Shengqiang Cai

List of Publications by Year
in descending order

104 papers	5,499 citations	101543 36 h-index	85541 71 g-index
105 all docs	105 docs citations	105 times ranked	4547 citing authors

#	Article	IF	Citations
1	Electrically controlled liquid crystal elastomerâ€"based soft tubular actuator with multimodal actuation. Science Advances, 2019, 5, eaax5746.	10.3	312
2	A theory of constrained swelling of a pH-sensitive hydrogel. Soft Matter, 2010, 6, 784.	2.7	288
3	Large Plastic Deformation in Highâ€Capacity Lithiumâ€Ion Batteries Caused by Charge and Discharge. Journal of the American Ceramic Society, 2011, 94, s226.	3.8	276
4	Mechanics and chemical thermodynamics of phase transition in temperature-sensitive hydrogels. Journal of the Mechanics and Physics of Solids, 2011, 59, 2259-2278.	4.8	253
5	Translucent soft robots driven by frameless fluid electrode dielectric elastomer actuators. Science Robotics, 2018, 3, .	17.6	229
6	Reprogrammable, Reprocessible, and Self-Healable Liquid Crystal Elastomer with Exchangeable Disulfide Bonds. ACS Applied Materials & Interfaces, 2017, 9, 33119-33128.	8.0	208
7	Resonant behavior of a membrane of a dielectric elastomer. International Journal of Solids and Structures, 2010, 47, 3254-3262.	2.7	202
8	Model of dissipative dielectric elastomers. Journal of Applied Physics, 2012, 111, .	2.5	200
9	Poroelastic swelling kinetics of thin hydrogel layers: comparison of theory and experiment. Soft Matter, 2010, 6, 6004.	2.7	186
10	Nonlinear oscillation of a dielectric elastomer balloon. Polymer International, 2010, 59, 378-383.	3.1	157
11	Electrospun liquid crystal elastomer microfiber actuator. Science Robotics, 2021, 6, .	17.6	157
12	Polydopamine-Coated Main-Chain Liquid Crystal Elastomer as Optically Driven Artificial Muscle. ACS Applied Materials & Interfaces, 2018, 10, 8307-8316.	8.0	147
13	Bioinspired Design of Lightâ€Powered Crawling, Squeezing, and Jumping Untethered Soft Robot. Advanced Materials Technologies, 2019, 4, 1900185.	5.8	144
14	A Lightâ€Powered Ultralight Tensegrity Robot with High Deformability and Load Capacity. Advanced Materials, 2019, 31, e1806849.	21.0	133
15	Three-dimensional printing of functionally graded liquid crystal elastomer. Science Advances, 2020, 6, .	10.3	129
16	Light or Thermally Powered Autonomous Rolling of an Elastomer Rod. ACS Applied Materials & Interfaces, 2018, 10, 25689-25696.	8.0	115
17	Creasing instability of elastomer films. Soft Matter, 2012, 8, 1301-1304.	2.7	114
18	High stretchability, strength, and toughness of living cells enabled by hyperelastic vimentin intermediate filaments. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 17175-17180.	7.1	103

#	Article	IF	Citations
19	Discontinuous fibrous Bouligand architecture enabling formidable fracture resistance with crack orientation insensitivity. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 15465-15472.	7.1	96
20	Bioinspired Design of Vascular Artificial Muscle. Advanced Materials Technologies, 2019, 4, 1800244.	5.8	86
21	Cavitation in soft matter. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 9157-9165.	7.1	86
22	Size- and speed-dependent mechanical behavior in living mammalian cytoplasm. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 9529-9534.	7.1	81
23	Recyclable and Self-Repairable Fluid-Driven Liquid Crystal Elastomer Actuator. ACS Applied Materials & Interfaces, 2020, 12, 35464-35474.	8.0	80
24	Creases in soft tissues generated by growth. Europhysics Letters, 2011, 95, 64002.	2.0	74
25	Osmotic collapse of a void in an elastomer: breathing, buckling and creasing. Soft Matter, 2010, 6, 5770.	2.7	63
26	Programmable actuation of liquid crystal elastomers <i>via</i> â€œlivingâ€• exchange reaction. Soft Matter, 2019, 15, 2811-2816.	2.7	63
27	Force generated by a swelling elastomer subject to constraint. Journal of Applied Physics, 2010, 107, 103535.	2.5	59
28	Recent progress in dynamic covalent chemistries for liquid crystal elastomers. Journal of Materials Chemistry B, 2020, 8, 6610-6623.	5.8	59
29	Viscoelastic deformation of a dielectric elastomer membrane subject to electromechanical loads. Journal of Applied Physics, 2013, 113, .	2.5	56
30	Snap-through Expansion of a Gas Bubble in an Elastomer. Journal of Adhesion, 2011, 87, 466-481.	3.0	54
31	Computational Model of Hydrostatically Coupled Dielectric Elastomer Actuators. Journal of Applied Mechanics, Transactions ASME, 2012, 79, .	2.2	50
32	A Biomimetic Soft Lens Controlled by Electrooculographic Signal. Advanced Functional Materials, 2019, 29, 1903762.	14.9	50
33	Creases and wrinkles on the surface of a swollen gel. Journal of Applied Physics, 2013, 114, .	2.5	46
34	Thermal Conductivity of Polyacrylamide Hydrogels at the Nanoscale. ACS Applied Materials & Interfaces, 2018, 10, 36352-36360.	8.0	46
35	Bio-inspired effective and regenerable building cooling using tough hydrogels. Applied Energy, 2016, 168, 332-339.	10.1	44
36	Stretchable and transparent ionic diode and logic gates. Extreme Mechanics Letters, 2019, 28, 81-86.	4.1	41

#	Article	IF	Citations
37	Fracture modes and hybrid toughening mechanisms in oscillated/twisted plywood structure. Acta Biomaterialia, 2019, 91, 284-293.	8.3	40
38	A simple and robust way towards reversible mechanochromism: Using liquid crystal elastomer as a mask. Extreme Mechanics Letters, 2017, 11, 42-48.	4.1	35
39	Printing Multiâ€Material Organic Haptic Actuators. Advanced Materials, 2021, 33, e2002541.	21.0	35
40	Inhomogeneous stretch induced patterning of molecular orientation in liquid crystal elastomers. Extreme Mechanics Letters, 2015, 5, 30-36.	4.1	33
41	Cavitation to fracture transition in a soft solid. Soft Matter, 2017, 13, 6372-6376.	2.7	33
42	3D Printing of a Biocompatible Double Network Elastomer with Digital Control of Mechanical Properties. Advanced Functional Materials, 2020, 30, 1910391.	14.9	30
43	Highly robust and soft biohybrid mechanoluminescence for optical signaling and illumination. Nature Communications, 2022, 13, .	12.8	30
44	Modeling of Light-Driven Bending Vibration of a Liquid Crystal Elastomer Beam. Journal of Applied Mechanics, Transactions ASME, 2016, 83, .	2.2	27
45	3D Printing of Electrically Responsive PVC Gel Actuators. ACS Applied Materials & Interfaces, 2021, 13, 24164-24172.	8.0	27
46	Shape Bifurcation of a Spherical Dielectric Elastomer Balloon Under the Actions of Internal Pressure and Electric Voltage. Journal of Applied Mechanics, Transactions ASME, 2015, 82, .	2.2	26
47	Electrically Controlled Soft Actuators with Multiple and Reprogrammable Actuation Modes. Advanced Intelligent Systems, 2020, 2, 1900177.	6.1	26
48	Porous double network gels with high toughness, high stretchability and fast solvent-absorption. Soft Matter, 2017, 13, 6852-6857.	2.7	25
49	Mechanics of vitrimer with hybrid networks. Mechanics of Materials, 2021, 153, 103687.	3.2	25
50	Swellable elastomers under constraint. Journal of Applied Physics, 2012, 112, .	2.5	24
51	Computational model of deformable lenses actuated by dielectric elastomers. Journal of Applied Physics, 2013, 114, 104104.	2.5	23
52	Chemomechanical oscillations in a responsive gel induced by an autocatalytic reaction. Journal of Applied Physics, 2014, 116, .	2.5	23
53	Polymer nanofiber reinforced double network gel composite: Strong, tough and transparent. Extreme Mechanics Letters, 2016, 9, 165-170.	4.1	23
54	Residual strain effects in needle-induced cavitation. Soft Matter, 2019, 15, 7390-7397.	2.7	22

#	Article	IF	Citations
55	Anomalous inflation of a nematic balloon. Journal of the Mechanics and Physics of Solids, 2020, 142, 104013.	4.8	22
56	Reversible actuation for self-folding modular machines using liquid crystal elastomer. Smart Materials and Structures, 2020, 29, 105003.	3.5	22
57	Self-sustained eversion or inversion of a thermally responsive torus. Physical Review E, 2021, 103, 033004.	2.1	21
58	Three-Dimensional Printing of Liquid Crystal Elastomers and Their Applications. ACS Applied Polymer Materials, 2022, 4, 3153-3168.	4.4	20
59	Crease in a ring of a pH-sensitive hydrogel swelling under constraint. International Journal of Solids and Structures, 2013, 50, 920-927.	2.7	19
60	New electromechanical instability modes in dielectric elastomer balloons. International Journal of Solids and Structures, 2018, 132-133, 96-104.	2.7	19
61	Nonlinear elasticity of biological basement membrane revealed by rapid inflation and deflation. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	19
62	Self-sustained rolling of a thermally responsive rod on a hot surface. Extreme Mechanics Letters, 2021, 42, 101116.	4.1	18
63	Indentation of a stretched elastomer. Journal of the Mechanics and Physics of Solids, 2017, 107, 145-159.	4.8	17
64	Strong size-dependent stress relaxation in electrospun polymer nanofibers. Journal of Applied Physics, 2017, 121, 015103.	2.5	15
65	Fatigue fracture of a highly stretchable acrylic elastomer. Polymer Testing, 2017, 61, 373-377.	4.8	15
66	Rayleighâ€“Taylor instability in a confined elastic soft cylinder. Journal of the Mechanics and Physics of Solids, 2019, 131, 221-229.	4.8	15
67	Uniaxial tension of a nematic elastomer with inclined mesogens. Extreme Mechanics Letters, 2020, 40, 100936.	4.1	15
68	Effects of network structures on the fracture of hydrogel. Extreme Mechanics Letters, 2021, 49, 101495.	4.1	15
69	Gravity induced crease-to-wrinkle transition in soft materials. Applied Physics Letters, 2015, 106, .	3.3	14
70	Nonsteady fracture of transient networks: The case of vitrimer. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	14
71	Seeded laser-induced cavitation for studying high-strain-rate irreversible deformation of soft materials. Soft Matter, 2020, 16, 9006-9013.	2.7	13
72	Highly Durable and Tough Liquid Crystal Elastomers. ACS Applied Materials & Interfaces, 2022, 14, 2006-2014.	8.0	13

#	Article	IF	Citations
73	Thermally driven self-oscillation of an elastomer fiber with a hanging weight. Extreme Mechanics Letters, 2022, 50, 101547.	4.1	13
74	Mechanics modelling of fern cavitation catapult. Journal of Applied Physics, 2017, 122, .	2.5	12
75	Cavitation in a swollen elastomer constrained by a non-swellable shell. Journal of Applied Physics, 2015, 117, 154901.	2.5	11
76	Rupture of Polydomain and Monodomain Liquid Crystal Elastomer. International Journal of Applied Mechanics, 2016, 08, 1640001.	2.2	11
77	Creasing of an everted elastomer tube. Soft Matter, 2016, 12, 7726-7730.	2.7	11
78	Rupture of swollen styrene butadiene rubber. Polymer Testing, 2017, 61, 100-105.	4.8	10
79	Biomechanics of osteochondral impact with cushioning and graft Insertion: Cartilage damage is correlated with delivered energy. Journal of Biomechanics, 2018, 73, 127-136.	2.1	10
80	Force-dependent bond dissociation explains the rate-dependent fracture of vitrimers. Soft Matter, 2021, 17, 6669-6674.	2.7	10
81	Contact mechanics of a gel under constrained swelling. Journal of the Mechanics and Physics of Solids, 2019, 124, 427-445.	4.8	9
82	Anisotropic mechanical behavior of 3D printed liquid crystal elastomer. Additive Manufacturing, 2022, 52, 102678.	3.0	9
83	Impact insertion of osteochondral grafts: Interference fit and central graft reduction affect biomechanics and cartilage damage. Journal of Orthopaedic Research, 2018, 36, 377-386.	2.3	8
84	Soft pumps for soft robots. Science Robotics, 2021, 6, .	17.6	8
85	Fluid-like Surface Layer and Its Flow Characteristics in Glassy Nanotubes. Nano Letters, 2016, 16, 7545-7550.	9.1	7
86	Bending a beam by a generalized ideal elastomeric gel. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2015, 471, 20140919.	2.1	6
87	Drying-Induced Deformation in Fiber-Embedded Gels to Mimic Plant Nastic Movements. International Journal of Applied Mechanics, 2015, 07, 1550016.	2.2	6
88	Delayed electromechanical instability of a viscoelastic dielectric elastomer balloon. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2019, 475, 20190316.	2.1	6
89	Wrinkles Riding Waves in Soft Layered Materials. Advanced Materials Interfaces, 2019, 6, 1801609.	3.7	6
90	Analytical solutions of cavitation instability in a compressible hyperelastic solid. International Journal of Non-Linear Mechanics, 2020, 126, 103562.	2.6	6

#	Article	IF	Citations
91	Diffusion-induced wrinkling instability in a circular poroelastic plate. Applied Physics Letters, 2013, 102, 241908.	3.3	5
92	Toughening of poly(lactide acid) with low crystallinity through biaxial poststretching. Journal of Polymer Science, 2020, 58, 3488-3495.	3.8	5
93	Cavitation dynamics in a vitrimer. Acta Mechanica Sinica/Lixue Xuebao, 2021, 37, 767-772.	3.4	5
94	Needle-induced-fracking in soft solids with crack blunting. Extreme Mechanics Letters, 2022, 52, 101673.	4.1	5
95	Thermally induced self-rupture of a constrained liquid crystal elastomer. Engineering Fracture Mechanics, 2022, 269, 108584.	4.3	5
96	Evolution equations of deformation twins in metalsâ€"Evolution of deformation twins in pure titanium. Physica B: Condensed Matter, 2008, 403, 1660-1665.	2.7	4
97	Determining Prestrains in an Elastomer Through Elliptical Indentation. Journal of Applied Mechanics, Transactions ASME, 2019, 86, .	2.2	3
98	Artificial Muscles for Underwater Soft Robotic System. , 2021, , 71-97.		3
99	Fracture mechanics modeling of popping event during daughter cell separation. Biomechanics and Modeling in Mechanobiology, 2018, 17, 1131-1137.	2.8	2
100	Mechanical behavior of a pH-sensitive hydrogel ring used in a micro-optical device. Proceedings in Applied Mathematics and Mechanics, 2012, 12, 411-412.	0.2	1
101	Wrinkles: Wrinkles Riding Waves in Soft Layered Materials (Adv. Mater. Interfaces 1/2019). Advanced Materials Interfaces, 2019, 6, 1970004.	3.7	1
102	Cavitation induced fracture of intact brain tissue. Biophysical Journal, 2022, 121, 2721-2729.	0.5	1
103	Stability of Couette flow past a gel film. Theoretical and Applied Mechanics Letters, 2017, 7, 286-291.	2.8	0
104	Cellular Responses to Nanomaterials with Biomedical Applications. Journal of Nanomaterials, 2022, 2022, 1-3.	2.7	0