# Andrew M Mullis

List of Publications by Year
in descending order



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|---|---|---|---|
| 115 papers | 1,652 citations | 257450 24 h-index | 345221 36 g-index |
| 117 all docs | 117 docs citations | 117 times ranked | 778 citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | Grain refinement and the stability of dendrites growing into undercooled pure metals and alloys. Journal of Applied Physics, 1997, 82, 3783-3790. | 2.5 | 130 |
| 2 | Estimation of Cooling Rates During Close-Coupled Gas Atomization Using Secondary Dendrite Arm Spacing Measurement. Metallurgical and Materials Transactions B: Process Metallurgy and Materials Processing Science, 2013, 44, 992-999. | 2.1 | 84 |
| 3 | A fully implicit, fully adaptive time and space discretisation method for phase-field simulation of binary alloy solidification. Journal of Computational Physics, 2007, 225, 1271-1287. | 3.8 | 78 |
| 4 | Mechanical deformation of dendrites by fluid flow during the solidification of undercooled melts. Acta Materialia, 2002, 50, 3743-3755. | 7.9 | 68 |
| 5 | Evidence for an extensive, undercooling-mediated transition in growth orientation, and novel dendritic seaweed microstructures in Cuâ€“8.9wt.% Ni. Acta Materialia, 2014, 66, 378-387. | 7.9 | 60 |
| 6 | Mechanism selection for spontaneous grain refinement in undercooled metallic melts. Acta Materialia, 2014, 77, 76-84. | 7.9 | 57 |
| 7 | Title is missing!. Journal of Materials Science, 2000, 35, 1365-1373. | 3.7 | 53 |
| 8 | Experimental Evidence for Dendrite Tip Splitting in Deeply Undercooled, Ultrahigh Purity Cu. Physical Review Letters, 2002, 89, 215502. | 7.8 | 45 |
| 9 | The mechanism for spontaneous grain refinement in undercooled pure Cu melts. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2004, 375-377, 479-484. | 5.6 | 39 |
| 10 | Microstructure evolution and mechanical properties of drop-tube processed, rapidly solidified grey cast iron. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2016, 654, 143-150. | 5.6 | 39 |
| 11 | The role of silica precipitation kinetics in determining the rate of quartz pressure solution. Journal of Geophysical Research, 1991, 96, 10007-10013. | 3.3 | 35 |
| 12 | Disorder trapping during the solidification of Î²Ni3Ge from its deeply undercooled melt. Journal of Materials Science, 2012, 47, 2411-2420. | 3.7 | 35 |
| 13 | Solute trapping and the effects of anti-trapping currents on phase-field models of coupled thermo-solutal solidification. Journal of Crystal Growth, 2010, 312, 1891-1897. | 1.5 | 34 |
| 14 | The effect of experimental variables on the levels of melt undercooling. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2004, 375-377, 485-487. | 5.6 | 33 |
| 15 | The formation of regular Î±Ni-Î³(Ni31Si12) eutectic structures from undercooled Niâ€“25 at.% Si melts. Intermetallics, 2012, 22, 55-61. | 3.9 | 33 |
| 16 | Deformation of dendrites by fluid flow during rapid solidification. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2001, 304-306, 245-249. | 5.6 | 32 |
| 17 | Quantitative phase-field modeling of solidification at high Lewis number. Physical Review E, 2009, 79, 030601. | 2.1 | 32 |
| 18 | Spasmodic growth during the rapid solidification of undercooled Ag-Cu eutectic melts. Applied Physics Letters, 2013, 102, . | 3.3 | 31 |

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|---|---|---|---|
| 19 | On the origin of anomalous eutectic growth from undercooled melts: Why re-melting is not a plausible explanation. Acta Materialia, 2018, 145, 186-195. | 7.9 | 30 |
| 20 | Rapid solidification within the framework of a hyperbolic conduction model. International Journal of Heat and Mass Transfer, 1997, 40, 4085-4094. | 4.8 | 29 |
| 21 | Dynamics of coreâ€“shell particle formation in drop-tube processed metastable monotectic alloys. Acta Materialia, 2020, 188, 591-598. | 7.9 | 28 |
| 22 | Effect of rapid solidification on the microstructure and microhardness of BS1452 grade 250 hypoeutectic grey cast iron. Journal of Alloys and Compounds, 2017, 707, 347-350. | 5.5 | 27 |
| 23 | Rapid solidification morphologies in Ni 3 Ge: Spherulites, dendrites and dense-branched fractal structures. Intermetallics, 2016, 76, 70-77. | 3.9 | 26 |
| 24 | Metastable monotectic phase separation in Coâ€“Cu alloys. Journal of Materials Science, 2018, 53, 11749-11764. | 3.7 | 26 |
| 25 | Quantification of mesh induced anisotropy effects in the phase-field method. Computational Materials Science, 2006, 36, 345-353. | 3.0 | 25 |
| 26 | A numerical model for porosity modification at a sandstone-mudstone boundary by quartz pressure dissolution and diffusive mass transfer. Sedimentology, 1992, 39, 99-107. | 3.1 | 24 |
| 27 | Determination of the rate-limiting mechanism for quartz pressure dissolution. Geochimica Et Cosmochimica Acta, 1993, 57, 1499-1503. | 3.9 | 24 |
| 28 | Numerical and Experimental Investigations of the Effect of Melt Delivery Nozzle Design on the Open- to Closed-Wake Transition in Closed-Coupled Gas Atomization. Metallurgical and Materials Transactions B: Process Metallurgy and Materials Processing Science, 2015, 46, 1990-2004. | 2.1 | 24 |
| 29 | Numerical and experimental modelling of back stream flow during close-coupled gas atomization. Computers and Fluids, 2013, 88, 1-10. | 2.5 | 23 |
| 30 | Prediction of the operating point of dendrites growing under coupled thermosolutal control at high growth velocity. Physical Review E, 2011, 83, 061601. | 2.1 | 22 |
| 31 | Grain refinement and growth instability in undercooled alloys at low undercooling. Journal of Applied Physics, 1998, 84, 4905-4910. | 2.5 | 21 |
| 32 | The mechanisms for spontaneous grain refinement in undercooled Cuâ€“O and Cuâ€“Sn melts. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2001, 304-306, 262-266. | 5.6 | 21 |
| 33 | A study of kinetically limited dendritic growth at high undercooling using phase-field techniques. Acta Materialia, 2003, 51, 1959-1969. | 7.9 | 18 |
| 34 | The solidification of undercooled melts via twinned dendritic growth. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2004, 35, 3211-3220. | 2.2 | 18 |
| 35 | Disorder-order morphologies in drop-tube processed Ni 3 Ge: Dendritic and seaweed growth. Journal of Alloys and Compounds, 2017, 707, 327-331. | 5.5 | 17 |
| 36 | Solidification morphology and phase selection in drop-tube processed Niâ€“Feâ€“Si intermetallics. Intermetallics, 2015, 60, 33-44. | 3.9 | 15 |

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|---|---|---|---|
| 37 | Microstructural Evolution and Phase Formation in Rapidly Solidified Ni-25.3ÂAt.ÂPct Si Alloy. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2015, 46, 4705-4715. | 2.2 | 14 |
| 38 | Spontaneous deterministic side-branching behavior in phase-field simulations of equiaxed dendritic growth. Journal of Applied Physics, 2015, 117, 114305. | 2.5 | 13 |
| 39 | Simulations of three-dimensional dendritic growth using a coupled thermo-solutal phase-field model. Applied Physics Letters, 2015, 107, 053108. | 3.3 | 13 |
| 40 | Natural convection in porous, permeable media: sheets, wedges and lenses. Marine and Petroleum Geology, 1995, 12, 17-25. | 3.3 | 12 |
| 41 | The effects of fluid flow on secondary arm coarsening during dendritic solidification. Journal of Materials Science, 2003, 38, 2517-2523. | 3.7 | 12 |
| 42 | The Role of Recrystallization in Spontaneous Grain Refinement of Rapidly Solidified Ni3Ge. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2017, 48, 5424-5431. | 2.2 | 12 |
| 43 | Lamella structure formation in drop-tube processed Niâ€“25.3at.% Si alloy. Journal of Alloys and Compounds, 2014, 615, S599-S601. | 5.5 | 11 |
| 44 | Solidification of Undercooled Melts of Al-Based Alloys on Earth and in Space. Jom, 2017, 69, 1303-1310. | 1.9 | 11 |
| 45 | Rapid solidification and a finite velocity for the propagation of heat. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 1997, 226-228, 28-32. | 5.6 | 10 |
| 46 | Effect of the ratio of solid to liquid conductivity on the stability parameter of dendrites within a phase-field model of solidification. Physical Review E, 2003, 68, 011602. | 2.1 | 10 |
| 47 | Evidence for an extended transition in growth orientation and novel dendritic seaweed structures in undercooled Cuâ€“8.9wt%Ni. Journal of Alloys and Compounds, 2014, 615, S612-S615. | 5.5 | 10 |
| 48 | Spontaneous grain refinement in alloy systems at low undercooling. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2001, 304-306, 267-271. | 5.6 | 9 |
| 49 | A mechanism for the equalisation of primary spacing during cellular and dendritic growth. Journal of Materials Science, 2001, 36, 865-869. | 3.7 | 9 |
| 50 | Morphology of Spherulites in Rapidly Solidified Ni3Ge Droplets. Crystals, 2017, 7, 100. | 2.2 | 9 |
| 51 | Relationship between cooling rate and SDAS in liquid phase separated metastable Cuâ€“Co alloys. Journal of Alloys and Compounds, 2021, 883, 160823. | 5.5 | 9 |
| 52 | A numerical model for the calculation of the growth velocity of nonisothermal parabolic dendrites. Journal of Applied Physics, 1995, 78, 4137-4143. | 2.5 | 8 |
| 53 | Effect of cooling rate on the microstructure of rapidly solidified SiGe. Materials Characterization, 2019, 154, 377-385. | 4.4 | 8 |
| 54 | On the Fully Implicit Solution of a Phase-Field Model for Binary Alloy Solidification in Three Dimensions. Advances in Applied Mathematics and Mechanics, 2012, 4, 665-684. | 1.2 | 8 |

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|---|---|---|---|
| 55 | Semi-solid processing of the analogue casting system NH4Cl-H2O. Scripta Materialia, 1998, 39, 147-152. | 5.2 | 7 |
| 56 | A free boundary model for shape preserving dendritic growth at high undercooling. Journal of Applied Physics, 1996, 80, 4129-4136. | 2.5 | 6 |
| 57 | The Origins of Spontaneous Grain Refinement in Deeply Undercooled Metallic Melts. Metals, 2014, 4, 155-167. | 2.3 | 6 |
| 58 | Microstructural development and mechanical properties of drop tube atomized Al-2.85 wt% Fe. Journal of Materials Science and Technology, 2022, 104, 41-51. | 10.7 | 6 |
| 59 | A model for spontaneous grain refinement in alloy systems at low undercooling. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 1997, 226-228, 804-808. | 5.6 | 5 |
| 60 | Phase Field Analysis of Eutectic Breakdown. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2007, 38, 1426-1432. | 2.2 | 5 |
| 61 | High speed imaging and Fourier analysis of the melt plume during close coupled gas atomisation. Powder Metallurgy, 2009, 52, 205-212. | 1.7 | 5 |
| 62 | Log-Normal Melt Pulsation in Close-Coupled Gas Atomization. Metallurgical and Materials Transactions B: Process Metallurgy and Materials Processing Science, 2013, 44, 789-793. | 2.1 | 5 |
| 63 | Determination of the Origin of Anomalous Eutectic Structures from <i>In Situ</i> Observation of Recalescence Behaviour. Materials Science Forum, 2014, 790-791, 349-354. | 0.3 | 5 |
| 64 | Structure and phase-composition of Ti-doped gas atomized Raney-type Ni catalyst precursor alloys. Intermetallics, 2015, 67, 63-68. | 3.9 | 5 |
| 65 | Effect of cooling rate and chromium doping on the microstructure of Al-25â€¯at.% Ni Raney type alloy. Journal of Alloys and Compounds, 2018, 744, 801-808. | 5.5 | 5 |
| 66 | Existence of seaweed structures in rapidly solidified Ni3Ge intermetallic. Journal of Alloys and Compounds, 2019, 801, 640-644. | 5.5 | 4 |
| 67 | Evidence for dendritic fragmentation in as-solidified samples of deeply undercooled melts. Journal of Crystal Growth, 2020, 529, 125276. | 1.5 | 4 |
| 68 | An investigation of the depth of excavation and thickness of basalt fill for the lunar mascon basins. Geophysical Journal International, 1992, 109, 233-239. | 2.4 | 3 |
| 69 | An analytical geometrical model for secondary dendrite arm detachment. Scripta Materialia, 2006, 54, 795-799. | 5.2 | 3 |
| 70 | Phase-field modelling of rapid solidification in alloy systems: Spontaneous grain refinement effects. IOP Conference Series: Materials Science and Engineering, 2012, 33, 012109. | 0.6 | 3 |
| 71 | Towards a Three-Dimensional Phase-Field Model of Dendritic Solidification with Physically Realistic Interface Width. Transactions of the Indian Institute of Metals, 2012, 65, 617-621. | 1.5 | 3 |
| 72 | Non-Equilibrium Processing of Ni-Si Alloys at High Undercooling and High Cooling Rates. Materials Science Forum, 2014, 790-791, 22-27. | 0.3 | 3 |

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| 73 | Deterministic side-branching during thermal dendritic growth. IOP Conference Series: Materials Science and Engineering, 2015, 84, 012071. | 0.6 | 3 |
| 74 | Rapidly solidified Ag-Cu eutectics: A comparative study using drop-tube and melt fluxing techniques. IOP Conference Series: Materials Science and Engineering, 2016, 117, 012053. | 0.6 | 3 |
| 75 | A novel route to the coupling of molecular dynamics and phase-field simulations of crystal growth. IOP Conference Series: Materials Science and Engineering, 2019, 529, 012032. | 0.6 | 3 |
| 76 | Depth of basalt fill and transient crater geometry for the Imbrium mascon basin. Geophysical Journal International, 1991, 105, 777-781. | 2.4 | 2 |
| 77 | A Mechanism For the Generation of the Lunar-Mare Basalts. Geophysical Journal International, 1993, 114, 196-208. | 2.4 | 2 |
| 78 | The Effects of Fluid Flow During Rapid Dendritic Solidification. Advanced Engineering Materials, 2000, 2, 597-600. | 3.5 | 2 |
| 79 | An extension to the Wheeler phase-field model to allow decoupling of the capillary and kinetic anisotropies. European Physical Journal B, 2004, 41, 377-382. | 1.5 | 2 |
| 80 | Mechanically Deformed Primary Dendritic Structures Observed During the Solidification of Undercooled Melts. , 2005, , 175-184. | | 2 |
| 81 | A Phase-Field Model for the Diffusive Melting of Isolated Dendritic Fragments. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2014, 45, 3097-3102. | 2.2 | 2 |
| 82 | An adaptive mesh method for phase-field simulation of alloy solidification in three dimensions. IOP Conference Series: Materials Science and Engineering, 2015, 84, 012068. | 0.6 | 2 |
| 83 | Order-disorder morphologies in rapidly solidified Îµ/Îµâ€²-Ni5Ge3 intermetallic. Journal of Alloys and Compounds, 2018, 739, 160-163. | 5.5 | 2 |
| 84 | THE PHYSICAL MECHANISM FORMELT PULSATION DURING CLOSE-COUPLED ATOMIZATION. Atomization and Sprays, 2019, 29, 143-159. | 0.8 | 2 |
| 85 | Mechanical behaviour of rapidly solidified copper: Effects of undercooling and strain rate. Materials Science and Technology, 2020, 36, 202-209. | 1.6 | 2 |
| 86 | Spatially Resolved Velocity Mapping of the Melt Plume During High-Pressure Gas Atomization of Liquid Metals. Metallurgical and Materials Transactions B: Process Metallurgy and Materials Processing Science, 2020, 51, 1973-1988. | 2.1 | 2 |
| 87 | Morphology of Order-Disorder Structures in Rapidly Solidified L12 Intermetallics. Minerals, Metals and Materials Series, 2017, , 729-736. | 0.4 | 2 |
| 88 | Towards a Physically Consistent Phase-Field Model for Alloy Solidification. Metals, 2022, 12, 272. | 2.3 | 2 |
| 89 | A Model for the Anomalous Velocity-Undercooling Behaviour of Levitated Al-Ni Alloys On-board the International Space Station. Microgravity Science and Technology, 2021, 33, 1. | 1.4 | 2 |
| 90 | A new approach to multi-phase field for the solidification of alloys. IOP Conference Series: Materials Science and Engineering, 2012, 33, 012099. | 0.6 | 1 |

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| 91 | Towards a 3-Dimensional Phase-Field Model of Non-Isothermal Alloy Solidification. Materials Science Forum, 0, 783-786, 2166-2171. | 0.3 | 1 |
| 92 | CFD Modelling of High Pressure Gas Atomization of Liquid Metals. Minerals, Metals and Materials Series, 2018, , 77-84. | 0.4 | 1 |
| 93 | Direct observation of dendrite fragmentation in the solidification of undercooled melts. IOP Conference Series: Materials Science and Engineering, 2019, 529, 012020. | 0.6 | 1 |
| 94 | Solidification transformations in liquid phase separated metastable monotectic Cu-50 at. % Co alloy. Canadian Journal of Chemistry, 2021, 99, 831-836. | 1.1 | 1 |
| 95 | Phase-Field Modelling of Intermetallic Solidification. Minerals, Metals and Materials Series, 2018, , 587-596. | 0.4 | 1 |
| 96 | Mechanical Properties of Rapidly Solidified Ni5Ge3 Intermetallic. Minerals, Metals and Materials Series, 2018, , 705-711. | 0.4 | 1 |
| 97 | Partitionless solidification and anomalous triradiate crystal formation in drop-tube processed Al-3.9Âwt%Fe alloys. Materials Today Communications, 2022, 31, 103274. | 1.9 | 1 |
| 98 | A Phase Field Model for Grain Refinement in Deeply Undercooled Metallic Melts. Materials Research Society Symposia Proceedings, 2001, 677, 7151. | 0.1 | 0 |
| 99 | Particle Dynamic Simulation of Semi-Solid Metal Rheology. Materials Research Society Symposia Proceedings, 2001, 677, 7181. | 0.1 | 0 |
| 100 | A Numerical Model for Porosity Modification at a Sandstoneâ€“Mudstone Boundary by Quartz Pressure Dissolution and Diffusive Mass Transfer. , 0, , 365-373. | | 0 |
| 101 | The prediction of tip radius during rapid dendritic growth under coupled thermo-solutal control: What value Ïƒ. Transactions of the Indian Institute of Metals, 2009, 62, 309-313. | 1.5 | 0 |
| 102 | Operating point selection for dendritic growth during rapid solidification. IOP Conference Series: Materials Science and Engineering, 2012, 27, 012076. | 0.6 | 0 |
| 103 | Thermo-Solutal Modelling of Microstructure Formation during Multiphase Alloy Solidification - a New Approach. Materials Science Forum, 0, 790-791, 103-108. | 0.3 | 0 |
| 104 | Effect of Cooling Rate on Drop-Tube Processed Commercial Grey Cast Iron. , 2015, , . | | 0 |
| 105 | The origins of spontaneous grain refinement in deeply undercooled metallic melts. IOP Conference Series: Materials Science and Engineering, 2016, 117, 012054. | 0.6 | 0 |
| 106 | Development of an Anti-Trapping Current for Phase Field Models Using Arbitrary CALPHAD Thermodynamics. Materials Science Forum, 2018, 941, 2337-2342. | 0.3 | 0 |
| 107 | Simulation of Intermetallic Solidification Using Phase-Field Techniques. Transactions of the Indian Institute of Metals, 2018, 71, 2617-2622. | 1.5 | 0 |
| 108 | Microstructure Characterization of Ni-75 at.% Al Raney Type Alloy as a Result of Cooling Rate and Chromium Doping. MRS Advances, 2019, 4, 1441-1447. | 0.9 | 0 |

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| 109 | Orderâ€"Disorder Morphologies in Rapidly Solidified Ni3Ge Intermetallic. Jom, 2019, 71, 2728-2733. | 1.9 | 0 |
| 110 | Dendritic Growth of Rapid-Solidified Eutectic High-Entropy Alloy. Materials Science Forum, 0, 1035, 46-50. | 0.3 | 0 |
| 111 | The Development of Plate and Lath Morphology in Ni5Ge3. Physics of Metals and Metallography, 0, , 1. | 1.0 | 0 |
| 112 | Presence of Î-and Îµ crystal structures in rapidly solidified intermetallic compound Ni5Ge3. Journal of Alloys and Compounds, 2021, 887, 161465. | 5.5 | 0 |
| 113 | Phase Transformation, Microstructural Evolution and Property Modification in Rapidly Solidified Grey Cast Iron. Minerals, Metals and Materials Series, 2017, , 719-727. | 0.4 | 0 |
| 114 | Mechanical Properties of Rapidly Solidified Ni<sub>3</sub>Ge and Ni<sub>5</sub>Ge<sub>3</sub> Intermetallic Compounds. Journal of Nanoscience and Nanotechnology, 2020, 20, 4591-4596. | 0.9 | 0 |
| 115 | Thermal transitions in metastable Cu â€" 68.5 at. % Co alloy.. Canadian Journal of Chemistry, 0, , . | 1.1 | 0 |