Negative normal stress in semiflexible biopolymer gels

Nature Materials

6, 48-51

DOI: 10.1038/nmat1810

#	Article	IF	Citations
1	Local and global deformations in a strain-stiffening fibrin gel. New Journal of Physics, 2007, 9, 428-428.	2.9	63
2	Nonaffine rubber elasticity for stiff polymer networks. Physical Review E, 2007, 76, 031906.	2.1	100
3	Linear and nonlinear laser-trapping microrheology. Proceedings of SPIE, 2007, , .	0.8	0
4	Fibroblast Adaptation and Stiffness Matching to Soft Elastic Substrates. Biophysical Journal, 2007, 93, 4453-4461.	0.5	885
5	Using Lessons from Cellular and Molecular Structures for Future Materials. Advanced Materials, 2007, 19, 3761-3770.	21.0	43
6	Softness, strength and self-repair in intermediate filament networks. Experimental Cell Research, 2007, 313, 2228-2235.	2.6	109
7	Constitutive modeling of the stressâ€“strain behavior of F-actin filament networks. Acta Biomaterialia, 2008, 4, 597-612.	8.3	133
8	Chapter 19 Mechanical Response of Cytoskeletal Networks. Methods in Cell Biology, 2008, 89, 487-519.	1.1	180
9	Influence of Carbon Nanotube Aspect Ratio on Normal Stress Differences in Isotactic Polypropylene Nanocomposite Melts. Macromolecules, 2008, 41, 815-825.	4.8	105
10	Thermal fluctuations of fibrin fibres at short time scales. Soft Matter, 2008, 4, 1438.	2.7	20
11	Nonequilibrium Mechanics and Dynamics of Motor-Activated Gels. Physical Review Letters, 2008, 100, 018104.	7.8	171
12	Nonlinear Elasticity of Composite Networks of Stiff Biopolymers with Flexible Linkers. Physical Review Letters, 2008, 101, 118103.	7.8	85
13	Rods-on-string idealization captures semiflexible filament dynamics. Physical Review E, 2009, 79, 011906.	2.1	23
14	Effective-medium approach for stiff polymer networks with flexible cross-links. Physical Review E, 2009, 79, 061914.	2.1	35
15	Nonlinear elasticity of stiff biopolymers connected by flexible linkers. Physical Review E, 2009, 79, 041928.	2.1	75
16	Role of friction in the mechanics of nonbonded fibrous materials. Physical Review E, 2009, 80, 016115.	2.1	36
17	Cross-Linked Networks of Stiff Filaments Exhibit Negative Normal Stress. Physical Review Letters, 2009, 102, 088102.	7.8	85
18	Plastic Dissipation Mechanisms in Periodic Microframeâ€Structured Polymers. Advanced Functional Materials, 2009, 19, 1343-1350.	14.9	36

#	Article	IF	Citations
19	Lengthâ€Dependent Mechanics of Carbonâ€Nanotube Networks. Advanced Materials, 2009, 21, 874-878.	21.0	58
20	MAP2-mediated in vitro interactions of brain microtubules and their modulation by cAMP. European Biophysics Journal, 2009, 38, 381-393.	2.2	3
21	Heterogeneous long-range correlated deformation of semiflexible random fiber networks. Physical Review E, 2009, 80, 046703.	2.1	39
22	Theoretical Issues Relating to Thermally Reversible Gelation by Supermolecular Fiber Formation. Langmuir, 2009, 25, 8386-8391.	3.5	38
23	Rheology of the Cytoskeleton. Annual Review of Fluid Mechanics, 2009, 41, 433-453.	25.0	108
24	Fibrin gels and their clinical and bioengineering applications. Journal of the Royal Society Interface, 2009, 6, 1-10.	3.4	537
25	Fast Dynamics of Semiflexible Chain Networks of Self-Assembled Peptides. Biomacromolecules, 2009, 10, 1374-1380.	5.4	72
26	The compaction of gels by cells: a case of collective mechanical activity. Integrative Biology (United) Tj ETQq1 1 0.784314 rgBT /Overlo	1.3	84
27	Reversible stress softening and stress recovery of cellulose networks. Soft Matter, 2009, 5, 4185.	2.7	44
28	Nonlinear Elasticity of Stiff Filament Networks: Strain Stiffening, Negative Normal Stress, and Filament Alignment in Fibrin Gels. Journal of Physical Chemistry B, 2009, 113, 3799-3805.	2.6	166
29	Cytoskeletal Mechanics and Cellular Mechanotransduction: A Molecular Perspective. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2010, , 3-27.	1.0	7
30	Rheology of Soft Materials. Annual Review of Condensed Matter Physics, 2010, 1, 301-322.	14.5	305
31	Chains Are More Flexible Under Tension. Macromolecules, 2010, 43, 9181-9190.	4.8	63
32	Shear rheology of carbon nanotube suspensions. Rheologica Acta, 2010, 49, 323-334.	2.4	91
33	Long-range correlations of elastic fields in semi-flexible fiber networks. Computational Mechanics, 2010, 46, 635-640.	4.0	11
34	Bioinspired Structural Material Exhibiting Postâ€Yield Lateral Expansion and Volumetric Energy Dissipation During Tension. Advanced Functional Materials, 2010, 20, 3025-3030.	14.9	46
35	Nonlinear elasticity modeling of biogels. Journal of the Mechanics and Physics of Solids, 2010, 58, 300-310.	4.8	26
36	Passive and active microrheology for cross-linked F-actin networks in vitro. Acta Biomaterialia, 2010, 6, 1207-1218.	8.3	60

#	Article	IF	Citations
37	Injectable, rapid gelling and highly flexible hydrogel composites as growth factor and cell carriers. Acta Biomaterialia, 2010, 6, 1978-1991.	8.3	167
38	Poissonâ€™s Ratio in Composite Elastic Media with Rigid Rods. Physical Review Letters, 2010, 105, 138102.	7.8	19
39	Semiflexible Filamentous Composites. Physical Review Letters, 2010, 105, 118101.	7.8	23
40	Stiffening of Individual Fibrin Fibers Equitably Distributes Strain and Strengthens Networks. Biophysical Journal, 2010, 98, 1632-1640.	0.5	64
41	Size-Dependent Rheology of Type-I Collagen Networks. Biophysical Journal, 2010, 99, L65-L67.	0.5	72
42	Evidence that Î±C Region Is Origin of Low Modulus, High Extensibility, and Strain Stiffening in Fibrin Fibers. Biophysical Journal, 2010, 99, 3038-3047.	0.5	64
43	Frequency-dependent stiffening of semiflexible networks: A dynamical nonaffine to affine transition. Physical Review E, 2010, 82, 061902.	2.1	29
44	Non-equilibrium silk fibroin adhesives. Journal of Structural Biology, 2010, 170, 406-412.	2.8	81
45	First normal stress difference of entangled polymer solutions in large amplitude oscillatory shear flow. Journal of Rheology, 2010, 54, 1243-1266.	2.6	30
46	Nanoplastic Interactions of Surface-Grafted Single-Walled Carbon Nanotubes with Glassy Polymer Chains in Nanocomposites. Macromolecules, 2010, 43, 6811-6817.	4.8	10
47	Measurement of nonlinear rheology of cross-linked biopolymer gels. Soft Matter, 2010, 6, 4120.	2.7	91
48	Control of non-linear elasticity in F-actin networks with microtubules. Soft Matter, 2011, 7, 902-906.	2.7	56
49	Universality in Nonlinear Elasticity of Biological and Polymeric Networks and Gels. Macromolecules, 2011, 44, 140-146.	4.8	140
51	Polymer physics of the cytoskeleton. Current Opinion in Solid State and Materials Science, 2011, 15, 177-182.	11.5	112
52	Gelation of semiflexible polyelectrolytes by multivalent counterions. Soft Matter, 2011, 7, 7257.	2.7	14
53	Concentration Independent Modulation of Local Micromechanics in a Fibrin Gel. PLoS ONE, 2011, 6, e20201.	2.5	76
54	Second-order elastic solutions for spherical gels subjected to spherically symmetric dilatation. Mechanics of Materials, 2011, 43, 721-729.	3.2	6
55	A review of nonlinear oscillatory shear tests: Analysis and application of large amplitude oscillatory shear (LAOS). Progress in Polymer Science, 2011, 36, 1697-1753.	24.7	1,109

#	Article	IF	Citations
56	Mechanics of soft composites of rods in elastic gels. Physical Review E, 2011, 84, 061906.	2.1	18
57	Finding Auxetic Frameworks in Periodic Tessellations. Advanced Materials, 2011, 23, 2669-2674.	21.0	67
58	The micromechanics of threeâ€dimensional collagenâ€I gels. Complexity, 2011, 16, 22-28.	1.6	122
59	Strategies and challenges for the mechanical modeling of biological and bio-inspired materials. Materials Science and Engineering C, 2011, 31, 1209-1220.	7.3	21
60	The interplay of nonlinearity and architecture in equilibrium cytoskeletal mechanics. Journal of Chemical Physics, 2011, 134, 014510.	3.0	14
61	Four-dimensional structural dynamics of sheared collagen networks. Chaos, 2011, 21, 041102.	2.5	7
62	Rheoâ€"small-angle neutron scattering at the National Institute of Standards and Technology Center for Neutron Research. Review of Scientific Instruments, 2011, 82, 083902.	1.3	45
63	Positive or negative Poynting effect? The role of adscititious inequalities in hyperelastic materials. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2011, 467, 3633-3646.	2.1	80
64	Real-time observation of flow-induced cytoskeletal stress in living cells. American Journal of Physiology - Cell Physiology, 2011, 301, C646-C652.	4.6	51
65	Nonlinear effective-medium theory of disordered spring networks. Physical Review E, 2012, 85, 021801.	2.1	69
66	Filament-Length-Controlled Elasticity in 3D Fiber Networks. Physical Review Letters, 2012, 108, 078102.	7.8	96
67	Negative normal stress differences in graphene/polycarbonate composites. Applied Physics Letters, 2012, 100, .	3.3	14
68	Non-affine deformations in polymer hydrogels. Soft Matter, 2012, 8, 8039.	2.7	123
69	Homogenization of random elastic networks with non-affine kinematics. Proceedings in Applied Mathematics and Mechanics, 2012, 12, 417-418.	0.2	0
70	Investigating the Relationship between Network Mechanics and Single-Chain Extension Using Biomimetic Polysaccharide Gels. Macromolecules, 2012, 45, 4863-4869.	4.8	17
71	Semiflexible filament networks viewed as fluctuating beam-frames. Soft Matter, 2012, 8, 4664.	2.7	14
72	The maximal advance path constraint for the homogenization of materials with random network microstructure. Philosophical Magazine, 2012, 92, 2779-2808.	1.6	55
74	Mechanical metamaterials with negative compressibility transitions. Nature Materials, 2012, 11, 608-613.	27.5	344

#	Article	IF	Citations
75	Tensegrity and motor-driven effective interactions in a model cytoskeleton. Journal of Chemical Physics, 2012, 136, 145102.	3.0	36
76	Multiscale modeling and mechanics of filamentous actin cytoskeleton. Biomechanics and Modeling in Mechanobiology, 2012, 11, 291-302.	2.8	29
77	The trousers test for tearing of soft biomaterials. International Journal of Solids and Structures, 2012, 49, 161-169.	2.7	12
78	The importance of the second strain invariant in the constitutive modeling of elastomers and soft biomaterials. Mechanics of Materials, 2012, 51, 43-52.	3.2	78
79	Symmetry detection of auxetic behaviour in 2D frameworks. Europhysics Letters, 2013, 102, 66005.	2.0	21
80	Simple shear under large deformation: Experimental and theoretical analyses. European Journal of Mechanics, A/Solids, 2013, 42, 315-322.	3.7	43
82	Rheology of polymer carbon nanotubes composites. Soft Matter, 2013, 9, 9515.	2.7	90
83	Viscoelasticity of cross-linked actin networks: Experimental tests, mechanical modeling and finite-element analysis. Acta Biomaterialia, 2013, 9, 7343-7353.	8.3	29
84	Elastic response of filamentous networks with compliant crosslinks. Physical Review E, 2013, 88, 052705.	2.1	19
85	Comparison of simple and pure shear for an incompressible isotropic hyperelastic material under large deformation. Polymer Testing, 2013, 32, 240-248.	4.8	62
86	Multiplex Particle Focusing via Hydrodynamic Force in Viscoelastic Fluids. Scientific Reports, 2013, 3, 3258.	3.3	90
87	Numerical simulation of shear and the Poynting effects by the finite element method: An application of the generalised empirical inequalities in non-linear elasticity. International Journal of Non-Linear Mechanics, 2013, 49, 1-14.	2.6	43
88	Strain stiffening in collagen I networks. Biopolymers, 2013, 99, 35-46.	2.4	138
89	A new approach to model cross-linked actin networks: Multi-scale continuum formulation and computational analysis. Journal of the Mechanical Behavior of Biomedical Materials, 2013, 22, 95-114.	3.1	49
90	Fibrillar Structure in Aqueous Methylcellulose Solutions and Gels. Macromolecules, 2013, 46, 9760-9771.	4.8	74
91	Finite auxetic deformations of plane tessellations. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2013, 469, 20120465.	2.1	25
92	Elasticity of a filamentous kagome lattice. Physical Review E, 2013, 87, 042602.	2.1	44
93	Active patterning and asymmetric transport in a model actomyosin network. Journal of Chemical Physics, 2013, 139, 235103.	3.0	4

#	Article	IF	Citations
94	Nonlinear elasticity of cross-linked networks. Physical Review E, 2013, 87, 042721.	2.1	8
95	Normal-stress coefficients and rod climbing in colloidal dispersions. Physical Review E, 2013, 88, 042303.	2.1	5
96	Effects of molecular model, ionic strength, divalent ions, and hydrophobic interaction on human neurofilament conformation. Journal of Chemical Physics, 2013, 138, 015103.	3.0	14
97	Normal stresses in elastic networks. Physical Review E, 2013, 88, 052601.	2.1	19
98	Compression stiffening of brain and its effect on mechanosensing by glioma cells. New Journal of Physics, 2014, 16, 075002.	2.9	148
99	Spontaneous polarization in an interfacial growth model for actin filament networks with a rigorous mechanochemical coupling. Physical Review E, 2014, 90, 052706.	2.1	3
100	Strain-rate stiffening of cortical bone: observations and implications from nanoindentation experiments. Nanoscale, 2014, 6, 14863-14871.	5.6	20
101	Anomalous normal stresses in biopolymer networks with compliant cross-links. Europhysics Letters, 2014, 105, 38003.	2.0	2
102	Shear dilatancy in marginal solids. Granular Matter, 2014, 16, 203-208.	2.2	40
103	Poynting and axial forceâ€"twist effects in nonlinear elastic mono- and bi-layered cylinders: Torsion, axial and combined loadings. International Journal of Solids and Structures, 2014, 51, 1003-1019.	2.7	16
104	Actin Dynamics, Architecture, and Mechanics in Cell Motility. Physiological Reviews, 2014, 94, 235-263.	28.8	1,109
105	Mechanical modeling of rheometer experiments: Applications to rubber and actin networks. International Journal of Non-Linear Mechanics, 2014, 67, 300-307.	2.6	3
106	Stress localization, stiffening, and yielding in a model colloidal gel. Journal of Rheology, 2014, 58, 1089-1116.	2.6	114
107	Impact of elastic and inelastic substrate behaviors on mechanosensation. Soft Matter, 2014, 10, 408-420.	2.7	17
108	Influences of high aspect ratio carbon nanotube network on normal stress difference measurements and extrusion behaviors for isotactic polypropylene nanocomposite melts. RSC Advances, 2014, 4, 1246-1255.	3.6	20
109	Generalized shear of a soft rectangular block. Journal of the Mechanics and Physics of Solids, 2014, 70, 297-313.	4.8	14
110	Modeling semiflexible polymer networks. Reviews of Modern Physics, 2014, 86, 995-1036.	45.6	576
111	Sawtooth Tensile Response of Model Semiflexible and Block Copolymer Elastomers. Macromolecules, 2014, 47, 840-850.	4.8	19

#	Article	IF	Citations
112	Advances in the mechanical modeling of filamentous actin andÂitsÂcross-linked networks on multiple scales. Biomechanics and Modeling in Mechanobiology, 2014, 13, 1155-1174.	2.8	18
113	Nano-thrombelastography of fibrin during blood plasma clotting. Journal of Structural Biology, 2014, 186, 462-471.	2.8	11
114	An affine continuum mechanical model for cross-linked F-actin networks with compliant linker proteins. Journal of the Mechanical Behavior of Biomedical Materials, 2014, 38, 78-90.	3.1	35
115	Structural basis for the nonlinear mechanics of fibrin networks under compression. Biomaterials, 2014, 35, 6739-6749.	11.4	110
116	Nonlinear and heterogeneous elasticity of multiply-crosslinked biopolymer networks. New Journal of Physics, 2015, 17, 083035.	2.9	14
117	Experimental Study of Nonlinear Effects under Torsion of the Uniform Cylinder with Initially Circular Cross Section. Solid State Phenomena, 0, 243, 29-34.	0.3	1
118	Stress Heterogeneities in Sheared Type-I Collagen Networks Revealed by Boundary Stress Microscopy. PLoS ONE, 2015, 10, e0118021.	2.5	45
119	Microbuckling of fibrin provides a mechanism for cell mechanosensing. Journal of the Royal Society Interface, 2015, 12, 20150320.	3.4	89
120	DNA driven self-assembly of micron-sized rods using DNA-grafted bacteriophage fd virions. Physical Chemistry Chemical Physics, 2015, 17, 8194-8202.	2.8	11
121	Nonlinear effects in composite cylinders: relations and dependence on inhomogeneities. International Journal of Engineering Science, 2015, 90, 27-43.	5.0	6
122	Modeling and simulation of biopolymer networks: Classification of the cytoskeleton models according to multiple scales. Korean Journal of Chemical Engineering, 2015, 32, 1207-1217.	2.7	12
123	Elasticity of 3D networks with rigid filaments and compliant crosslinks. Soft Matter, 2015, 11, 343-354.	2.7	27
124	Analytical Modeling of Trapeze and Poynting Effects of Initially Twisted Beams. Journal of Applied Mechanics, Transactions ASME, 2015, 82, .	2.2	12
125	Elastic Behavior and Platelet Retraction in Low- and High-Density FibrinÂGels. Biophysical Journal, 2015, 108, 173-183.	0.5	61
126	Magnetic microrods as a tool for microrheology. Soft Matter, 2015, 11, 2563-2569.	2.7	20
127	Bone micro-fragility caused by the mimetic aging processes in Î±-klotho deficient mice: In situ nanoindentation assessment of dilatational bands. Biomaterials, 2015, 47, 62-71.	11.4	27
128	Generalized shear of a bilayer. Mechanics of Materials, 2015, 83, 122-135.	3.2	2
129	Dominant negative Poynting effect in simple shearing of soft tissues. Journal of Engineering Mathematics, 2015, 95, 87-98.	1.2	38

#	Article	IF	Citations
130	A fibril-based structural constitutive theory reveals the dominant role of network characteristics on the mechanical behavior of fibroblast-compacted collagen gels. Biomaterials, 2015, 67, 365-381.	11.4	4
131	Linear and Nonlinear Rheological Behavior of Fibrillar Methylcellulose Hydrogels. ACS Macro Letters, 2015, 4, 538-542.	4.8	67
132	Viscoelasticity and Ultrastructure in Coagulation and Inflammation: Two Diverse Techniques, One Conclusion. Inflammation, 2015, 38, 1707-1726.	3.8	21
133	Rheology and Mechanics of the Cytoskeleton. Biological and Medical Physics Series, 2015, , 187-205.	0.4	4
134	Rheology of a dual crosslink self-healing gel: Theory and measurement using parallel-plate torsional rheometry. Journal of Rheology, 2015, 59, 643-665.	2.6	46
135	Stress controls the mechanics of collagen networks. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 9573-9578.	7.1	284
136	Bone Aging by Advanced Glycation End Products. Journal of Dental Research, 2015, 94, 1684-1690.	5.2	23
137	A model for compression-weakening materials and the elastic fields due to contractile cells. Journal of the Mechanics and Physics of Solids, 2015, 85, 16-32.	4.8	47
138	In situ quasi-static and dynamic nanoindentation tests on calcified nodules formed by osteoblasts: Implication of glucocorticoids responsible for osteoblast calcification. Acta Biomaterialia, 2015, 12, 216-226.	8.3	10
139	Reverse Poynting Effects in the Torsion of Soft Biomaterials. Journal of Elasticity, 2015, 118, 127-140.	1.9	27
140	Nonlinear elasticity of semiflexible filament networks. Soft Matter, 2016, 12, 6749-6756.	2.7	41
141	Uncoupling shear and uniaxial elastic moduli of semiflexible biopolymer networks: compression-softening and stretch-stiffening. Scientific Reports, 2016, 6, 19270.	3.3	122
142	Torsion of cylindrically anisotropic nano/microtubes from seven-constant tetragonal crystals. Poyntingâ€™s effect. Physical Mesomechanics, 2016, 19, 349-354.	1.9	7
143	Structure-induced nonlinear viscoelasticity of non-woven fibrous matrices. Biomechanics and Modeling in Mechanobiology, 2016, 15, 1641-1654.	2.8	3
144	Elasticity of fibrous networks under uniaxial prestress. Soft Matter, 2016, 12, 5050-5060.	2.7	61
145	F-Actin Fragmentation Induces Distinct Mechanisms of Stress Relaxation in the Actin Cytoskeleton. ACS Macro Letters, 2016, 5, 641-645.	4.8	15
146	Nonlinear Mechanics of Athermal Branched Biopolymer Networks. Journal of Physical Chemistry B, 2016, 120, 5831-5841.	2.6	32
147	A new computational framework for materials with different mechanical responses in tension and compression and its applications. International Journal of Solids and Structures, 2016, 100-101, 54-73.	2.7	63

#	Article	IF	Citations
148	Tuning the Sawtooth Tensile Response and Toughness of Multiblock Copolymer Diamond Networks. Macromolecules, 2016, 49, 6711-6721.	4.8	10
149	Negative Poisson's Ratio in Modern Functional Materials. Advanced Materials, 2016, 28, 8079-8096.	21.0	259
150	Elastic regimes of subisostatic athermal fiber networks. Physical Review E, 2016, 93, 012407.	2.1	51
151	Porosity Governs Normal Stresses in Polymer Gels. Physical Review Letters, 2016, 117, 217802.	7.8	54
152	Thermalized connectivity networks of jammed packings. Soft Matter, 2016, 12, 7682-7687.	2.7	3
153	Force sensing using 3D displacement measurements in linear elastic bodies. Computational Mechanics, 2016, 58, 91-105.	4.0	7
154	Strain stiffening and negative normal stress in alginate hydrogels. Journal of Polymer Science, Part B: Polymer Physics, 2016, 54, 1767-1775.	2.1	29
155	Response of biopolymer networks governed by the physical properties of cross-linking molecules. Soft Matter, 2016, 12, 2537-2541.	2.7	24
156	Mechanical Properties of Intermediate Filament Proteins. Methods in Enzymology, 2016, 568, 35-57.	1.0	63
157	Two-dimensional magnetic colloids under shear. Soft Matter, 2016, 12, 3142-3148.	2.7	7
158	Nonlinear Variational Asymptotic Sectional Analysis of Hyperelastic Beams. AIAA Journal, 2016, 54, 679-690.	2.6	21
159	Interplay of Platelet Contractility and Elasticity of Fibrin/Erythrocytes in Blood Clot Retraction. Biophysical Journal, 2017, 112, 714-723.	0.5	41
160	Large Network Swelling and Solvent Redistribution Are Necessary for Polymer Gels to Show Negative Normal Stress. ACS Macro Letters, 2017, 6, 512-514.	4.8	8
161	Looking â€œUnder the Hoodâ€• of Cellular Mechanotransduction with Computational Tools: A Systems Biomechanics Approach across Multiple Scales. ACS Biomaterials Science and Engineering, 2017, 3, 2712-2726.	5.2	12
162	Optomechanical soft metamaterials. Acta Mechanica Sinica/Lixue Xuebao, 2017, 33, 575-584.	3.4	5
163	Anti-plane crack solutions in higher-order elasticity. International Journal of Engineering Science, 2017, 121, 60-79.	5.0	4
164	Fiber orientation effects in simple shearing of fibrous soft tissues. Journal of Biomechanics, 2017, 64, 131-135.	2.1	17
165	Inverse poroelasticity as a fundamental mechanism in biomechanics and mechanobiology. Nature Communications, 2017, 8, 1002.	12.8	69

#	Article	IF	Citations
166	Shear induced formation of lubrication layers of negative normal stress gels. Soft Matter, 2017, 13, 6515-6520.	2.7	1
167	Shear-Induced Heterogeneity in Associating Polymer Gels: Role of Network Structure and Dilatancy. Physical Review Letters, 2017, 119, 117801.	7.8	16
168	Mechanical response of collagen networks to nonuniform microscale loads. Soft Matter, 2017, 13, 5749-5758.	2.7	29
169	Poynting and reverse Poynting effects in soft materials. Soft Matter, 2017, 13, 4916-4923.	2.7	44
170	Relaxation Dynamics of the Normal Stress of Polymer Gels. Macromolecules, 2017, 50, 5208-5213.	4.8	4
171	A homogenization model of the Voigt type for skeletal muscle. Journal of Theoretical Biology, 2017, 414, 50-61.	1.7	27
172	Topology effects on nonaffine behavior of semiflexible fiber networks. Physical Review E, 2017, 96, 062502.	2.1	9
173	Theory of Semiflexible Filaments and Networks. Polymers, 2017, 9, 52.	4.5	45
174	Pantographic metamaterials show atypical Poynting effect reversal. Mechanics Research Communications, 2018, 89, 6-10.	1.8	87
175	Normal Stresses, Contraction, and Stiffening in Sheared Elastic Networks. Physical Review Letters, 2018, 120, 148004.	7.8	12
176	Mechanobiology of the cellâ€“matrix interplay: Catching a glimpse of complexity via minimalistic models. Extreme Mechanics Letters, 2018, 20, 59-64.	4.1	14
177	Normal stresses in semiflexible polymer hydrogels. Physical Review E, 2018, 97, 032418.	2.1	14
178	Network Topology in Soft Gels: Hardening and Softening Materials. Langmuir, 2018, 34, 773-781.	3.5	63
179	Displacement Propagation in Fibrous Networks Due to Local Contraction. Journal of Biomechanical Engineering, 2018, 140, .	1.3	23
180	The mechanics of phantom Mikado networks. Journal of Physics Communications, 2018, 2, 055015.	1.2	2
181	Freely Jointed Polymers Made of Droplets. Physical Review Letters, 2018, 121, 138002.	7.8	64
182	Normal stress in magnetorheological polymer gel under large amplitude oscillatory shear. Journal of Rheology, 2018, 62, 1409-1418.	2.6	20
183	Systematic bottom-up theory for the viscoelastic response of worm-like chain networks. Europhysics Letters, 2018, 123, 58002.	2.0	3

#	Article	IF	Citations
184	Simulation of the mechanical behavior of random fiber networks with different microstructure. European Physical Journal E, 2018, 41, 65.	1.6	6
185	Elastic compliance of fibrillar assemblies in type I collagen. Biophysical Chemistry, 2018, 240, 15-24.	2.8	8
186	Modulation of Abnormal Poissonâ€™s Ratios and Electronic Properties in Mixed-Valence Perovskite Manganite Films. ACS Applied Materials & Interfaces, 2018, 10, 18029-18035.	8.0	13
187	Combined experimental and computational characterization of crosslinked collagen-based hydrogels. PLoS ONE, 2018, 13, e0195820.	2.5	65
188	Stress relaxation in the transition from shear thinning to shear jamming in shear thickening fluid. Smart Materials and Structures, 2018, 27, 085013.	3.5	8
189	Effect of Block Immiscibility on Strain-Induced Microphase Segregation and Crystallization of Model Block Copolymer Elastomers. Macromolecules, 2018, 51, 5685-5693.	4.8	2
190	Stress singularity of a notch in a higher-order elastic solid under anti-plane deformation. International Journal of Engineering Science, 2018, 129, 156-168.	5.0	3
191	Self-Assembly and Mechanical Properties of a Triblock Copolymer Gel in a Mid-block Selective Solvent. ACS Symposium Series, 2018, , 157-197.	0.5	4
192	The complex mechanical response of anisotropic materials in simple experiments. International Journal of Non-Linear Mechanics, 2018, 106, 274-279.	2.6	7
193	The Role of Network Architecture in Collagen Mechanics. Biophysical Journal, 2018, 114, 2665-2678.	0.5	153
194	Fluidization of Transient Filament Networks. Macromolecules, 2018, 51, 4660-4669.	4.8	12
195	Structural topology optimization involving bi-modulus materials with asymmetric properties in tension and compression. Computational Mechanics, 2019, 63, 335-363.	4.0	21
196	Maximally stiffening composites require maximally coupled rather than maximally entangled polymer species. Soft Matter, 2019, 15, 6703-6717.	2.7	4
197	Poynting effect of brain matter in torsion. Soft Matter, 2019, 15, 5147-5153.	2.7	32
198	Rheological properties and failure of alginate hydrogels with ionic and covalent crosslinks. Soft Matter, 2019, 15, 7852-7862.	2.7	52
199	Double-line particle focusing induced by negative normal stress difference in a microfluidic channel. Microfluidics and Nanofluidics, 2019, 23, 1.	2.2	3
200	Normal stress anisotropy and marginal stability in athermal elastic networks. Soft Matter, 2019, 15, 1666-1675.	2.7	14
201	Modulus of Fibrous Collagen at the Length Scale of a Cell. Experimental Mechanics, 2019, 59, 1323-1334.	2.0	19

#	Article	IF	Citations
202	Modeling and Simulations of the Dynamic Behaviors of Actin-Based Cytoskeletal Networks. ACS Biomaterials Science and Engineering, 2019, 5, 3720-3734.	5.2	18
203	Random fiber networks with inclusions: The mechanism of reinforcement. Physical Review E, 2019, 99, 063001.	2.1	10
204	Structure-Property Relationships via Recovery Rheology in Viscoelastic Materials. Physical Review Letters, 2019, 122, 248003.	7.8	37
205	Stress-stabilized subisostatic fiber networks in a ropelike limit. Physical Review E, 2019, 99, 042412.	2.1	21
206	Design 3D metamaterials with compression-induced-twisting characteristics using shearâ€“compression coupling effects. Extreme Mechanics Letters, 2019, 29, 100471.	4.1	39
207	Extreme contractility and torsional compliance of soft ribbons under high twist. Physical Review E, 2019, 99, 043002.	2.1	12
208	Rivlin's legacy in continuum mechanics and applied mathematics. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2019, 377, 20190090.	3.4	6
209	From mechanical resilience to active material properties in biopolymer networks. Nature Reviews Physics, 2019, 1, 249-263.	26.6	111
210	A minimal-length approach unifies rigidity in underconstrained materials. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 6560-6568.	7.1	71
211	Capturing 3D large-strain Euler-bending filament dynamics in fibrous media simulations; sample case of compression collapse in dendritic actin network. Scientific Reports, 2019, 9, 3990.	3.3	1
212	Self-Healing and Rheological Properties of Polyhydroxyurethane Elastomers Based on Glycerol Carbonate Capped Prepolymers. Macromolecular Research, 2019, 27, 460-469.	2.4	8
213	Likely equilibria of the stochastic Rivlin cube. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2019, 377, 20180068.	3.4	15
214	The yield normal stress. Journal of Rheology, 2019, 63, 285-290.	2.6	49
215	Cytoskeletal stiffening in synthetic hydrogels. Nature Communications, 2019, 10, 609.	12.8	63
216	Compressive Remodeling Alters Fluid Transport Properties of Collagen Networks â€“ Implications for Tumor Growth. Scientific Reports, 2019, 9, 17151.	3.3	23
217	Design and applications of man-made biomimetic fibrillar hydrogels. Nature Reviews Materials, 2019, 4, 99-115.	48.7	253
218	Nanomechanical characterization of time-dependent deformation/recovery on human dentin caused by radiation-induced glycation. Journal of the Mechanical Behavior of Biomedical Materials, 2019, 90, 248-255.	3.1	7
219	Thermodynamics-based stability criteria for constitutive equations of isotropic hyperelastic solids. Journal of the Mechanics and Physics of Solids, 2019, 124, 115-142.	4.8	30

#	Article	IF	Citations
220	Vibro-acoustic performance and design of annular cellular structures with graded auxetic mechanical metamaterials. Journal of Sound and Vibration, 2020, 466, 115038.	3.9	24
221	Multi-scale Mechanics of Collagen Networks: Biomechanical Basis of Matrix Remodeling in Cancer. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2020, , 343-387.	1.0	5
222	The bending-stretching effect of a nonlinear elastic beam under finite deformation. International Journal of Solids and Structures, 2020, 185-186, 143-158.	2.7	1
223	Finite-size spherical particles in a square duct flow of an elastoviscoplastic fluid: anÂexperimental study. Journal of Fluid Mechanics, 2020, 883, .	3.4	8
224	A constitutive model for fibre-matrix interaction in fibre-reinforced hyperelastic materials. Applications in Engineering Science, 2020, 2, 100008.	0.8	2
225	Experimental study of the Poynting effect in a soft unidirectional fiber-reinforced material under simple shear. Soft Matter, 2020, 16, 7950-7957.	2.7	8
226	Coarse-grained modeling of nanocellulose network towards understanding the mechanical performance. Extreme Mechanics Letters, 2020, 40, 100942.	4.1	18
227	Continuum elastic models for force transmission in biopolymer gels. Soft Matter, 2020, 16, 10781-10808.	2.7	10
228	Correlation between linear and nonlinear material functions under large amplitude oscillatory shear. Physics of Fluids, 2020, 32, .	4.0	8
229	Strain Stiffening and Negative Normal Force of Agarose Hydrogels. Macromolecules, 2020, 53, 9983-9992.	4.8	16
230	Single molecule protein stabilisation translates to macromolecular mechanics of a protein network. Soft Matter, 2020, 16, 6389-6399.	2.7	23
231	Deformation Model of Chains and Networks with Extendable Bonds. Macromolecules, 2020, 53, 10874-10881.	4.8	1
232	Dynamics of undulatory fluctuations of semiflexible filaments in a network. Physical Review E, 2020, 102, 062406.	2.1	2
233	Hierarchical biomechanics: an introductory teaching framework. Physics Education, 2020, 55, 055002.	0.5	1
234	Loops <i>versus</i> lines and the compression stiffening of cells. Soft Matter, 2020, 16, 4389-4406.	2.7	14
235	Effective mechanical response of non-linear heterogeneous materials comprising bimodular phases. European Journal of Mechanics, A/Solids, 2020, 81, 103962.	3.7	3
236	Equilibrium fluctuations of a semiflexible filament cross linked into a network. Physical Review E, 2020, 101, 012408.	2.1	2
237	Embedding orthogonal memories in a colloidal gel through oscillatory shear. Soft Matter, 2020, 16, 3746-3752.	2.7	10

#	Article	IF	Citations
238	A computational study of the behavior of colloidal gel networks at low volume fraction. Journal of Physics Condensed Matter, 2020, 32, 275101.	1.8	1
239	Filamentous and step-like behavior of gelling coarse fibrin networks revealed by high-frequency microrheology. Soft Matter, 2020, 16, 4234-4242.	2.7	5
240	Biomimetic self-assembly of subcellular structures. Chemical Communications, 2020, 56, 8342-8354.	4.1	10
241	AgNP/Alginate Nanocomposite hydrogel for antimicrobial and antibiofilm applications. Carbohydrate Polymers, 2021, 251, 117017.	10.2	63
242	Tunable dynamic properties of hydrogen-bonded supramolecular assemblies in solution. Progress in Polymer Science, 2021, 112, 101321.	24.7	13
243	A whole blood thrombus mimic: Constitutive behavior under simple shear. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 115, 104216.	3.1	27
244	Novel strategies for parameter fitting procedure of the Ogden hyperfoam model under shear condition. European Journal of Mechanics, A/Solids, 2021, 86, 104154.	3.7	12
245	Long-range mechanical signaling in biological systems. Soft Matter, 2021, 17, 241-253.	2.7	36
246	The stress deformation response influenced by the chain rigidity for mesostructures in diblock copolymers. Physical Chemistry Chemical Physics, 2021, 23, 22992-23004.	2.8	1
247	Strain localization and yielding dynamics in disordered collagen networks. Soft Matter, 2021, 17, 6435-6444.	2.7	2
248	Nonlinear Mechanical Properties of Prestressed Branched Fibrous Networks. Biophysical Journal, 2021, 120, 527-538.	0.5	10
249	Enhanced Heterogeneous Diffusion of Nanoparticles in Semiflexible Networks. ACS Nano, 2021, 15, 4608-4616.	14.6	40
250	The effect of fiber-matrix interaction on the Poynting effect for torsion of fibrous soft biomaterials. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 118, 104410.	3.1	8
251	Viscoelastic Networks: Forming Cells and Tissues. Frontiers in Physics, 2021, 9, .	2.1	22
252	Hydrogels with Tunable Physical Cues and Their Emerging Roles in Studies of Cellular Mechanotransduction. Advanced NanoBiomed Research, 2021, 1, 2100059.	3.6	9
253	Fiber-Matrix Interaction and Fiber Orientation in Simple Shearing of Fibrous Soft Tissues. Journal of Elasticity, 0, , 1.	1.9	0
254	Control of Nanoscale <i>In Situ</i> Protein Unfolding Defines Network Architecture and Mechanics of Protein Hydrogels. ACS Nano, 2021, 15, 11296-11308.	14.6	24
255	Theory and Simulations of Hybrid Networks. Macromolecules, 2021, 54, 7337-7346.	4.8	3

#	Article	IF	Citations
256	Intermediate filaments ensure resiliency of single carcinoma cells, while active contractility of the actin cortex determines their invasive potential. New Journal of Physics, 2021, 23, 083028.	2.9	2
257	Inverted and Programmable Poynting Effects in Metamaterials. Advanced Science, 2021, 8, e2102279.	11.2	10
258	Constitutive modeling of magneto-viscoelastic polymers, demagnetization correction, and field-induced Poynting effect. International Journal of Engineering Science, 2021, 165, 103488.	5.0	18
259	Shear-induced phase transition and critical exponents in three-dimensional fiber networks. Physical Review E, 2021, 104, L022402.	2.1	5
260	Finite Deformation of Swollen pH-Sensitive Hydrogel Cylinder Under Extension and Torsion and its Poynting Effect: Analytical Solution and Numerical Verification. International Journal of Applied Mechanics, 2021, 13, .	2.2	7
261	Cell-matrix reciprocity in 3D culture models with nonlinear elasticity. Bioactive Materials, 2022, 9, 316-331.	15.6	36
262	The mechanics of fibrillar collagen extracellular matrix. Cell Reports Physical Science, 2021, 2, 100515.	5.6	54
263	Synthetic hydrogels as blood clot mimicking wound healing materials. Progress in Biomedical Engineering, 2021, 3, 042006.	4.9	11
265	Investigation of the extensional properties of elasto-visco-plastic materials in cross-slot geometries. Journal of Non-Newtonian Fluid Mechanics, 2021, 296, 104627.	2.4	11
266	Shear and viscoelastic properties of early-age concrete using small-amplitude and low-rate rheometry â€“ From fresh state to initial set. Cement and Concrete Composites, 2021, 124, 104223.	10.7	10
267	Rheological and clot microstructure evaluation of heparin neutralization by UHRA and protamine. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 124, 104851.	3.1	2
268	Out of Many, One: Modeling Schemes for Biopolymer and Biofibril Networks. Challenges and Advances in Computational Chemistry and Physics, 2010, , 557-602.	0.6	7
269	Cytoskeletal Mechanics and Rheology. , 2011, , 167-188.		3
270	How to characterize a nonlinear elastic material? A review on nonlinear constitutive parameters in isotropic finite elasticity. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2017, 473, 20170607.	2.1	119
272	Non-Linear Elasticity of Extracellular Matrices Enables Contractile Cells to Communicate Local Position and Orientation. PLoS ONE, 2009, 4, e6382.	2.5	320
273	Shear-induced damped oscillations in an epithelium depend on actomyosin contraction and E-cadherin cell adhesion. ELife, 2018, 7, .	6.0	19
274	A data-driven approach for modeling tensionâ€“compression asymmetric material behavior: numerical simulation and experiment. Computational Mechanics, 2022, 69, 299-313.	4.0	6
275	Nanoparticle-Based Mycosis Vaccine. Methods in Molecular Biology, 2017, 1625, 169-211.	0.9	3

#	Article	IF	Citations
276	Role of Normal Stress in the Creep Dynamics and Failure of a Biopolymer Gel. Physical Review Letters, 2020, 125, 268006.	7.8	5
278	Microstructure and dynamics of nanocellulose films: Insights into the deformational behavior. Extreme Mechanics Letters, 2022, 50, 101519.	4.1	10
279	Wave propagation through an elastically asymmetric architected material. Comptes Rendus - Mecanique, 2022, 350, 1-26.	0.7	0
280	The role of cellâ€"matrix interactions in connective tissue mechanics. Physical Biology, 2022, 19, 021001.	1.8	8
281	Materials science and mechanosensitivity of living matter. Applied Physics Reviews, 2022, 9, 011320.	11.3	4
282	Tuneable normal stresses in hyperelastic emulsions. Physical Review Research, 2022, 4, .	3.6	4
284	Modeling and Design of Periodic Polygonal Lattices Constructed from Microstructures with Varying Curvatures. Physical Review Applied, 2022, 17, .	3.8	10
285	A constitutive model for fibrous tissues with cross-linked collagen fibers including dispersion â€" With an analysis of the Poynting effect. Journal of the Mechanics and Physics of Solids, 2022, 164, 104911.	4.8	5
286	Torsion of hydrogel cylinder with a chemo-mechanical coupled nonlinear elastic theory. International Journal of Solids and Structures, 2022, 248, 111670.	2.7	1
287	Constitutive modelling of fibre networks with stretch distributions. Part I: Theory and illustration. Journal of the Mechanics and Physics of Solids, 2022, 167, 104960.	4.8	10
288	Fibrous hydrogels under biaxial confinement. Nature Communications, 2022, 13, .	12.8	6
289	Some Effects of Fiber Dispersion on the Mechanical Response of Incompressible Soft Solids. Journal of Elasticity, 2022, 150, 119-149.	1.9	1
290	Compression-induced buckling of a semiflexible filament in two and three dimensions. Journal of Chemical Physics, 2022, 157, .	3.0	1
291	Marangoni effect and cell spreading. European Biophysics Journal, 2022, 51, 419-429.	2.2	12
292	Exponents of the one-term Ogden model: insights from simple shear. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2022, 380, .	3.4	3
293	Evolution of Force Chains Explains the Onset of Strain Stiffening in Fiber Networks. Journal of Applied Mechanics, Transactions ASME, 2022, 89, .	2.2	7
294	Are Elastic Materials Like Gambling Machines?. Interdisciplinary Applied Mathematics, 2022, , 49-65.	0.3	0
295	Finite Elasticity as Prior Information. Interdisciplinary Applied Mathematics, 2022, , 7-47.	0.3	0

#	Article	IF	Citations
296	Temperature- and strain-dependent transient microstructure and rheological responses of endblock-associated triblock gels of different block lengths in a midblock selective solvent. Soft Matter, 2022, 18, 7020-7034.	2.7	1
297	Mechanical Behavior and Relation to Structural Parameters. , 2022, , 146-251.		0
299	Rheology of marine sponges reveals anisotropic mechanics and tuned dynamics. Journal of the Royal Society Interface, 2022, 19, .	3.4	4
300	Disorder to order transition in cell-ECM systems mediated by cell-cell collective interactions. Acta Biomaterialia, 2022, 154, 290-301.	8.3	5
301	Stretch formulations and the Poynting effect in nonlinear elasticity. International Journal of Non-Linear Mechanics, 2023, 148, 104293.	2.6	4
302	Topology optimization for structures with bi-modulus material properties considering displacement constraints. Computers and Structures, 2023, 276, 106952.	4.4	3
303	Probing Local Force Propagation in Tensed Fibrous Gels. Small, 2023, 19, .	10.0	5
304	A Bi-Modulus Material Model for Bending Test on NHL3.5 Lime Mortar. Materials, 2023, 16, 486.	2.9	4
305	Further Results on Stretch Formulations of Simple Shear and Pure Torsion for Incompressible Isotropic Hyperelastic Materials. Journal of Elasticity, 2023, 153, 207-217.	1.9	2
307	Vein fate determined by flow-based but time-delayed integration of network architecture. ELife, 0, 12, .	6.0	6
308	Simulating cylinder torsion using Hillâ€™s linear isotropic hyperelastic material models. Mechanics of Time-Dependent Materials, 0, , .	4.4	1
309	Diversity of viscoelastic properties of an engineered muscle-inspired protein hydrogel. Soft Matter, 2023, 19, 3167-3178.	2.7	2
310	Nonlinear elastic behaviors and deformation mechanisms of nano-structured crosslinked biopolymer networks. Extreme Mechanics Letters, 2023, , 102017.	4.1	0
311	Mapping of elastic properties of twisting metamaterials onto micropolar continuum using static calculations. International Journal of Mechanical Sciences, 2023, 254, 108411.	6.7	5
312	Appetizer on soft matter physics concepts in mechanobiology. Development Growth and Differentiation, 2023, 65, 234-244.	1.5	1
313	Bioinspired Fiber Networks With Tunable Mechanical Properties by Additive Manufacturing. Journal of Applied Mechanics, Transactions ASME, 2023, 90, .	2.2	0
314	Canceling the elastic Poynting effect with geometry. Physical Review E, 2023, 107, .	2.1	6
315	Exploring the dynamics of vascular adaptation. ELife, 0, 12, .	6.0	0

#	Article	IF	Citations
316	On the coupling of rectilinear shear and stretching in a slab made of incompressible elastic neo-Hookean materials: analytic formulation and finite element validation. Meccanica, 2023, 58, 1657-1669.	2.0	1
320	Response of cells and tissues to shear stress. Journal of Cell Science, 2023, 136, .	2.0	4
321	Review paper: The importance of consideration of collagen cross-links in computational models of collagen-based tissues. Journal of the Mechanical Behavior of Biomedical Materials, 2023, 148, 106203.	3.1	0
322	Effective medium theory for mechanical phase transitions of fiber networks. Soft Matter, 0, , .	2.7	0
323	A model for residually stressed viscoelastic bodies and its application to some boundary value problems. Mathematics and Mechanics of Solids, 2024, 29, 452-473.	2.4	1
324	The mechanics of embedded fiber networks. Journal of the Mechanics and Physics of Solids, 2023, 181, 105456.	4.8	1
325	Effect of fiber properties and orientation on the shear rheology and Poynting effect in meat and meat analogues. Food Hydrocolloids, 2024, 149, 109509.	10.7	0
326	Poynting effect in fluid-saturated poroelastic soft materials in torsion. International Journal of Non-Linear Mechanics, 2024, 159, 104601.	2.6	0
328	Vascular adaptation model from force balance: Physarum polycephalum as a case study. New Journal of Physics, 0, , .	2.9	0
329	Viscoplastic simple shear at finite strains. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2023, 479, .	2.1	1
330	Elastic wave dispersion and polarization in a chiral elastic metamaterial. Journal of Mechanics of Materials and Structures, 2024, 19, 91-108.	0.6	0
331	A rheological model for spheroids including extra-cellular matrix. Europhysics Letters, 2024, 145, 17001.	2.0	0
332	An Ogden hyperelastic 3D micromechanical model to depict Poynting effect in brain white matter. Heliyon, 2024, 10, e25379.	3.2	0