James C Weaver

List of Publications by Citations

108 papers	9,867 citations	43 h-index	99 g-index
110 ext. papers	12,011 ext. citations	12.8 avg, IF	6.28 L-index

#	Paper	IF	Citations
108	Hydrogels with tunable stress relaxation regulate stem cell fate and activity. *Nature Materials*, **2016**, 15, 326-34	27	1153
107	Skeleton of Euplectella sp.: structural hierarchy from the nanoscale to the macroscale. *Science*, **2005**, 309, 275-8	33.3	871
106	SOFT ROBOTICS. A 3D-printed, functionally graded soft robot powered by combustion. *Science*, **2015**, 349, 161-5	33.3	608
105	The stomatopod dactyl club: a formidable damage-tolerant biological hammer. *Science*, **2012**, 336, 1275-80	33.3	489
104	Substrate stress relaxation regulates cell spreading. *Nature Communications*, **2015**, 6, 6364	17.4	485
103	Condensation on slippery asymmetric bumps. *Nature*, **2016**, 531, 78-82	50.4	481
102	Small airway-on-a-chip enables analysis of human lung inflammation and drug responses in vitro. *Nature Methods*, **2016**, 13, 151-7	21.6	426
101	Harnessing buckling to design tunable locally resonant acoustic metamaterials. *Physical Review Letters*, **2014**, 113, 014301	7.4	351
100	Bone marrow-on-a-chip replicates hematopoietic niche physiology in vitro. *Nature Methods*, **2014**, 11, 663-9	21.6	293
99	Biomimetic shark skin: design, fabrication and hydrodynamic function. *Journal of Experimental Biology*, **2014**, 217, 1656-66	3	247
98	A three-dimensional actuated origami-inspired transformable metamaterial with multiple degrees of freedom. *Nature Communications*, **2016**, 7, 10929	17.4	219
97	A facile approach to enhance antigen response for personalized cancer vaccination. *Nature Materials*, **2018**, 17, 528-534	27	215
96	Soft robotic sleeve supports heart function. *Science Translational Medicine*, **2017**, 9,	17.5	191
95	Influence of the stiffness of three-dimensional alginate/collagen-I interpenetrating networks on fibroblast biology. *Biomaterials*, **2014**, 35, 8927-36	15.6	184
94	Rational design of reconfigurable prismatic architected materials. *Nature*, **2017**, 541, 347-352	50.4	166
93	Photoactivation of endogenous latent transforming growth factor-β1 directs dental stem cell differentiation for regeneration. *Science Translational Medicine*, **2014**, 6, 238ra69	17.5	156
92	Additive Manufacturing of Optically Transparent Glass. *3D Printing and Additive Manufacturing*, **2015**, 2, 92-105	4	154

91	Matched-Comparative Modeling of Normal and Diseased Human Airway Responses Using a Microengineered Breathing Lung Chip. *Cell Systems*, **2016**, 3, 456-466.e4	10.6	152
90	Hierarchical assembly of the siliceous skeletal lattice of the hexactinellid sponge Euplectella aspergillum. *Journal of Structural Biology*, **2007**, 158, 93-106	3.4	145
89	Micromechanical properties of biological silica in skeletons of deep-sea sponges. *Journal of Materials Research*, **2006**, 21, 2068-2078	2.5	139
88	Harnessing instabilities for design of soft reconfigurable auxetic/chiral materials. *Soft Matter*, **2013**, 9, 8198	3.6	128
87	Analysis of an ultra hard magnetic biomineral in chiton radular teeth. *Materials Today*, **2010**, 13, 42-52	21.8	128
86	A biorobotic adhesive disc for underwater hitchhiking inspired by the remora suckerfish. *Science Robotics*, **2017**, 2,	18.6	110
85	Ultra-sensitive and resilient compliant strain gauges for soft machines. *Nature*, **2020**, 587, 219-224	50.4	109
84	Effects of Laminate Architecture on Fracture Resistance of Sponge Biosilica: Lessons from Nature. *Advanced Functional Materials*, **2008**, 18, 1241-1248	15.6	99
83	Molecular biology of demosponge axial filaments and their roles in biosilicification. *Microscopy Research and Technique*, **2003**, 62, 356-67	2.8	96
82	Complex ordered patterns in mechanical instability induced geometrically frustrated triangular cellular structures. *Physical Review Letters*, **2014**, 112, 098701	7.4	92
81	Nanostructural features of demosponge biosilica. *Journal of Structural Biology*, **2003**, 144, 271-81	3.4	80
80	Harnessing Buckling to Design Architected Materials that Exhibit Effective Negative Swelling. *Advanced Materials*, **2016**, 28, 6619-24	24	78
79	Human Colon-on-a-Chip Enables Continuous In Vitro Analysis of Colon Mucus Layer Accumulation and Physiology. *Cellular and Molecular Gastroenterology and Hepatology*, **2020**, 9, 507-526	7.9	75
78	Shark skin-inspired designs that improve aerodynamic performance. *Journal of the Royal Society Interface*, **2018**, 15,	4.1	69
77	Substrate Stress-Relaxation Regulates Scaffold Remodeling and Bone Formation In Vivo. *Advanced Healthcare Materials*, **2017**, 6, 1601185	10.1	68
76	Octopus Arm-Inspired Tapered Soft Actuators with Suckers for Improved Grasping. *Soft Robotics*, **2020**, 7, 639-648	9.2	65
75	An injectable bone marrow-like scaffold enhances T cell immunity after hematopoietic stem cell transplantation. *Nature Biotechnology*, **2019**, 37, 293-302	44.5	62
74	A highly conspicuous mineralized composite photonic architecture in the translucent shell of the blue-rayed limpet. *Nature Communications*, **2015**, 6, 6322	17.4	59

73	Sustained release of targeted cardiac therapy with a replenishable implanted epicardial reservoir. *Nature Biomedical Engineering*, **2018**, 2, 416-428	19	55
72	Tunability and enhancement of mechanical behavior with additively manufactured bio-inspired hierarchical suture interfaces. *Journal of Materials Research*, **2014**, 29, 1867-1875	2.5	54
71	Structure, biomimetics, and fluid dynamics of fish skin surfaces*. *Physical Review Fluids*, **2016**, 1,	2.8	52
70	Phase Transformations and Structural Developments in the Radular Teeth of Cryptochiton Stelleri. *Advanced Functional Materials*, **2013**, 23, 2908-2917	15.6	51
69	Making data matter: Voxel printing for the digital fabrication of data across scales and domains. *Science Advances*, **2018**, 4, eaas8652	14.3	48
68	Mechanically robust lattices inspired by deep-sea glass sponges. *Nature Materials*, **2021**, 20, 237-241	27	46
67	Ultrastructural and developmental features of the tessellated endoskeleton of elasmobranchs (sharks and rays). *Journal of Anatomy*, **2016**, 229, 681-702	2.9	44
66	Multi-scale thermal stability of a hard thermoplastic protein-based material. *Nature Communications*, **2015**, 6, 8313	17.4	43
65	BaCe1-xPdxO3-(0 ≤0.1): Redox Controlled Ingress and Egress of Palladium in a Perovskite. *Chemistry of Materials*, **2007**, 19, 1418-1426	9.6	43
64	Dimpled elastic sheets: a new class of non-porous negative Poisson's ratio materials. *Scientific Reports*, **2015**, 5, 18373	4.9	40
63	Hierarchical structural design for fracture resistance in the shell of the pteropod Clio pyramidata. *Nature Communications*, **2015**, 6, 6216	17.4	39
62	Glassin, a histidine-rich protein from the siliceous skeletal system of the marine sponge Euplectella, directs silica polycondensation. *Proceedings of the National Academy of Sciences of the United States of America*, **2015**, 112, 11449-54	11.5	39
61	Materials science and architecture. *Nature Reviews Materials*, **2017**, 2,	73.3	39
60	Osteocyte lacunar properties in rat cortical bone: Differences between lamellar and central bone. *Journal of Structural Biology*, **2015**, 191, 59-67	3.4	37
59	Improved magnetic regulation of delivery profiles from ferrogels. *Biomaterials*, **2018**, 161, 179-189	15.6	35
58	A Biologically Inspired, Functionally Graded End Effector for Soft Robotics Applications. *Soft Robotics*, **2017**, 4, 317-323	9.2	33
57	New functional insights into the internal architecture of the laminated anchor spicules of Euplectella aspergillum. *Proceedings of the National Academy of Sciences of the United States of America*, **2015**, 112, 4976-81	11.5	33
56	Rotary-actuated folding polyhedrons for midwater investigation of delicate marine organisms. *Science Robotics*, **2018**, 3,	18.6	33

55	CD44 alternative splicing in gastric cancer cells is regulated by culture dimensionality and matrix stiffness. *Biomaterials*, **2016**, 98, 152-62	15.6	29
54	Characterization of a Mechanically Tunable Gyroid Photonic Crystal Inspired by the Butterfly Parides Sesostris. *Advanced Optical Materials*, **2016**, 4, 99-105	8.1	29
53	Pre-procedural fit-testing of TAVR valves using parametric modeling and 3D printing. *Journal of Cardiovascular Computed Tomography*, **2019**, 13, 21-30	2.8	29
52	Unifying Design Strategies in Demosponge and Hexactinellid Skeletal Systems **2010**, 86, 72-95		28
51	Structure-Function Studies of the Lustrin A Polyelectrolyte Domains, RKSY and D4. *Connective Tissue Research*, **2003**, 44, 10-15	3.3	28
50	Grown, Printed, and Biologically Augmented: An Additively Manufactured Microfluidic Wearable, Functionally Templated for Synthetic Microbes. *3D Printing and Additive Manufacturing*, **2016**, 3, 79-89	4	26
49	Bioinspired design of flexible armor based on chiton scales. *Nature Communications*, **2019**, 10, 5413	17.4	25
48	Data-Driven Material Modeling with Functional Advection for 3D Printing of Materially Heterogeneous Objects. *3D Printing and Additive Manufacturing*, **2016**, 3, 71-79	4	24
47	Hybrid Living Materials: Digital Design and Fabrication of 3D Multimaterial Structures with Programmable Biohybrid Surfaces. *Advanced Functional Materials*, **2020**, 30, 1907401	15.6	23
46	Uncovering Nature's Design Strategies through Parametric Modeling, Multi-Material 3D Printing, and Mechanical Testing . *Advanced Engineering Materials*, **2017**, 19, e201600848	3.5	20
45	Imaging biological surface topography in situ and in vivo. *Methods in Ecology and Evolution*, **2017**, 8, 1626-1638	7.7	19
44	Calcified cartilage or bone? Collagens in the tessellated endoskeletons of cartilaginous fish (sharks and rays). *Journal of Structural Biology*, **2017**, 200, 54-71	3.4	19
43	From Improved Diagnostics to Presurgical Planning: High-Resolution Functionally Graded Multimaterial 3D Printing of Biomedical Tomographic Data Sets. *3D Printing and Additive Manufacturing*, **2018**, 5, 103-113	4	19
42	Engineering the Mechanics of Heterogeneous Soft Crystals. *Advanced Functional Materials*, **2016**, 26, 6938-6949	15.6	18
41	Large area sub-micron chemical imaging of magnesium in sea urchin teeth. *Journal of Structural Biology*, **2015**, 189, 269-75	3.4	18
40	A geometrically adaptable heart valve replacement. *Science Translational Medicine*, **2020**, 12,	17.5	18
39	Honeycomb Actuators Inspired by the Unfolding of Ice Plant Seed Capsules. *PLoS ONE*, **2016**, 11, e0163506	3.7	18
38	Fabrication of Paper-Templated Structures of Noble Metals. *Advanced Materials Technologies*, **2017**, 2, 1600229	6.8	16

37	The Geometric Design and Fabrication of Actuating Cellular Structures. *Advanced Materials Interfaces*, **2015**, 2, 1500011	4.6	16
36	Echinoderm-Inspired Tube Feet for Robust Robot Locomotion and Adhesion. *IEEE Robotics and Automation Letters*, **2018**, 3, 2222-2228	4.2	14
35	Ultrastructural, material and crystallographic description of endophytic masses - A possible damage response in shark and ray tessellated calcified cartilage. *Journal of Structural Biology*, **2017**, 198, 5-18	3.4	13
34	Design, Fabrication, and Characterization of an Untethered Amphibious Sea Urchin-Inspired Robot. *IEEE Robotics and Automation Letters*, **2019**, 4, 3348-3354	4.2	13
33	Tensile Instability in a Thick Elastic Body. *Physical Review Letters*, **2016**, 117, 094301	7.4	13
32	Bright Green Biofluorescence in Sharks Derives from Bromo-Kynurenine Metabolism. *IScience*, **2019** , 19, 1291-1336	6.1	13
31	Mechanical properties of stingray tesserae: High-resolution correlative analysis of mineral density and indentation moduli in tessellated cartilage. *Acta Biomaterialia*, **2019**, 96, 421-435	10.8	12
30	Mechanical induction of dentin-like differentiation by adult mouse bone marrow stromal cells using compressive scaffolds. *Stem Cell Research*, **2017**, 24, 55-60	1.6	12
29	Crystal nucleation and growth of spherulites demonstrated by coral skeletons and phase-field simulations. *Acta Biomaterialia*, **2021**, 120, 277-292	10.8	12
28	High-Throughput Segmentation of Tiled Biological Structures using Random-Walk Distance Transforms. *Integrative and Comparative Biology*, **2019**, 59, 1700-1712	2.8	11
27	Large-scale micron-order 3D surface correlative chemical imaging of ancient Roman concrete. *PLoS ONE*, **2019**, 14, e0210710	3.7	10
26	Evidence of Cosmic Impact at Abu Hureyra, Syria at the Younger Dryas Onset (~12.8 ka): High-temperature melting at >2200 ℃. *Scientific Reports*, **2020**, 10, 4185	4.9	10
25	Smart Thermally Actuating Textiles. *Advanced Materials Technologies*, **2020**, 5, 2000383	6.8	10
24	Biomineralization. Built for tough conditions. *Science*, **2015**, 347, 712-3	33.3	9
23	A damage-tolerant, dual-scale, single-crystalline microlattice in the knobby starfish, .. *Science*, **2022**, 375, 647-652	33.3	9
22	Responsive materials: a novel design for enhanced machine-augmented composites. *Scientific Reports*, **2014**, 4, 3783	4.9	8
21	Strategies for simultaneous strengthening and toughening via nanoscopic intracrystalline defects in a biogenic ceramic. *Nature Communications*, **2020**, 11, 5678	17.4	8
20	Crystal misorientation correlates with hardness in tooth enamels. *Acta Biomaterialia*, **2021**, 120, 124-134	10.8	7

19	Ontogenetic scaling patterns of lizard skin surface structure as revealed by gel-based stereo-profilometry. *Journal of Anatomy*, **2019**, 235, 346-356	2.9	6
18	Impact-related microspherules in Late Pleistocene Alaskan and Yukon "muck" deposits signify recurrent episodes of catastrophic emplacement. *Scientific Reports*, **2017**, 7, 16620	4.9	6
17	The Temple Scroll: Reconstructing an ancient manufacturing practice. *Science Advances*, **2019**, 5, eaaw7494	12.3	5
16	Microstructural design for mechanical-optical multifunctionality in the exoskeleton of the flower beetle. *Proceedings of the National Academy of Sciences of the United States of America*, **2021**, 118,	11.5	5
15	Morphogenesis of aligned collagen fibers in the annulus fibrosus: Mammals versus avians. *Biochemical and Biophysical Research Communications*, **2018**, 503, 1168-1173	3.4	5
14	3D printing and intraoperative neuronavigation tailoring for skull base reconstruction after extended endoscopic endonasal surgery: proof of concept. *Journal of Neurosurgery*, **2018**, 130, 248-255	3.2	4
13	Metamaterials: 3D Soft Metamaterials with Negative Poisson's Ratio (Adv. Mater. 36/2013). *Advanced Materials*, **2013**, 25, 5116-5116	24	4
12	Cambrian comb jellies from Utah illuminate the early evolution of nervous and sensory systems in ctenophores. *IScience*, **2021**, 24, 102943	6.1	4
11	A Soft, Modular, and Bi-stable Dome Actuator for Programmable Multi-Modal Locomotion **2020**,		3
10	Mechanical and hydrodynamic analyses of helical strake-like ridges in a glass sponge. *Journal of the Royal Society Interface*, **2021**, 18, 20210559	4.1	3
9	Dynamic Self-Repairing Hybrid Liquid-in-Solid Protective Barrier for Cementitious Materials. *ACS Applied Materials & Interfaces*, **2020**, 12, 31922-31932	9.5	2
8	Shape-preserving erosion controlled by the graded microarchitecture of shark tooth enameloid. *Nature Communications*, **2020**, 11, 5971	17.4	2
7	The structural origins of brittle star arm kinematics: An integrated tomographic, additive manufacturing, and parametric modeling-based approach. *Journal of Structural Biology*, **2020**, 211, 107481	3.4	1
6	Neuroanatomy in a middle Cambrian mollisoniid and the ancestral nervous system organization of chelicerates.. *Nature Communications*, **2022**, 13, 410	17.4	1
5	A Fabrication Strategy for Reconfigurable Millimeter-Scale Metamaterials. *Advanced Functional Materials*, **2021**, 31, 2103428	15.6	1
4	A Modular and Self-Contained Fluidic Engine for Soft Actuators. *Advanced Intelligent Systems*,2100094	6	1
3	Robotic Textiles: Smart Thermally Actuating Textiles (Adv. Mater. Technol. 8/2020). *Advanced Materials Technologies*, **2020**, 5, 2070050	6.8	
2	Large-Scale Micron-Order 3D Surface Correlative Imaging of Ancient Roman Concrete. *Microscopy and Microanalysis*, **2018**, 24, 2130-2131	0.5	

1 Computational methods for the characterization of Apis mellifera comb architecture.. *Communications Biology*, **2022**, 5, 468 6.7