Albert C To

List of Publications by Year
in descending order

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135 papers	4,925 citations	94269 37 h-index	110170 64 g-index
138 all docs	138 docs citations	138 times ranked	3848 citing authors

#	Article	IF	Citations
1	Current and future trends in topology optimization for additive manufacturing. Structural and Multidisciplinary Optimization, 2018, 57, 2457-2483.	1.7	533
2	Functionally graded lattice structure topology optimization for the design of additive manufactured components with stress constraints. Computer Methods in Applied Mechanics and Engineering, 2019, 344, 334-359.	3.4	195
3	Interplay between phononic bandgaps and piezoelectric microstructures for energy harvesting. Journal of the Mechanics and Physics of Solids, 2009, 57, 621-633.	2.3	178
4	Efficient Design-Optimization of Variable-Density Hexagonal Cellular Structure by Additive Manufacturing: Theory and Validation. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2015, 137, .	1.3	170
5	Efficient design optimization of variable-density cellular structures for additive manufacturing: theory and experimental validation. Rapid Prototyping Journal, 2017, 23, 660-677.	1.6	168
6	Finite element modeling and validation of thermomechanical behavior of Ti-6Al-4V in directed energy deposition additive manufacturing. Additive Manufacturing, 2016, 12, 169-177.	1.7	145
7	Role of anisotropic properties on topology optimization of additive manufactured load bearing structures. Scripta Materialia, 2017, 135, 148-152.	2.6	130
8	Statistical volume element method for predicting microstructureâ€“constitutive property relations. Computer Methods in Applied Mechanics and Engineering, 2008, 197, 3516-3529.	3.4	112
9	Coupling lattice structure topology optimization with design-dependent feature evolution for additive manufactured heat conduction design. Computer Methods in Applied Mechanics and Engineering, 2018, 332, 408-439.	3.4	110
10	Biomimetic staggered composites with highly enhanced energy dissipation: Modeling, 3D printing, and testing. Journal of the Mechanics and Physics of Solids, 2015, 83, 285-300.	2.3	106
11	A modified method for estimating inherent strains from detailed process simulation for fast residual distortion prediction of single-walled structures fabricated by directed energy deposition. Additive Manufacturing, 2018, 23, 471-486.	1.7	106
12	An inherent strain based multiscale modeling framework for simulating part-scale residual deformation for direct metal laser sintering. Additive Manufacturing, 2019, 28, 406-418.	1.7	106
13	Perfectly matched multiscale simulations. Physical Review B, 2005, 72, .	1.1	103
14	Variation of hardness, microstructure, and Laves phase distribution in direct laser deposited alloy 718 cuboids. Materials and Design, 2017, 119, 188-198.	3.3	92
15	Wavelet denoising techniques with applications to experimental geophysical data. Signal Processing, 2009, 89, 144-160.	2.1	86
16	On utilizing topology optimization to design support structure to prevent residual stress induced build failure in laser powder bed metal additive manufacturing. Additive Manufacturing, 2019, 27, 290-304.	1.7	86
17	Deposition path planning-integrated structural topology optimization for 3D additive manufacturing subject to self-support constraint. CAD Computer Aided Design, 2017, 91, 27-45.	1.4	85
18	Broadband wave filtering of bioinspired hierarchical phononic crystal. Applied Physics Letters, 2013, 102, .	1.5	84

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19	Part-scale build orientation optimization for minimizing residual stress and support volume for metal additive manufacturing: Theory and experimental validation. CAD Computer Aided Design, 2019, 113, 1-23.	1.4	82
20	Modified inherent strain method for efficient prediction of residual deformation in direct metal laser sintered components. Computational Mechanics, 2019, 64, 1719-1733.	2.2	79
21	Proportional Topology Optimization: A New Non-Sensitivity Method for Solving Stress Constrained and Minimum Compliance Problems and Its Implementation in MATLAB. PLoS ONE, 2015, 10, e0145041.	1.1	69
22	Immersed electrokinetic finite element method. International Journal for Numerical Methods in Engineering, 2007, 71, 379-405.	1.5	65
23	Natural frequency optimization of 3D printed variable-density honeycomb structure via a homogenization-based approach. Additive Manufacturing, 2018, 20, 189-198.	1.7	61
24	Invited review: Machine learning for materials developments in metals additive manufacturing. Additive Manufacturing, 2020, 36, 101641.	1.7	61
25	Quantitative texture prediction of epitaxial columnar grains in additive manufacturing using selective laser melting. Additive Manufacturing, 2017, 16, 58-64.	1.7	60
26	Transversely isotropic hyperelastic-viscoplastic model for glassy polymers with application to additive manufactured photopolymers. International Journal of Plasticity, 2016, 80, 56-74.	4.1	59
27	Ultra-low Thermal Conductivity in Si/Ge Hierarchical Superlattice Nanowire. Scientific Reports, 2015, 5, 16697.	1.6	58
28	Natural Frequency Optimization of Variable-Density Additive Manufactured Lattice Structure: Theory and Experimental Validation. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2018, 140, .	1.3	58
29	Predicting Microstructure Evolution During Directed Energy Deposition Additive Manufacturing of Ti-6Al-4V. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2018, 140, .	1.3	56
30	Perfectly matched multiscale simulations for discrete lattice systems: Extension to multiple dimensions. Physical Review B, 2006, 74, .	1.1	54
31	Heats of Vaporization of Room Temperature Ionic Liquids by Tunable Vacuum Ultraviolet Photoionization. Journal of Physical Chemistry B, 2010, 114, 1361-1367.	1.2	49
32	A review of multi-scale and multi-physics simulations of metal additive manufacturing processes with focus on modeling strategies. Additive Manufacturing, 2021, 47, 102278.	1.7	48
33	Concurrent lattice infill with feature evolution optimization for additive manufactured heat conduction design. Structural and Multidisciplinary Optimization, 2018, 58, 511-535.	1.7	46
34	Topology optimization for energy dissipation design of lattice structures through snap-through behavior. Computer Methods in Applied Mechanics and Engineering, 2020, 358, 112641.	3.4	45
35	Hydrogen storage in heat welded random CNT network structures. International Journal of Hydrogen Energy, 2015, 40, 403-411.	3.8	44
36	Ultrahigh Thermal Rectification in Pillared Graphene Structure with Carbon Nanotubeâ€“Graphene Intramolecular Junctions. ACS Applied Materials & Interfaces, 2017, 9, 29-35.	4.0	40

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37	Vibration promotes heat welding of single-walled carbon nanotubes. Chemical Physics Letters, 2011, 502, 231-234.	1.2	38
38	Multiresolution molecular mechanics: Statics. Computer Methods in Applied Mechanics and Engineering, 2013, 258, 26-38.	3.4	34
39	Highly Enhanced Damping Figure of Merit in Biomimetic Hierarchical Staggered Composites. Journal of Applied Mechanics, Transactions ASME, 2014, 81, .	1.1	34
40	A level-set based continuous scanning path optimization method for reducing residual stress and deformation in metal additive manufacturing. Computer Methods in Applied Mechanics and Engineering, 2020, 360, 112719.	3.4	34
41	Anomalous heat conduction behavior in thin finite-size silicon nanowires. Nanotechnology, 2010, 21, 155704.	1.3	33
42	Topology optimization for hybrid additive-subtractive manufacturing. Structural and Multidisciplinary Optimization, 2017, 55, 1281-1299.	1.7	33
43	Sensitivity analysis and lattice density optimization for sequential inherent strain method used in additive manufacturing process. Computer Methods in Applied Mechanics and Engineering, 2020, 370, 113231.	3.4	32
44	Topology optimization based on deep representation learning (DRL) for compliance and stress-constrained design. Computational Mechanics, 2020, 66, 449-469.	2.2	31
45	A Parametric Level Set Method for Topology Optimization Based on Deep Neural Network. Journal of Mechanical Design, Transactions of the ASME, 2021, 143, .	1.7	31
46	An analytical model of the melt pool and single track in coaxial laser direct metal deposition (LDMD) additive manufacturing. Journal of Micromechanics and Molecular Physics, 2017, 02, 1750013.	0.7	30
47	Manufacturing cost constrained topology optimization for additive manufacturing. Frontiers of Mechanical Engineering, 2019, 14, 213-221.	2.5	30
48	Elucidating the effect of preheating temperature on melt pool morphology variation in Inconel 718 laser powder bed fusion via simulation and experiment. Additive Manufacturing, 2021, 37, 101642.	1.7	30
49	Mean-field polycrystal plasticity modeling with grain size and shape effects for laser additive manufactured FCC metals. International Journal of Solids and Structures, 2017, 112, 35-42.	1.3	29
50	Design, testing, and mechanical behavior of additively manufactured casing with optimized lattice structure. Additive Manufacturing, 2018, 22, 462-471.	1.7	28
51	Inherent strain homogenization for fast residual deformation simulation of thin-walled lattice support structures built by laser powder bed fusion additive manufacturing. Additive Manufacturing, 2020, 32, 101091.	1.7	28
52	Effects of welding on thermal conductivity of randomly oriented carbon nanotube networks. International Journal of Heat and Mass Transfer, 2014, 70, 803-810.	2.5	23
53	Materials integrity in microsystems: a framework for a petascale predictive-science-based multiscale modeling and simulation system. Computational Mechanics, 2008, 42, 485-510.	2.2	21
54	An efficient 146-line 3D sensitivity analysis code of stress-based topology optimization written in MATLAB. Optimization and Engineering, 2022, 23, 1733-1757.	1.3	21

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55	Surface effects on stacking fault and twin formation in fcc nanofilms: A first-principles study. Computational Materials Science, 2011, 50, 3342-3345.	1.4	20
56	Heat welding of non-orthogonal X-junction of single-walled carbon nanotubes. Physica E: Low-Dimensional Systems and Nanostructures, 2012, 46, 30-32.	1.3	20
57	Multiresolution molecular mechanics: A unified and consistent framework for general finite element shape functions. Computer Methods in Applied Mechanics and Engineering, 2015, 283, 384-418.	3.4	20
58	A new method for predicting cracking at the interface between solid and lattice support during laser powder bed fusion additive manufacturing. Additive Manufacturing, 2020, 32, 101050.	1.7	20
59	A Digital Twin Approach to Study Additive Manufacturing Processing Using Embedded Optical Fiber Sensors and Numerical Modeling. Journal of Lightwave Technology, 2020, 38, 6402-6411.	2.7	20
60	Tensile behavior of heat welded CNT network structures. Computational Materials Science, 2014, 88, 14-21.	1.4	19
61	On incorporating scanning strategy effects into the modified inherent strain modeling framework for laser powder bed fusion. Additive Manufacturing, 2021, 37, 101648.	1.7	19
62	A new procedure for implementing the modified inherent strain method with improved accuracy in predicting both residual stress and deformation for laser powder bed fusion. Additive Manufacturing, 2021, 47, 102345.	1.7	19
63	Carbon nanotubeâ€“fullerene hybrid nanostructures by C₆₀ bombardment: formation and mechanical behavior. Physical Chemistry Chemical Physics, 2014, 16, 21615-21619.	1.3	18
64	Effects of lithium doping on hydrogen storage properties of heat welded random CNT network structures. International Journal of Hydrogen Energy, 2016, 41, 8246-8255.	3.8	18
65	Topology optimization design of stretchable metamaterials with BÃ©zier skeleton explicit density (BSED) representation algorithm. Computer Methods in Applied Mechanics and Engineering, 2020, 366, 113093.	3.4	18
66	Spurious heat conduction behavior of finite-size graphene nanoribbon under extreme uniaxial strain caused by the AIREBO potential. Physica E: Low-Dimensional Systems and Nanostructures, 2018, 96, 46-53.	1.3	17
67	Propagation of a mode-III interfacial conductive crack along a conductive interface between two piezoelectric materials. Wave Motion, 2006, 43, 368-386.	1.0	16
68	Surface structure and properties of functionalized nanodiamonds: a first-principles study. Nanotechnology, 2011, 22, 065706.	1.3	16
69	Arbitrary void feature control in level set topology optimization. Computer Methods in Applied Mechanics and Engineering, 2017, 324, 595-618.	3.4	16
70	Distortion energy-based topology optimization design of hyperelastic materials. Structural and Multidisciplinary Optimization, 2019, 59, 1895-1913.	1.7	16
71	Topology optimization of phononic-like structures using experimental material interpolation model for additive manufactured lattice infills. Computer Methods in Applied Mechanics and Engineering, 2021, 377, 113717.	3.4	16
72	Full waveform inversion of a 3-D source inside an artificial rock. Journal of Sound and Vibration, 2005, 285, 835-857.	2.1	15

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73	A finite temperature continuum theory based on interatomic potential in crystalline solids. Computational Mechanics, 2008, 42, 531-541.	2.2	15
74	A stochastic algorithm for modeling heat welded random carbon nanotube network. Computer Methods in Applied Mechanics and Engineering, 2013, 259, 1-9.	3.4	15
75	Multiresolution Molecular Mechanics: Dynamics. Computer Methods in Applied Mechanics and Engineering, 2014, 274, 42-55.	3.4	15
76	Length and temperature dependence of the mechanical properties of finite-size carbyne. Physica E: Low-Dimensional Systems and Nanostructures, 2017, 93, 124-131.	1.3	14
77	A Discrete Dendrite Dynamics Model for Epitaxial Columnar Grain Growth in Metal Additive Manufacturing with Application to Inconel. Additive Manufacturing, 2020, 36, 101611.	1.7	14
78	Linear and nonlinear topology optimization design with projectionâ€based ground structure method (Pâ€GSM). International Journal for Numerical Methods in Engineering, 2020, 121, 2437-2461.	1.5	14
79	Conforming local meshfree method. International Journal for Numerical Methods in Engineering, 2011, 86, 335-357.	1.5	13
80	Effects of nanobuds and heat welded nanobuds chains on mechanical behavior of carbon nanotubes. Computational Materials Science, 2015, 109, 49-55.	1.4	13
81	Island scanning pattern optimization for residual deformation mitigation in laser powder bed fusion via sequential inherent strain method and sensitivity analysis. Additive Manufacturing, 2021, 46, 102116.	1.7	13
82	Compressive Behavior and Deformation Mechanism of Nanoporous Open-Cell Foam with Ultrathin Ligaments. Journal of Nanomechanics & Micromechanics, 2014, 4, .	1.4	12
83	Residual Stress Modeling with Phase Transformation for Wire Arc Additive Manufacturing of B91 Steel. Jom, 2020, 72, 4178-4186.	0.9	12
84	Mechanical properties of SWNT X-Junctions through molecular dynamics simulation. International Journal of Smart and Nano Materials, 2012, 3, 33-46.	2.0	11
85	Porous structure design through Blinn transformation-based level set method. Structural and Multidisciplinary Optimization, 2018, 57, 849-864.	1.7	11
86	A process-microstructure finite element simulation framework for predicting phase transformations and microhardness for directed energy deposition of Ti6Al4V. Additive Manufacturing, 2020, 35, 101252.	1.7	11
87	An enhanced layer lumping method for accelerating simulation of metal components produced by laser powder bed fusion. Additive Manufacturing, 2021, 39, 101881.	1.7	11
88	Integrating Geometric Data into Topology Optimization via Neural Style Transfer. Materials, 2021, 14, 4551.	1.3	11
89	On scattering in dissimilar piezoelectric materials by a semi-infinite interfacial crack. Quarterly Journal of Mechanics and Applied Mathematics, 2005, 58, 309-331.	0.5	10
90	Homogenization timing effect on microstructure and precipitation strengthening of 17â€“4PH stainless steel fabricated by laser powder bed fusion. Additive Manufacturing, 2022, 52, 102672.	1.7	10

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91	Atom collocation method. Computer Methods in Applied Mechanics and Engineering, 2012, 237-240, 67-77.	3.4	9
92	A fast method for generating atomistic models of arbitrarily-shaped carbon graphitic nanostructures. RSC Advances, 2013, 3, 1359-1362.	1.7	9
93	Coalescence of parallel finite length single-walled carbon nanotubes by heat treatment. Journal of Physics and Chemistry of Solids, 2013, 74, 436-440.	1.9	9
94	Heat conduction in extended X-junctions of single-walled carbon nanotubes. Journal of Physics and Chemistry of Solids, 2014, 75, 123-129.	1.9	9
95	Point group symmetry and deformation-induced symmetry breaking of superlattice materials. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2015, 471, 20150125.	1.0	9
96	Homogenization of additive manufactured polymeric foams with spherical cells. Additive Manufacturing, 2016, 12, 274-281.	1.7	9
97	Microseismic source deconvolution: Wiener filter versus minimax, Fourier versus wavelets, and linear versus nonlinear. Journal of the Acoustical Society of America, 2004, 115, 3048-3058.	0.5	8
98	Multiresolution molecular mechanics: Convergence and error structure analysis. Computer Methods in Applied Mechanics and Engineering, 2014, 269, 20-45.	3.4	8
99	Multiresolution molecular mechanics: Implementation and efficiency. Journal of Computational Physics, 2017, 328, 27-45.	1.9	8
100	Optimally variable density lattice to reduce warping thermal distortion of laser powder bed fusion. Additive Manufacturing, 2021, 48, 102422.	1.7	8
101	On Scattering in a Piezoelectric Medium by a Conducting Crack. Journal of Applied Mechanics, Transactions ASME, 2005, 72, 943.	1.1	7
102	The controlled growth of single metallic and conducting polymer nanowires via gate-assisted electrochemical deposition. Nanotechnology, 2009, 20, 285605.	1.3	7
103	A modification to Hardy's thermomechanical theory that conserves fundamental properties more accurately. Journal of Applied Physics, 2013, 113, 233505.	1.1	7
104	Thermal conductivity of periodic array of intermolecular junctions of silicon nanowires. Physica E: Low-Dimensional Systems and Nanostructures, 2011, 44, 141-145.	1.3	6
105	Transformation of non-orthogonal X-junction of single-walled carbon nanotubes into parallel junction by heating. Chemical Physics Letters, 2012, 547, 42-46.	1.2	6
106	Nanobuds promote heat welding of carbon nanotubes at experimentally-relevant temperatures. RSC Advances, 2014, 4, 56313-56317.	1.7	6
107	Multiresolution molecular mechanics: Adaptive analysis. Computer Methods in Applied Mechanics and Engineering, 2016, 305, 682-702.	3.4	6
108	Efficient prediction of cracking at solid-lattice support interface during laser powder bed fusion via global-local J-integral analysis based on modified inherent strain method and lattice support homogenization. Additive Manufacturing, 2020, 36, 101590.	1.7	6

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109	Part-scale thermal process modeling for laser powder bed fusion with matrix-free method and GPU computing. Additive Manufacturing, 2021, 37, 101732.	1.7	6
110	Lateral Load Capacity of Drilled Shafts in Jointed Rock. Journal of Geotechnical and Geoenvironmental Engineering - ASCE, 2003, 129, 711-726.	1.5	5
111	Formation of single carbon chain bridging two SWCNTs via tensile deformation of nanobud junction. Materials and Design, 2016, 97, 86-92.	3.3	5
112	Computer-Aided Design-Based Topology Optimization System With Dynamic Feature Shape and Modeling History Evolution. Journal of Mechanical Design, Transactions of the ASME, 2020, 142, .	1.7	5
113	Denoising methods for thermomechanical decomposition for quasi-equilibrium molecular dynamics simulations. Computer Methods in Applied Mechanics and Engineering, 2011, 200, 1979-1992.	3.4	4
114	Support Thickness, Pitch, and Applied Bias Effects on the Carbide Formation, Surface Roughness, and Material Removal of Additively Manufactured 316ÂL Stainless Steel. Jom, 2020, 72, 4254-4263.	0.9	4
115	Projection-Based Implicit Modeling Method (PIMM) for Functionally Graded Lattice Optimization. Jom, 2021, 73, 2012-2021.	0.9	4
116	A computational framework for modeling distortion during sintering of binder jet printed parts. Journal of Micromechanics and Molecular Physics, 2021, 06, 95-102.	0.7	4
117	Enabling Part-Scale Scanwise process simulation for predicting melt pool variation in LPBF by combining GPU-based Matrix-free FEM and adaptive Remeshing. Additive Manufacturing Letters, 2022, 3, 100051.	0.9	4
118	On determining the thermal state of individual atoms in molecular dynamics simulations of nonequilibrium processes in solids. Chemical Physics Letters, 2011, 506, 290-297.	1.2	3
119	On the evaluation of Hardy's thermomechanical quantities using ensemble and time averaging. Modelling and Simulation in Materials Science and Engineering, 2013, 21, 055015.	0.8	3
120	Multiresolution molecular mechanics: Surface effects in nanoscale materials. Journal of Computational Physics, 2017, 336, 212-234.	1.9	3
121	Reverse shape compensation via a gradient-based moving particle optimization method. Computer Methods in Applied Mechanics and Engineering, 2021, 377, 113658.	3.4	3
122	CAD-integrated topology optimization method with dynamic extrusion feature evolution for multi-axis machining. Computer Methods in Applied Mechanics and Engineering, 2022, 390, 114456.	3.4	3
123	A modification to Hardy's thermomechanical theory for conserving fundamental properties more accurately: tensile and shear failures in iron. Modelling and Simulation in Materials Science and Engineering, 2014, 22, 015010.	0.8	2
124	Optical Fiber Sensor-Fused Additive Manufacturing and Its Applications in Residual Stress Measurements in Titanium Parts. , 2016, , .		2
125	Optical Fiber Sensor-Fused Additive Manufacturing and Its Applications in Residual Stress Measurements. , 2017, , .		2
126	A Novel Mathematical Formulation for Density-Based Topology Optimization Method Considering Multi-Axis Machining Constraint. Journal of Mechanical Design, Transactions of the ASME, 2022, 144, .	1.7	2

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127	Accelerating High-Fidelity Thermal Process Simulation of Laser Powder Bed Fusion via the Computational Fluid Dynamics Imposed Finite Element Method (CIFEM). Additive Manufacturing Letters, 2022, 3, 100081.	0.9	2
128	Interactions of Fullerene (C60) and its Hydroxyl Derivatives with Lipid Bilayer: A Coarse-Grained Molecular Dynamics Simulation. Brazilian Journal of Physics, 2014, 44, 1-7.	0.7	1
129	Quantitative Texture Prediction of Epitaxial Columnar Grains in Alloy 718 Processed by Additive Manufacturing. Minerals, Metals and Materials Series, 2018, , 749-755.	0.3	1
130	A densityâ€based boundary evolving method for bucklingâ€induced design under large deformation. International Journal for Numerical Methods in Engineering, 2021, 122, 1770-1796.	1.5	1
131	Embedding Distributed Temperature and Strain Optical Fiber Sensors in Metal Components Using Additive Manufacturing. , 2018, , .		1
132	Multifunctional One-dimensional Phononic Crystal Structures Exploiting Interfacial Acoustic Waves. Materials Research Society Symposia Proceedings, 2009, 1188, 145.	0.1	0
133	Thermal Conductivity in Thin Silicon Nanowires with Rough Surfaces by Molecular Dynamics Simulations. , 2010, , .		0
134	Mechanics of Nanoporous Metals. , 2013, , .		0
135	3D Temperature Mapping of Cellular Passive Cooling Structures Fabricated by Additive Manufacturing for Lasers. , 2017, , .		0