

Shiwei Zhou

List of Publications by Year in descending order

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122
papers

6,476
citations

87843

38
h-index

66879

78
g-index

123
all docs

123
docs citations

123
times ranked

5614
citing authors

#	ARTICLE	IF	CITATIONS
1	Topological design and additive manufacturing of porous metals for bone scaffolds and orthopaedic implants: A review. <i>Biomaterials</i> , 2016, 83, 127-141.	5.7	1,492
2	Crashworthiness design for functionally graded foam-filled thin-walled structures. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2010, 527, 1911-1919.	2.6	262
3	Design of lattice structures with controlled anisotropy. <i>Materials and Design</i> , 2016, 93, 443-447.	3.3	212
4	Multimaterial structural topology optimization with a generalized Cahn-Hilliard model of multiphase transition. <i>Structural and Multidisciplinary Optimization</i> , 2006, 33, 89-111.	1.7	194
5	Crashworthiness design of vehicle by using multiobjective robust optimization. <i>Structural and Multidisciplinary Optimization</i> , 2011, 44, 99-110.	1.7	187
6	A variational level set method for the topology optimization of steady-state Navier-Stokes flow. <i>Journal of Computational Physics</i> , 2008, 227, 10178-10195.	1.9	167
7	On design of multi-functional microstructural materials. <i>Journal of Materials Science</i> , 2013, 48, 51-66.	1.7	164
8	Topology optimization of microstructures of cellular materials and composites for macrostructures. <i>Computational Materials Science</i> , 2013, 67, 397-407.	1.4	146
9	Topological design of structures and composite materials with multiobjectives. <i>International Journal of Solids and Structures</i> , 2007, 44, 7092-7109.	1.3	141
10	Microstructure design of biodegradable scaffold and its effect on tissue regeneration. <i>Biomaterials</i> , 2011, 32, 5003-5014.	5.7	134
11	Mathematical modeling of degradation for bulk-erosive polymers: Applications in tissue engineering scaffolds and drug delivery systems. <i>Acta Biomaterialia</i> , 2011, 7, 1140-1149.	4.1	133
12	On hybrid cellular materials based on triply periodic minimal surfaces with extreme mechanical properties. <i>Materials and Design</i> , 2019, 183, 108109.	3.3	130
13	Design of graded two-phase microstructures for tailored elasticity gradients. <i>Journal of Materials Science</i> , 2008, 43, 5157-5167.	1.7	127
14	Energy absorption of thin-walled tubes with pre-folded origami patterns: Numerical simulation and experimental verification. <i>Thin-Walled Structures</i> , 2016, 103, 33-44.	2.7	125
15	Mechanical properties of luffa sponge. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2012, 15, 141-152.	1.5	121
16	Design optimization of functionally graded dental implant for bone remodeling. <i>Composites Part B: Engineering</i> , 2009, 40, 668-675.	5.9	116
17	Simple cubic three-dimensional auxetic metamaterials. <i>Physica Status Solidi (B): Basic Research</i> , 2014, 251, 1515-1522.	0.7	109
18	Multiobjective topology optimization for finite periodic structures. <i>Computers and Structures</i> , 2010, 88, 806-811.	2.4	93

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19	Evolutionary topological design for phononic band gap crystals. <i>Structural and Multidisciplinary Optimization</i> , 2016, 54, 595-617.	1.7	93
20	Re-entrant auxetic lattices with enhanced stiffness: A numerical study. <i>International Journal of Mechanical Sciences</i> , 2020, 178, 105619.	3.6	92
21	Level-set based topology optimization for electromagnetic dipole antenna design. <i>Journal of Computational Physics</i> , 2010, 229, 6915-6930.	1.9	91
22	On stiffness of scaffolds for bone tissue engineering—a numerical study. <i>Journal of Biomechanics</i> , 2010, 43, 1738-1744.	0.9	89
23	Evolutionary topology optimization of periodic composites for extremal magnetic permeability and electrical permittivity. <i>Structural and Multidisciplinary Optimization</i> , 2012, 46, 385-398.	1.7	79
24	Topology optimization for microstructures of viscoelastic composite materials. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2015, 283, 503-516.	3.4	79
25	Topology optimization for negative permeability metamaterials using level-set algorithm. <i>Acta Materialia</i> , 2011, 59, 2624-2636.	3.8	73
26	Designing orthotropic materials for negative or zero compressibility. <i>International Journal of Solids and Structures</i> , 2014, 51, 4038-4051.	1.3	71
27	A level-set procedure for the design of electromagnetic metamaterials. <i>Optics Express</i> , 2010, 18, 6693.	1.7	67
28	Cuttlebone: Characterisation, application and development of biomimetic materials. <i>Journal of Bionic Engineering</i> , 2012, 9, 367-376.	2.7	65
29	Behaviour of luffa sponge material under dynamic loading. <i>International Journal of Impact Engineering</i> , 2013, 57, 17-26.	2.4	63
30	Multi-fidelity optimization for sheet metal forming process. <i>Structural and Multidisciplinary Optimization</i> , 2011, 44, 111-124.	1.7	56
31	On the internal architecture of emergent plants. <i>Journal of the Mechanics and Physics of Solids</i> , 2018, 119, 224-239.	2.3	55
32	Computational design of multi-phase microstructural materials for extremal conductivity. <i>Computational Materials Science</i> , 2008, 43, 549-564.	1.4	54
33	Novel Negative Poisson's Ratio Lattice Structures with Enhanced Stiffness and Energy Absorption Capacity. <i>Materials</i> , 2018, 11, 1095.	1.3	54
34	Multi-objective optimization of multi-cell tubes with origami patterns for energy absorption. <i>Thin-Walled Structures</i> , 2018, 123, 100-113.	2.7	53
35	Topological Design of Cellular Phononic Band Gap Crystals. <i>Materials</i> , 2016, 9, 186.	1.3	51
36	Synthesis of shape and topology of multi-material structures with a phase-field method. <i>Journal of Computer-Aided Materials Design</i> , 2004, 11, 117-138.	0.7	48

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37	Topology optimization of compliant mechanisms with desired structural stiffness. <i>Engineering Structures</i> , 2014, 79, 13-21.	2.6	48
38	Nonlinear diffusions in topology optimization. <i>Structural and Multidisciplinary Optimization</i> , 2004, 28, 262-276.	1.7	45
39	Concurrent topological design of composite thermoelastic macrostructure and microstructure with multi-phase material for maximum stiffness. <i>Composite Structures</i> , 2016, 150, 84-102.	3.1	42
40	A direct approach to controlling the topology in structural optimization. <i>Computers and Structures</i> , 2020, 227, 106141.	2.4	39
41	COMPUTATIONAL DESIGN FOR MULTIFUNCTIONAL MICROSTRUCTURAL COMPOSITES. <i>International Journal of Modern Physics B</i> , 2009, 23, 1345-1351.	1.0	37
42	Designing broad phononic band gaps for in-plane modes. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 2018, 382, 679-684.	0.9	37
43	Design of dimpled tubular structures for energy absorption. <i>Thin-Walled Structures</i> , 2017, 112, 31-40.	2.7	34
44	The relation of constant mean curvature surfaces to multiphase composites with extremal thermal conductivity. <i>Journal Physics D: Applied Physics</i> , 2007, 40, 6083-6093.	1.3	32
45	Microstructural design of connective base cells for functionally graded materials. <i>Materials Letters</i> , 2008, 62, 4022-4024.	1.3	31
46	Characterization of cuttlebone for a biomimetic design of cellular structures. <i>Acta Mechanica Sinica/Lixue Xuebao</i> , 2010, 26, 27-35.	1.5	31
47	Simple and effective strategies for achieving diverse and competitive structural designs. <i>Extreme Mechanics Letters</i> , 2019, 30, 100481.	2.0	31
48	Morphological optimization of scorpion telson. <i>Journal of the Mechanics and Physics of Solids</i> , 2020, 135, 103773.	2.3	29
49	Sensitivity analysis of bi-layered ceramic dental restorations. <i>Dental Materials</i> , 2012, 28, e6-e14.	1.6	28
50	Water-responsive rapid recovery of natural cellular material. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2014, 34, 283-293.	1.5	28
51	Level-set topology optimization for maximizing fracture resistance of brittle materials using phase-field fracture model. <i>International Journal for Numerical Methods in Engineering</i> , 2020, 121, 2929-2945.	1.5	28
52	Nondestructive characterization of bone tissue scaffolds for clinical scenarios. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2019, 89, 150-161.	1.5	27
53	Computational Design of Microstructural Composites with Tailored Thermal Conductivity. <i>Numerical Heat Transfer; Part A: Applications</i> , 2008, 54, 686-708.	1.2	25
54	Design and fabrication of biphasic cellular materials with transport properties – A modified bidirectional evolutionary structural optimization procedure and MATLAB program. <i>International Journal of Heat and Mass Transfer</i> , 2012, 55, 8149-8162.	2.5	25

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55	Finite element based bone remodeling and resonance frequency analysis for osseointegration assessment of dental implants. <i>Finite Elements in Analysis and Design</i> , 2011, 47, 898-905.	1.7	24
56	A maze-like path generation scheme for fused deposition modeling. <i>International Journal of Advanced Manufacturing Technology</i> , 2019, 104, 1509-1519.	1.5	23
57	Design of fishnet metamaterials with broadband negative refractive index in the visible spectrum. <i>Optics Letters</i> , 2014, 39, 2415.	1.7	21
58	Numerical investigation of compressive behaviour of luffa-filled tubes. <i>Composites Part B: Engineering</i> , 2015, 73, 149-157.	5.9	21
59	On the shape transformation of cone scales. <i>Soft Matter</i> , 2016, 12, 9797-9802.	1.2	21
60	Piezoelectric properties of triply periodic minimum surface structures. <i>Composites Science and Technology</i> , 2020, 200, 108417.	3.8	21
61	Design Optimization of Scaffold Microstructures Using Wall Shear Stress Criterion Towards Regulated Flow-Induced Erosion. <i>Journal of Biomechanical Engineering</i> , 2011, 133, 081008.	0.6	20
62	A fixed-grid bidirectional evolutionary structural optimization method and its applications in tunnelling engineering. <i>International Journal for Numerical Methods in Engineering</i> , 2008, 73, 1788-1810.	1.5	19
63	A microstructure diagram for known bounds in conductivity. <i>Journal of Materials Research</i> , 2008, 23, 798-811.	1.2	18
64	Broadband All-angle Negative Refraction by Optimized Phononic Crystals. <i>Scientific Reports</i> , 2017, 7, 7445.	1.6	18
65	Residual Stresses in Fabrication of Core-Veneered Ceramic Prostheses. <i>Advanced Materials Research</i> , 2010, 97-101, 2241-2244.	0.3	17
66	Evolutionary topology optimization of hinge-free compliant mechanisms. <i>International Journal of Mechanical Sciences</i> , 2014, 86, 69-75.	3.6	17
67	A reaction diffusion-based level set method using body-fitted mesh for structural topology optimization. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2021, 381, 113829.	3.4	17
68	Design of cellular porous biomaterials for wall shear stress criterion. <i>Biotechnology and Bioengineering</i> , 2010, 107, 737-746.	1.7	16
69	Numerical simulation of three-dimensional multicomponent Cahn-Hilliard systems. <i>International Journal of Mechanical Sciences</i> , 2021, 198, 106349.	3.6	15
70	Design of 3-D Periodic Metamaterials for Electromagnetic Properties. <i>IEEE Transactions on Microwave Theory and Techniques</i> , 2010, 58, 910-916.	2.9	14
71	Optimizing two-level hierarchical particles for thin-film solar cells. <i>Optics Express</i> , 2013, 21, A285.	1.7	14
72	Shell buckling: from morphogenesis of soft matter to prospective applications. <i>Bioinspiration and Biomimetics</i> , 2018, 13, 051001.	1.5	14

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73	On the interaction of biological and mechanical factors in leaf vein formation. <i>Advances in Engineering Software</i> , 2020, 149, 102905.	1.8	13
74	Bioinspired lightweight cellular materials - Understanding effects of natural variation on mechanical properties. <i>Materials Science and Engineering C</i> , 2013, 33, 3146-3152.	3.8	12
75	A path-dependent level set topology optimization with fracture criterion. <i>Computers and Structures</i> , 2021, 249, 106515.	2.4	12
76	A comparison of fast Fourier transform-based homogenization method to asymptotic homogenization method. <i>Composite Structures</i> , 2020, 238, 111979.	3.1	12
77	Computer-Aided Design and Fabrication of Bio-Mimetic Materials and Scaffold Micro-Structures. <i>Advanced Materials Research</i> , 2011, 213, 628-632.	0.3	11
78	Towards ultra-stiff materials: Surface effects on nanoporous materials. <i>Applied Physics Letters</i> , 2014, 105, .	1.5	10
79	Buckling-induced retraction of spherical shells: A study on the shape of aperture. <i>Scientific Reports</i> , 2015, 5, 11309.	1.6	10
80	A New Homogenization Formulation for Multifunctional Composites. <i>International Journal of Computational Methods</i> , 2016, 13, 1640002.	0.8	10
81	An investigation of water-flow pressure distribution on bridge piers under flood loading. <i>Structure and Infrastructure Engineering</i> , 2019, 15, 219-229.	2.0	10
82	A reaction-diffusion based level set method for image segmentation in three dimensions. <i>Engineering Applications of Artificial Intelligence</i> , 2020, 96, 103998.	4.3	10
83	Bi-Directional Evolutionary Structural Optimization for Design of Compliant Mechanisms. <i>Key Engineering Materials</i> , 0, 535-536, 373-376.	0.4	9
84	A Kirigami Approach to Forming a Synthetic Buckliball. <i>Scientific Reports</i> , 2016, 6, 33016.	1.6	9
85	A reaction diffusion-based B-spline level set (RDBLS) method for structural topology optimization. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2022, 398, 115252.	3.4	9
86	Designing novel structures with hierarchically synchronized deformations. <i>Extreme Mechanics Letters</i> , 2018, 19, 1-6.	2.0	8
87	A study of shape optimization on the metallic nanoparticles for thin-film solar cells. <i>Nanoscale Research Letters</i> , 2013, 8, 447.	3.1	7
88	High-speed spinning disks on flexible threads. <i>Scientific Reports</i> , 2017, 7, 13111.	1.6	7
89	Static and dynamic properties of pre-twisted leaves and stalks with varying chiral morphologies. <i>Extreme Mechanics Letters</i> , 2020, 34, 100612.	2.0	7
90	Inertia Effect on Buckling-Induced Auxetic Metamaterials. <i>International Journal of Protective Structures</i> , 2015, 6, 311-322.	1.4	7

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91	Human-made corals for marine habitats: Design optimization and additive manufacturing. <i>Advances in Engineering Software</i> , 2021, 162-163, 103065.	1.8	7
92	Creating Biomaterials Inspired by the Microstructure of Cuttlebone. <i>Materials Science Forum</i> , 2010, 654-656, 2229-2232.	0.3	6
93	Compressive Behavior of Luffa Sponge Material at High Strain Rate. <i>Key Engineering Materials</i> , 0, 535-536, 465-468.	0.4	6
94	A finite-element approach to evaluating the size effects of complex nanostructures. <i>Royal Society Open Science</i> , 2016, 3, 160625.	1.1	6
95	Computational Design for Scaffold Tissue Engineering. <i>Springer Series in Biomaterials Science and Engineering</i> , 2017, , 349-369.	0.7	6
96	Pump drill: A superb device for converting translational motion into high-speed rotation. <i>Extreme Mechanics Letters</i> , 2017, 16, 56-63.	2.0	6
97	A nodal-based evolutionary optimization algorithm for frame structures. <i>Computer-Aided Civil and Infrastructure Engineering</i> , 2023, 38, 288-306.	6.3	6
98	Computational Fracture Modelling in Bioceramic Structures. <i>Advanced Materials Research</i> , 0, 268-270, 853-856.	0.3	5
99	Double-negative metamaterial from conducting spheres with a high-permittivity shell. <i>Optics Letters</i> , 2014, 39, 4587.	1.7	5
100	Design of fiber metamaterials with negative refractive index in the infrared. <i>Optics Express</i> , 2015, 23, 18236.	1.7	5
101	A Phase Field Method for Structural Topology Optimization. , 2004, , .		5
102	Body-fitted bi-directional evolutionary structural optimization using nonlinear diffusion regularization. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2022, 396, 115114.	3.4	5
103	Design for minimizing fracture risk of all-ceramic cantilever dental bridge. <i>Bio-Medical Materials and Engineering</i> , 2015, 26, S19-S25.	0.4	4
104	Assessing the Effects of Natural Variations in Microstructure for the Biomimetic Modeling of Cuttlebone. <i>Advanced Materials Research</i> , 2010, 123-125, 295-298.	0.3	3
105	Investigating size effects of complex nanostructures through Young-Laplace equation and finite element analysis. <i>Journal of Applied Physics</i> , 2015, 118, 204301.	1.1	3
106	Sensitivity analysis for electromagnetic topology optimization problems. <i>IOP Conference Series: Materials Science and Engineering</i> , 2010, 10, 012199.	0.3	2
107	Luffa Sponge as a Sustainable Engineering Material. <i>Applied Mechanics and Materials</i> , 0, 238, 3-8.	0.2	2
108	Multiscale metamaterials: a new route to isotropic double-negative behaviour at visible frequencies. <i>Optics Express</i> , 2014, 22, 21929.	1.7	2

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109	The Design of Functional Gradient Materials with Inverse Homogenization Method. <i>Advanced Materials Research</i> , 0, 32, 245-250.	0.3	1
110	Fishnet metamaterial with double negative refractive index in blue region of visible spectrum. <i>Proceedings of SPIE</i> , 2013, , .	0.8	1
111	Topology Optimization of Photonic Band Gap Crystals. <i>Applied Mechanics and Materials</i> , 2014, 553, 824-829.	0.2	1
112	Buckling-Induced Assembly of Three-Dimensional Tunable Metamaterials (Phys. Status Solidi RRL 4/2018). <i>Physica Status Solidi - Rapid Research Letters</i> , 2018, 12, 1870314.	1.2	1
113	Buckling-Induced Assembly of Three-Dimensional Tunable Metamaterials. <i>Physica Status Solidi - Rapid Research Letters</i> , 2018, 12, 1700420.	1.2	1
114	A computational investigation into the impact resistance of a precise finite element model derived from micro-CT data of a woodpecker's head. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2020, 112, 104107.	1.5	1
115	Characterization and design of 3D scaffolds for biofluidic criteria. , 2009, , .		0
116	A Design Procedure for Electric Inductive Capacitive Resonators with Negative Permittivity. <i>Applied Mechanics and Materials</i> , 0, 448-453, 2199-2202.	0.2	0
117	Buckling-Induced Retraction of Structured Spherical Shell under Pressure. <i>Applied Mechanics and Materials</i> , 2014, 553, 842-846.	0.2	0
118	Numerical Analysis and Parametric Study of Phononic Band Gap Structures. <i>Applied Mechanics and Materials</i> , 2016, 846, 120-126.	0.2	0
119	The Generalized Cahn-Hilliard Equations of Multiphase Transition for Structural Topology Optimization. , 2005, , .		0
120	Unlocking Metamaterial Properties through Multiscale Design. , 0, , .		0
121	A Comprehensive Study on Hydrogen Embrittlement and Corrosion Propagation in Mild Steel Bridges. , 2016, , .		0
122	The Cahn-Hilliard Phase-Field Model for Topology Optimization of Solids. , 2006, , 133-141.		0