bragg-edge neutron transmission. *Applied Physics A: Materials Science and Processing*, **2002**, 74, s1433-s1436	2.6	77
623	Neutron and synchrotron measurements of residual strain in TIG welded aluminium alloy 2024. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing* , **2003**, 346, 159-167	5.3	77
622	Inertia welding nickel-based superalloy: Part I. Metallurgical characterization. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science*, **2002**, 33, 3215-3225	2.3	74
621	Comparison of tool wear mechanisms and surface integrity for dry and wet micro-drilling of nickel-base superalloys. *International Journal of Machine Tools and Manufacture*, **2014**, 76, 49-60	9.4	73
620	Global mechanical tensioning for the management of residual stresses in welds. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2008**, 489, 351-362	5.3	73

619	A comparison of inertia friction welds in three nickel base superalloys. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2006**, 437, 38-45	5.3	73
618	Morphological Characterisation of Unstained and Intact Tissue Micro-architecture by X-ray Computed Micro- and Nano-Tomography. *Scientific Reports*, **2015**, 5, 10074	4.9	72
617	Evolution of a laser shock peened residual stress field locally with foreign object damage and subsequent fatigue crack growth. *Acta Materialia*, **2015**, 83, 216-226	8.4	72
616	Lithiation-Induced Dilation Mapping in a Lithium-Ion Battery Electrode by 3D X-Ray Microscopy and Digital Volume Correlation. *Advanced Energy Materials*, **2014**, 4, 1300506	21.8	72
615	The evolution of crack-tip stresses during a fatigue overload event. *Acta Materialia*, **2010**, 58, 4039-4052	8.4	72
614	X-ray computed tomography. *Nature Reviews Methods Primers*, **2021**, 1,		72
613	Evolution of damage during the fatigue of 3D woven glass-fibre reinforced composites subjected to tension□tension loading observed by time-lapse X-ray tomography. *Composites Part A: Applied Science and Manufacturing*, **2016**, 82, 279-290	8.4	71
612	Damage development in open-hole composite specimens in fatigue. Part 1: Experimental investigation. *Composite Structures*, **2013**, 106, 882-889	5.3	71
611	Using Synchrotron X-Ray Nano-CT to Characterize SOFC Electrode Microstructures in Three-Dimensions at Operating Temperature. *Electrochemical and Solid-State Letters*, **2011**, 14, B117		71
610	The sensitivity of Ni-based superalloy to hole making operations: Influence of process parameters on subsurface damage and residual stress. *Journal of Materials Processing Technology*, **2009**, 209, 3968-3977	5.3	69
609	Region-of-interest tomography using filtered backprojection: assessing the practical limits. *Journal of Microscopy*, **2011**, 241, 69-82	1.9	68
608	The effect of density and feature size on mechanical properties of isostructural metallic foams produced by additive manufacturing. *Acta Materialia*, **2015**, 85, 387-395	8.4	67
607	Comparison of residual stresses in Ti□6Al□4V and Ti□6Al□2Sn□4Zr□2Mo linear friction welds. *Materials Science and Technology*, **2009**, 25, 640-650	1.5	67
606	Analysis of elastic strain and crystallographic texture in poled rhombohedral PZT ceramics. *Acta Materialia*, **2006**, 54, 3075-3083	8.4	67
605	Comparison of residual stress distributions in conventional and stationary shoulder high-strength aluminum alloy friction stir welds. *Journal of Materials Processing Technology*, **2017**, 242, 92-100	5.3	66
604	Relaxation of residual stress in shot peened Udimet 720Li under high temperature isothermal fatigue. *International Journal of Fatigue*, **2005**, 27, 1530-1534	5	66
603	Neutron and Synchrotron X-ray Strain Scanning. *Strain*, **2001**, 37, 19-33	1.7	66
602	Metamorphosis revealed: time-lapse three-dimensional imaging inside a living chrysalis. *Journal of the Royal Society Interface*, **2013**, 10, 20130304	4.1	65

601	Repeated crack healing in MAX-phase ceramics revealed by 4D in situ synchrotron X-ray tomographic microscopy. *Scientific Reports*, **2016**, 6, 23040	4.9	65
600	Mapping two-dimensional state of strain using synchroton X-ray diffraction. *Scripta Materialia*, **1998**, 39, 1705-1712	5.6	64
599	The application of phase contrast X-ray techniques for imaging Li-ion battery electrodes. *Nuclear Instruments & Methods in Physics Research B*, **2014**, 324, 118-123	1.2	63
598	Dissimilar friction stir welds in AA5083-AA6082. Part II: Process parameter effects on microstructure. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science*, **2006**, 37, 2195-2206	2.3	63
597	X-ray damage characterisation in self-healing fibre reinforced polymers. *Composites Part A: Applied Science and Manufacturing*, **2012**, 43, 613-620	8.4	62
596	Fracture mechanics by three-dimensional crack-tip synchrotron X-ray microscopy. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2015**, 373,	3	61
595	Investigation of strain-rate effect on the compressive behaviour of closed-cell aluminium foam by 3D image-based modelling. *Materials and Design*, **2016**, 89, 215-224	8.1	60
594	Noncontact Characterization of Carbon-Fiber-Reinforced Plastics Using Multifrequency Eddy Current Sensors. *IEEE Transactions on Instrumentation and Measurement*, **2009**, 58, 738-743	5.2	60
593	Crystallographic texture and microstructure of pulsed diode laser-deposited Waspaloy. *Acta Materialia*, **2009**, 57, 1220-1229	8.4	60
592	Engineering the residual stress state and microstructure of stainless steel with mechanical surface treatments. *Applied Physics A: Materials Science and Processing*, **2010**, 99, 549-556	2.6	60
591	A neutron diffraction study of load partitioning in continuous Ti/SiC composites. *Acta Materialia*, **1998**, 46, 6585-6598	8.4	60
590	A new approach to correlate the defect population with the fatigue life of selective laser melted Ti-6Al-4V alloy. *International Journal of Fatigue*, **2020**, 136, 105584	5	59
589	The effect of □phase on microstructure and texture evolution during thermomechanical processing of ⊞□Ti alloy. *Acta Materialia*, **2013**, 61, 3200-3213	8.4	59
588	Mapping residual and internal stress in materials by neutron diffraction. *Comptes Rendus Physique*, **2007**, 8, 806-820	1.4	59
587	The deformation of discontinuously reinforced MMCs□ The initial yielding behaviour. *Acta Metallurgica Et Materialia*, **1994**, 42, 3425-3436		59
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585	Effects of fatigue and fretting on residual stresses introduced by laser shock peening. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*, **2006**, 435-436, 12-18	5.3	58
584	High-resolution strain mapping in bulk samples using full-profile analysis of energy-dispersive synchrotron X-ray diffraction data. *Journal of Applied Crystallography*, **2004**, 37, 883-889	3.8	58

583	Mapping fibre failure in situ in carbon fibre reinforced polymers by fast synchrotron X-ray computed tomography. *Composites Science and Technology*, **2017**, 149, 81-89	8.6	57
582	Exploring microstructural changes associated with oxidation in Ni–YSZ SOFC electrodes using high resolution X-ray computed tomography. *Solid State Ionics*, **2012**, 216, 69-72	3.3	57
581	A novel architecture for pore network modelling with applications to permeability of porous media. *Journal of Hydrology*, **2013**, 486, 246-258	6	56
580	Quantification of creep cavitation damage around a crack in a stainless steel pressure vessel. *Acta Materialia*, **2004**, 52, 23-34	8.4	56
579	Neutron-diffraction study of stress-induced martensitic transformation in TRIP steel. *Applied Physics A: Materials Science and Processing*, **2002**, 74, s1143-s1145	2.6	56
578	Crystallographic effects on the corrosion of twin roll cast AZ31 Mg alloy sheet. *Acta Materialia*, **2017**, 133, 90-99	8.4	55
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576	On the evolution of local material properties and residual stress in a three-pass SA508 steel weld. *Acta Materialia*, **2012**, 60, 3268-3278	8.4	55
575	In situ three-dimensional X-ray microtomography of an auxetic foam under tension. *Scripta Materialia*, **2009**, 60, 232-235	5.6	55
574	3D chemical imaging in the laboratory by hyperspectral X-ray computed tomography. *Scientific Reports*, **2015**, 5, 15979	4.9	54
573	X-ray computed tomography study of kink bands in unidirectional composites. *Composite Structures* , **2017**, 160, 917-924	5.3	53
572	Evaluation of surface integrity in micro drilling process for nickel-based superalloy. *International Journal of Advanced Manufacturing Technology*, **2011**, 55, 465-476	3.2	53
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569	Using pulsed neutron transmission for crystalline phase imaging and analysis. *Journal of Applied Physics*, **2005**, 97, 074903	2.5	52
568	Corrosion fatigue lifetime assessment of high-speed railway axle EA4T steel with artificial scratch. *Engineering Fracture Mechanics*, **2021**, 245, 107588	4.2	52
567	The effect of defect population on the anisotropic fatigue resistance of AlSi10Mg alloy fabricated by laser powder bed fusion. *International Journal of Fatigue*, **2021**, 151, 106317	5	52
566	Surface Decoration for Improving the Accuracy of Displacement Measurements by Digital Image Correlation in SEM. *Experimental Mechanics*, **2012**, 52, 793-804	2.6	51

565	In situ 3D X-ray microtomography study comparing auxetic and non-auxetic polymeric foams under tension. *Physica Status Solidi (B): Basic Research*, **2011**, 248, 45-51	1.3	51
564	Some experimental observations on crack closure and crack-tip plasticity. *Fatigue and Fracture of Engineering Materials and Structures*, **2009**, 32, 418-429	3	51
563	Changes in the misfit stresses in an Al/SiCp metal matrix composite under plastic strain. *Acta Materialia*, **2002**, 50, 1031-1040	8.4	51
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561	Turning of advanced Ni based alloys obtained via powder metallurgy route. *CIRP Annals - Manufacturing Technology*, **2006**, 55, 117-120	4.9	50
560	Synchrotron X-ray residual strain scanning of a friction stir weld. *Journal of Strain Analysis for Engineering Design*, **2001**, 36, 61-70	1.3	50
559	Fatigue damage assessment of uni-directional non-crimp fabric reinforced polyester composite using X-ray computed tomography. *Composites Science and Technology*, **2016**, 136, 94-103	8.6	50
558	Linking microstructure and processing defects to mechanical properties of selectively laser melted AlSi10Mg alloy. *Theoretical and Applied Fracture Mechanics*, **2018**, 98, 123-133	3.7	50
557	Determination of the high temperature elastic properties and diffraction elastic constants of Ni-base superalloys. *Materials and Design*, **2016**, 89, 856-863	8.1	48
556	The Effects of Filler Metal Transformation Temperature on Residual Stresses in a High Strength Steel Weld. *Journal of Pressure Vessel Technology, Transactions of the ASME*, **2009**, 131,	1.2	48
555	Finite element process modelling of inertia friction welding advanced nickel-based superalloy. *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing* , **2009**, 513-514, 366-375	5.3	48
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551	Laser Shock Peening on Zr-based Bulk Metallic Glass and Its Effect on Plasticity: Experiment and Modeling. *Scientific Reports*, **2015**, 5, 10789	4.9	46
550	Microstructural development in Pt-aluminide coating on CMSX-4 superalloy during TMF. *Surface and Coatings Technology*, **1998**, 107, 76-83	4.4	46
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548	The effect of thermal oxidation on polycrystalline graphite studied by X-ray tomography. *Carbon*, **2005**, 43, 765-774	10.4	46

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541	Investigation of interfacial properties of atmospheric plasma sprayed thermal barrier coatings with four-point bending and computed tomography technique. *Surface and Coatings Technology*, **2012**, 206, 4922-4929	4.4	44
540	In situ analysis of cracks in structural materials using synchrotron X-ray tomography and diffraction. *Nuclear Instruments & Methods in Physics Research B*, **2006**, 246, 217-225	1.2	44
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538	Completing the picture through correlative characterization. *Nature Materials*, **2019**, 18, 1041-1049	27	43
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535	A synchrotron radiation study of transient internal strain changes during the early stages of thermal cycling in an Al / SiCw MMC. *Scripta Materialia*, **1996**, 35, 1229-1234	5.6	43
534	Measuring overload effects during fatigue crack growth in bainitic steel by synchrotron X-ray diffraction. *International Journal of Fatigue*, **2015**, 71, 11-16	5	42
533	Modelling the effect of elastic and plastic anisotropies on stresses at grain boundaries. *International Journal of Plasticity*, **2014**, 61, 49-63	7.6	42
532	Energy-input-based finite-element process modeling of inertia welding. *Metallurgical and Materials Transactions B: Process Metallurgy and Materials Processing Science*, **2005**, 36, 513-523	2.5	42
531	SparseBeads data: benchmarking sparsity-regularized computed tomography. *Measurement Science and Technology*, **2017**, 28, 124005	2	41
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