

# James C Weaver

## List of Publications by Year in descending order

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108  
papers

13,955  
citations

41258

49  
h-index

27345

106  
g-index

110  
all docs

110  
docs citations

110  
times ranked

17629  
citing authors

#	ARTICLE	IF	CITATIONS
1	Hydrogels with tunable stress relaxation regulate stem cell fate and activity. <i>Nature Materials</i> , 2016, 15, 326-334.	13.3	1,650
2	Skeleton of <i>Euplectella</i> sp.: Structural Hierarchy from the Nanoscale to the Macroscale. <i>Science</i> , 2005, 309, 275-278.	6.0	997
3	A 3D-printed, functionally graded soft robot powered by combustion. <i>Science</i> , 2015, 349, 161-165.	6.0	802
4	Condensation on slippery asymmetric bumps. <i>Nature</i> , 2016, 531, 78-82.	13.7	656
5	The Stomatopod Dactyl Club: A Formidable Damage-Tolerant Biological Hammer. <i>Science</i> , 2012, 336, 1275-1280.	6.0	648
6	Substrate stress relaxation regulates cell spreading. <i>Nature Communications</i> , 2015, 6, 6364.	5.8	637
7	Small airway-on-a-chip enables analysis of human lung inflammation and drug responses in vitro. <i>Nature Methods</i> , 2016, 13, 151-157.	9.0	620
8	Harnessing Buckling to Design Tunable Locally Resonant Acoustic Metamaterials. <i>Physical Review Letters</i> , 2014, 113, 014301.	2.9	474
9	Bone marrow "on a chip" replicates hematopoietic niche physiology in vitro. <i>Nature Methods</i> , 2014, 11, 663-669.	9.0	369
10	Biomimetic shark skin: design, fabrication and hydrodynamic function. <i>Journal of Experimental Biology</i> , 2014, 217, 1656-1666.	0.8	340
11	A facile approach to enhance antigen response for personalized cancer vaccination. <i>Nature Materials</i> , 2018, 17, 528-534.	13.3	313
12	A three-dimensional actuated origami-inspired transformable metamaterial with multiple degrees of freedom. <i>Nature Communications</i> , 2016, 7, 10929.	5.8	312
13	Soft robotic sleeve supports heart function. <i>Science Translational Medicine</i> , 2017, 9, .	5.8	280
14	Ultra-sensitive and resilient compliant strain gauges for soft machines. <i>Nature</i> , 2020, 587, 219-224.	13.7	279
15	Rational design of reconfigurable prismatic architected materials. <i>Nature</i> , 2017, 541, 347-352.	13.7	236
16	Matched-Comparative Modeling of Normal and Diseased Human Airway Responses Using a Microengineered Breathing Lung Chip. <i>Cell Systems</i> , 2016, 3, 456-466.e4.	2.9	227
17	Influence of the stiffness of three-dimensional alginate/collagen-I interpenetrating networks on fibroblast biology. <i>Biomaterials</i> , 2014, 35, 8927-8936.	5.7	226
18	Photoactivation of Endogenous Latent Transforming Growth Factor $\beta$ 1 Directs Dental Stem Cell Differentiation for Regeneration. <i>Science Translational Medicine</i> , 2014, 6, 238ra69.	5.8	206

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19	A biorobotic adhesive disc for underwater hitchhiking inspired by the remora suckerfish. <i>Science Robotics</i> , 2017, 2, .	9.9	200
20	Additive Manufacturing of Optically Transparent Glass. <i>3D Printing and Additive Manufacturing</i> , 2015, 2, 92-105.	1.4	199
21	Hierarchical assembly of the siliceous skeletal lattice of the hexactinellid sponge <i>Euplectella aspergillum</i> . <i>Journal of Structural Biology</i> , 2007, 158, 93-106.	1.3	177
22	Harnessing instabilities for design of soft reconfigurable auxetic/chiral materials. <i>Soft Matter</i> , 2013, 9, 8198.	1.2	174
23	Micromechanical properties of biological silica in skeletons of deep-sea sponges. <i>Journal of Materials Research</i> , 2006, 21, 2068-2078.	1.2	171
24	Octopus Arm-Inspired Tapered Soft Actuators with Suckers for Improved Grasping. <i>Soft Robotics</i> , 2020, 7, 639-648.	4.6	171
25	Analysis of an ultra hard magnetic biomineral in chiton radular teeth. <i>Materials Today</i> , 2010, 13, 42-52.	8.3	166
26	Mechanically robust lattices inspired by deep-sea glass sponges. <i>Nature Materials</i> , 2021, 20, 237-241.	13.3	144
27	Human Colon-on-a-Chip Enables Continuous In Vitro Analysis of Colon Mucus Layer Accumulation and Physiology. <i>Cellular and Molecular Gastroenterology and Hepatology</i> , 2020, 9, 507-526.	2.3	140
28	Effects of Laminate Architecture on Fracture Resistance of Sponge Biosilica: Lessons from Nature. <i>Advanced Functional Materials</i> , 2008, 18, 1241-1248.	7.8	132
29	Harnessing Buckling to Design Architected Materials that Exhibit Effective Negative Swelling. <i>Advanced Materials</i> , 2016, 28, 6619-6624.	11.1	112
30	Shark skin-inspired designs that improve aerodynamic performance. <i>Journal of the Royal Society Interface</i> , 2018, 15, 20170828.	1.5	112
31	Complex Ordered Patterns in Mechanical Instability Induced Geometrically Frustrated Triangular Cellular Structures. <i>Physical Review Letters</i> , 2014, 112, 098701.	2.9	111
32	Molecular biology of demosponge axial filaments and their roles in biosilicification. <i>Microscopy Research and Technique</i> , 2003, 62, 356-367.	1.2	107
33	Substrate Stressâ€Relaxation Regulates Scaffold Remodeling and Bone Formation In Vivo. <i>Advanced Healthcare Materials</i> , 2017, 6, 1601185.	3.9	104
34	Nanostructural features of demosponge biosilica. <i>Journal of Structural Biology</i> , 2003, 144, 271-281.	1.3	90
35	An injectable bone marrowâ€like scaffold enhances T cell immunity after hematopoietic stem cell transplantation. <i>Nature Biotechnology</i> , 2019, 37, 293-302.	9.4	79
36	Making data matter: Voxel printing for the digital fabrication of data across scales and domains. <i>Science Advances</i> , 2018, 4, eaas8652.	4.7	78

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37	Structure, biomimetics, and fluid dynamics of fish skin surfaces. <i>Physical Review Fluids</i> , 2016, 1, .	1.0	73
38	A highly conspicuous mineralized composite photonic architecture in the translucent shell of the blue-rayed limpet. <i>Nature Communications</i> , 2015, 6, 6322.	5.8	71
39	Materials science and architecture. <i>Nature Reviews Materials</i> , 2017, 2, .	23.3	71
40	Sustained release of targeted cardiac therapy with a replenishable implanted epicardial reservoir. <i>Nature Biomedical Engineering</i> , 2018, 2, 416-428.	11.6	70
41	Tunability and enhancement of mechanical behavior with additively manufactured bio-inspired hierarchical suture interfaces. <i>Journal of Materials Research</i> , 2014, 29, 1867-1875.	1.2	69
42	Phase Transformations and Structural Developments in the Radular Teeth of <i>Cryptochiton Stelleri</i> . <i>Advanced Functional Materials</i> , 2013, 23, 2908-2917.	7.8	63
43	A damage-tolerant, dual-scale, single-crystalline microlattice in the knobby starfish, <i>Protoreaster nodosus</i> . <i>Science</i> , 2022, 375, 647-652.	6.0	63
44	Ultrastructural and developmental features of the tessellated endoskeleton of elasmobranchs (sharks and rays). <i>Journal of Anatomy</i> , 2016, 229, 681-702.	0.9	60
45	Rotary-actuated folding polyhedrons for midwater investigation of delicate marine organisms. <i>Science Robotics</i> , 2018, 3, .	9.9	59
46	Bioinspired design of flexible armor based on chiton scales. <i>Nature Communications</i> , 2019, 10, 5413.	5.8	56
47	Hierarchical structural design for fracture resistance in the shell of the pteropod <i>Clio pyramidata</i> . <i>Nature Communications</i> , 2015, 6, 6216.	5.8	55
48	Glassin, a histidine-rich protein from the siliceous skeletal system of the marine sponge <i>Euplectella</i> , directs silica polycondensation. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2015, 112, 11449-11454.	3.3	55
49	Multi-scale thermal stability of a hard thermoplastic protein-based material. <i>Nature Communications</i> , 2015, 6, 8313.	5.8	54
50	Dimpled elastic sheets: a new class of non-porous negative Poisson's ratio materials. <i>Scientific Reports</i> , 2016, 5, 18373.	1.6	51
51	New functional insights into the internal architecture of the laminated anchor spicules of <i>Euplectella aspergillum</i> . <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2015, 112, 4976-4981.	3.3	50
52	Pre-procedural fit-testing of TAVR valves using parametric modeling and 3D printing. <i>Journal of Cardiovascular Computed Tomography</i> , 2019, 13, 21-30.	0.7	49
53	Osteocyte lacunar properties in rat cortical bone: Differences between lamellar and central bone. <i>Journal of Structural Biology</i> , 2015, 191, 59-67.	1.3	47
54	Improved magnetic regulation of delivery profiles from ferrogels. <i>Biomaterials</i> , 2018, 161, 179-189.	5.7	47

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55	Hybrid Living Materials: Digital Design and Fabrication of 3D Multimaterial Structures with Programmable Biohybrid Surfaces. <i>Advanced Functional Materials</i> , 2020, 30, 1907401.	7.8	47
56	BaCe <sub>1-x</sub> Pd <sub>x</sub> O <sub>3-δ</sub> (0 ≤ x ≤ 0.1): Redox Controlled Ingress and Egress of Palladium in a Perovskite. <i>Chemistry of Materials</i> , 2007, 19, 1418-1426.	3.2	46
57	Characterization of a Mechanically Tunable Gyroid Photonic Crystal Inspired by the Butterfly <i>Parides Sesostris</i> . <i>Advanced Optical Materials</i> , 2016, 4, 99-105.	3.6	44
58	Design, Fabrication, and Characterization of an Untethered Amphibious Sea Urchin-Inspired Robot. <i>IEEE Robotics and Automation Letters</i> , 2019, 4, 3348-3354.	3.3	43
59	A Biologically Inspired, Functionally Graded End Effector for Soft Robotics Applications. <i>Soft Robotics</i> , 2017, 4, 317-323.	4.6	41
60	Calcified cartilage or bone? Collagens in the tessellated endoskeletons of cartilaginous fish (sharks) <i>Tj ETQq0 0 0 rgBT /Overlock 10 Tf 5</i>	1.3	38
61	Unifying Design Strategies in Demosponge and Hexactinellid Skeletal Systems. <i>Journal of Adhesion</i> , 2010, 86, 72-95.	1.8	36
62	Smart Thermally Actuating Textiles. <i>Advanced Materials Technologies</i> , 2020, 5, 2000383.	3.0	35
63	A geometrically adaptable heart valve replacement. <i>Science Translational Medicine</i> , 2020, 12, .	5.8	35
64	CD44 alternative splicing in gastric cancer cells is regulated by culture dimensionality and matrix stiffness. <i>Biomaterials</i> , 2016, 98, 152-162.	5.7	34
65	Data-Driven Material Modeling with Functional Advection for 3D Printing of Materially Heterogeneous Objects. <i>3D Printing and Additive Manufacturing</i> , 2016, 3, 71-79.	1.4	34
66	From Improved Diagnostics to Presurgical Planning: High-Resolution Functionally Graded Multimaterial 3D Printing of Biomedical Tomographic Data Sets. <i>3D Printing and Additive Manufacturing</i> , 2018, 5, 103-113.	1.4	34
67	Grown, Printed, and Biologically Augmented: An Additively Manufactured Microfluidic Wearable, Functionally Templated for Synthetic Microbes. <i>3D Printing and Additive Manufacturing</i> , 2016, 3, 79-89.	1.4	32
68	Structure-Function Studies of the Lustrin A Polyelectrolyte Domains, RKS <sub>Y</sub> and D <sub>4</sub> . <i>Connective Tissue Research</i> , 2003, 44, 10-15.	1.1	31
69	Engineering the Mechanics of Heterogeneous Soft Crystals. <i>Advanced Functional Materials</i> , 2016, 26, 6938-6949.	7.8	29
70	Bright Green Biofluorescence in Sharks Derives from Bromo-Kynurenine Metabolism. <i>IScience</i> , 2019, 19, 1291-1336.	1.9	27
71	Imaging biological surface topography <i>in situ</i> and <i>in vivo</i> . <i>Methods in Ecology and Evolution</i> , 2017, 8, 1626-1638.	2.2	26
72	Evidence of Cosmic Impact at Abu Hureyra, Syria at the Younger Dryas Onset (~12.8 ka): High-temperature melting at >2200°C. <i>Scientific Reports</i> , 2020, 10, 4185.	1.6	26

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73	Echinoderm-Inspired Tube Feet for Robust Robot Locomotion and Adhesion. IEEE Robotics and Automation Letters, 2018, 3, 2222-2228.	3.3	25
74	Honeycomb Actuators Inspired by the Unfolding of Ice Plant Seed Capsules. PLoS ONE, 2016, 11, e0163506.	1.1	25
75	Uncovering Nature's Design Strategies through Parametric Modeling, Multi-Material 3D Printing, and Mechanical Testing. Advanced Engineering Materials, 2017, 19, e201600848.	1.6	24
76	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.	1.3	24
77	Mechanical properties of stingray tesseræ: High-resolution correlative analysis of mineral density and indentation moduli in tessellated cartilage. Acta Biomaterialia, 2019, 96, 421-435.	4.1	24
78	Crystal misorientation correlates with hardness in tooth enamels. Acta Biomaterialia, 2021, 120, 124-134.	4.1	23
79	Microstructural design for mechanical-optical multifunctionality in the exoskeleton of the flower beetle <i>Torynorrhina flammea</i> . Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	23
80	The Geometric Design and Fabrication of Actuating Cellular Structures. Advanced Materials Interfaces, 2015, 2, 1500011.	1.9	22
81	Large area sub-micron chemical imaging of magnesium in sea urchin teeth. Journal of Structural Biology, 2015, 189, 269-275.	1.3	22
82	Crystal nucleation and growth of spherulites demonstrated by coral skeletons and phase-field simulations. Acta Biomaterialia, 2021, 120, 277-292.	4.1	21
83	Tensile Instability in a Thick Elastic Body. Physical Review Letters, 2016, 117, 094301.	2.9	20
84	Strategies for simultaneous strengthening and toughening via nanoscopic intracrystalline defects in a biogenic ceramic. Nature Communications, 2020, 11, 5678.	5.8	20
85	Fabrication of Paper-Templated Structures of Noble Metals. Advanced Materials Technologies, 2017, 2, 1600229.	3.0	17
86	Shape-preserving erosion controlled by the graded microarchitecture of shark tooth enameloid. Nature Communications, 2020, 11, 5971.	5.8	17
87	High-Throughput Segmentation of Tiled Biological Structures using Random-Walk Distance Transforms. Integrative and Comparative Biology, 2019, 59, 1700-1712.	0.9	16
88	Mechanical and hydrodynamic analyses of helical strake-like ridges in a glass sponge. Journal of the Royal Society Interface, 2021, 18, 20210559.	1.5	16
89	Mechanical induction of dentin-like differentiation by adult mouse bone marrow stromal cells using compressive scaffolds. Stem Cell Research, 2017, 24, 55-60.	0.3	15
90	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.	0.9	15

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91	Large-scale micron-order 3D surface correlative chemical imaging of ancient Roman concrete. PLoS ONE, 2019, 14, e0210710.	1.1	14
92	Cambrian comb jellies from Utah illuminate the early evolution of nervous and sensory systems in ctenophores. IScience, 2021, 24, 102943.	1.9	14
93	Built for tough conditions. Science, 2015, 347, 712-713.	6.0	12
94	A Fabrication Strategy for Reconfigurable Millimeterâ€Scale Metamaterials. Advanced Functional Materials, 2021, 31, 2103428.	7.8	12
95	Ontogenetic scaling patterns of lizard skin surface structure as revealed by gelâ€based stereoâ€profilometry. Journal of Anatomy, 2019, 235, 346-356.	0.9	10
96	Responsive materials: A novel design for enhanced machine-augmented composites. Scientific Reports, 2014, 4, 3783.	1.6	9
97	Impact-related microspherules in Late Pleistocene Alaskan and Yukon â€œmuckâ€deposits signify recurrent episodes of catastrophic emplacement. Scientific Reports, 2017, 7, 16620.	1.6	9
98	The Temple Scroll: Reconstructing an ancient manufacturing practice. Science Advances, 2019, 5, eaaw7494.	4.7	9
99	Neuroanatomy in a middle Cambrian mollisoniid and the ancestral nervous system organization of chelicerates. Nature Communications, 2022, 13, 410.	5.8	9
100	Metamaterials: 3D Soft Metamaterials with Negative Poisson's Ratio (Adv. Mater. 36/2013). Advanced Materials, 2013, 25, 5116-5116.	11.1	8
101	Morphogenesis of aligned collagen fibers in the annulus fibrosus: Mammals versus avians. Biochemical and Biophysical Research Communications, 2018, 503, 1168-1173.	1.0	8
102	A Modular and Selfâ€Contained Fluidic Engine for Soft Actuators. Advanced Intelligent Systems, 2022, 4, 2100094.	3.3	8
103	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.	1.3	7
104	A Soft, Modular, and Bi-stable Dome Actuator for Programmable Multi-Modal Locomotion. , 2020, , .		7
105	Dynamic Self-Repairing Hybrid Liquid-in-Solid Protective Barrier for Cementitious Materials. ACS Applied Materials & Interfaces, 2020, 12, 31922-31932.	4.0	6
106	Computational methods for the characterization of Apis mellifera comb architecture. Communications Biology, 2022, 5, 468.	2.0	2
107	Large-Scale Micron-Order 3D Surface Correlative Imaging of Ancient Roman Concrete. Microscopy and Microanalysis, 2018, 24, 2130-2131.	0.2	0
108	Robotic Textiles: Smart Thermally Actuating Textiles (Adv. Mater. Technol. 8/2020). Advanced Materials Technologies, 2020, 5, 2070050.	3.0	0