Itai Cohen

List of Publications by Year
in descending order

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Version: 2024-02-01

112 papers	6,944 citations	61984 43 h-index	60623 81 g-index
116 all docs	116 docs citations	116 times ranked	7368 citing authors

#	Article	IF	Citations
1	Re-entrant transition as a bridge of broken ergodicity in confined monolayers of hexagonal prisms and cylinders. Journal of Colloid and Interface Science, 2022, 607, 1478-1490.	9.4	1
2	Rigidity and fracture of biopolymer double networks. Soft Matter, 2022, 18, 322-327.	2.7	7
3	Structural origins of cartilage shear mechanics. Science Advances, 2022, 8, eabk2805.	10.3	8
4	Cilia metasurfaces for electronically programmable microfluidic manipulation. Nature, 2022, 605, 681-686.	27.8	50
5	Cartilage articulation exacerbates chondrocyte damage and death after impact injury. Journal of Orthopaedic Research, 2021, 39, 2130-2140.	2.3	13
6	Micrometer-sized electrically programmable shape-memory actuators for low-power microrobotics. Science Robotics, 2021, 6, .	17.6	62
7	The influence of chondrocyte source on the manufacturing reproducibility of human tissue engineered cartilage. Acta Biomaterialia, 2021, 131, 276-285.	8.3	0
8	Multivalued Inverse Design: Multiple Surface Geometries from One Flat Sheet. Physical Review Letters, 2021, 127, 128001.	7.8	7
9	Microscale strain mapping demonstrates the importance of interface slope in the mechanics of cartilage repair. Journal of Biomechanics, 2021, 114, 110159.	2.1	6
10	Depth-dependent patterns in shear modulus of temporomandibular joint cartilage correspond to tissue structure and anatomic location. Journal of Biomechanics, 2021, 129, 110815.	2.1	0
11	Mitoprotective therapy prevents rapid, strainâ€dependent mitochondrial dysfunction after articular cartilage injury. Journal of Orthopaedic Research, 2020, 38, 1257-1267.	2.3	31
12	Electronically integrated, mass-manufactured, microscopic robots. Nature, 2020, 584, 557-561.	27.8	192
13	Tunable solidification of cornstarch under impact: How to make someone walking on cornstarch sink. Science Advances, 2020, 6, eaay6661.	10.3	9
14	Bidirectional Self-Folding with Atomic Layer Deposition Nanofilms for Microscale Origami. Nano Letters, 2020, 20, 4850-4856.	9.1	15
15	Stress decomposition in LAOS of dense colloidal suspensions. Journal of Rheology, 2020, 64, 343-351.	2.6	18
16	Multiscale mechanics of tissueâ€engineered cartilage grown from human chondrocytes and humanâ€induced pluripotent stem cells. Journal of Orthopaedic Research, 2020, 38, 1965-1973.	2.3	12
17	Distinct tribological endotypes of pathological human synovial fluid reveal characteristic biomarkers and variation in efficacy of viscosupplementation at reducing local strains in articular cartilage. Osteoarthritis and Cartilage, 2020, 28, 492-501.	1.3	8
18	Embedding orthogonal memories in a colloidal gel through oscillatory shear. Soft Matter, 2020, 16, 3746-3752.	2.7	10

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19	Heterogeneous matrix deposition in human tissue engineered cartilage changes the local shear modulus and resistance to local construct buckling. Journal of Biomechanics, 2020, 105, 109760.	2.1	11
20	Capillary Origami with Atomically Thin Membranes. Nano Letters, 2019, 19, 6221-6226.	9.1	33
21	Micromechanical Systems: Atomic Layer Deposition for Membranes, Metamaterials, and Mechanisms (Adv. Mater. 29/2019). Advanced Materials, 2019, 31, 1970212.	21.0	0
22	Understanding the Stiff-to-Compliant Transition of the Meniscal Attachments by Spatial Correlation of Composition, Structure, and Mechanics. ACS Applied Materials & Interfaces, 2019, 11, 26559-26570.	8.0	27
23	The clot thickens: Autologous and allogeneic fibrin sealants are mechanically equivalent in an ex vivo model of cartilage repair. PLoS ONE, 2019, 14, e0224756.	2.5	21
24	Using Acoustic Perturbations to Dynamically Tune Shear Thickening in Colloidal Suspensions. Physical Review Letters, 2019, 123, 128001.	7.8	17
25	Fluid dynamics and control of insect flight. Nature Reviews Physics, 2019, 1, 638-639.	26.6	1
26	Kirigami Mechanics as Stress Relief by Elastic Charges. Physical Review Letters, 2019, 122, 048001.	7.8	24
27	Nonlinear mechanics of thin frames. Physical Review E, 2019, 99, 013002.	2.1	14
28	Atomic Layer Deposition for Membranes, Metamaterials, and Mechanisms. Advanced Materials, 2019, 31, e1901944.	21.0	24
29	Audio cues enhance mirroring of arm motion when visual cues are scarce. Journal of the Royal Society Interface, 2019, 16, 20180903.	3.4	0
30	Magnetic handshake materials as a scale-invariant platform for programmed self-assembly. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 24402-24407.	7.1	28
31	Automated home cage training of mice in a hold-still center-out reach task. Journal of Neurophysiology, 2019, 121, 500-512.	1.8	28
32	Flight of the fruit fly. Physical Review Fluids, 2019, 4, .	2.5	1
33	Measuring and Manipulating the Adhesion of Graphene. Nano Letters, 2018, 18, 449-454.	9.1	25
34	Graphene-based bimorphs for micron-sized, autonomous origami machines. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 466-470.	7.1	144
35	Microscale frictional strains determine chondrocyte fate in loaded cartilage. Journal of Biomechanics, 2018, 74, 72-78.	2.1	47
36	Local and global measurements show that damage initiation in articular cartilage is inhibited by the surface layer and has significant rate dependence. Journal of Biomechanics, 2018, 72, 63-70.	2.1	15

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37	Quantitative light microscopy of dense suspensions: Colloid science at the next decimal place. Current Opinion in Colloid and Interface Science, 2018, 34, 32-46.	7.4	12
38	Fiber Embroidery of Self-Sensing Soft Actuators. Biomimetics, 2018, 3, 24.	3.3	22
39	Density-functional fluctuation theory of crowds. Nature Communications, 2018, 9, 3538.	12.8	20
40	Topological kinematics of origami metamaterials. Nature Physics, 2018, 14, 811-815.	16.7	74
41	Facilitated recruitment of mesenchymal stromal cells by bone marrow concentrate and platelet rich plasma. PLoS ONE, 2018, 13, e0194567.	2.5	18
42	Multiscale Strain as a Predictor of Impact-Induced Fissuring in Articular Cartilage. Journal of Biomechanical Engineering, 2017, 139, .	1.3	14
43	Mechanical properties and structureâ€function relationships of human chondrocyteâ€seeded cartilage constructs after in vitro culture. Journal of Orthopaedic Research, 2017, 35, 2298-2306.	2.3	20
44	Three-dimensional microscale flow of polymer coatings on glass during indentation. MRS Communications, 2017, 7, 896-903.	1.8	0
45	In vitro culture increases mechanical stability of human tissue engineered cartilage constructs by prevention of microscale scaffold buckling. Journal of Biomechanics, 2017, 64, 77-84.	2.1	14
46	Determining Quiescent Colloidal Suspension Viscosities Using the Green-Kubo Relation and Image-Based Stress Measurements. Physical Review Letters, 2017, 119, 138001.	7.8	6
47	Stretchable surfaces with programmable 3D texture morphing for synthetic camouflaging skins. Science, 2017, 358, 210-214.	12.6	210
48	How Confinement-Induced Structures Alter the Contribution of Hydrodynamic and Short-Ranged Repulsion Forces to the Viscosity of Colloidal Suspensions. Physical Review X, 2017, 7, .	8.9	11
49	Controlling the alignment of rodlike colloidal particles with time-dependent shear flows. Journal of Rheology, 2017, 61, 979-996.	2.6	7
50	Walking like an ant: a quantitative and experimental approach to understanding locomotor mimicry in the jumping spiderMyrmarachne formicaria. Proceedings of the Royal Society B: Biological Sciences, 2017, 284, 20170308.	2.6	40
51	Topological Mechanics of Origami and Kirigami. Physical Review Letters, 2016, 116, 135501.	7.8	156
52	Chondrocyte death and mitochondrial dysfunction are mediated by cartilage friction and shear strain. Osteoarthritis and Cartilage, 2016, 24, S46.	1.3	9
53	Measuring nonlinear stresses generated by defects in 3D colloidal crystals. Nature Materials, 2016, 15, 1172-1176.	27.5	31
54	Human talar and femoral cartilage have distinct mechanical properties near the articular surface. Journal of Biomechanics, 2016, 49, 3320-3327.	2.1	26

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55	Relating microstructure and particle-level stress in colloidal crystals under increased confinement. Soft Matter, 2016, 12, 9058-9067.	2.7	4
56	Tunable shear thickening in suspensions. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 10774-10778.	7.1	74
57	Airborne Acoustic Perception by a Jumping Spider. Current Biology, 2016, 26, 2913-2920.	3.9	55
58	Wing-pitch modulation in maneuvering fruit flies is explained by an interplay between aerodynamics and a torsional spring. Physical Review E, 2015, 92, 022712.	2.1	43
59	Visualization, coarsening, and flow dynamics of focal conic domains in simulated smectic-Aliquid crystals. Physical Review E, 2015, 92, 062511.	2.1	9
60	Elastoviscous Transitions of Articular Cartilage Reveal a Mechanism of Synergy between Lubricin and Hyaluronic Acid. PLoS ONE, 2015, 10, e0143415.	2.5	105
61	Hydrodynamic and Contact Contributions to Continuous Shear Thickening in Colloidal Suspensions. Physical Review Letters, 2015, 115, 228304.	7.8	267
62	Measuring microscale strain fields in articular cartilage during rapid impact reveals thresholds for chondrocyte death and a protective role for the superficial layer. Journal of Biomechanics, 2015, 48, 3440-3446.	2.1	64
63	Mechanical characterization of matrix-induced autologous chondrocyte implantation (MACIÂ®) grafts in an equine model at 53 weeks. Journal of Biomechanics, 2015, 48, 1944-1949.	2.1	46
64	Origami structures with a critical transition to bistability arising from hidden degrees of freedom. Nature Materials, 2015, 14, 389-393.	27.5	382
65	The effect of shear flow on the rotational diffusion of a single axisymmetric particle. Journal of Fluid Mechanics, 2015, 772, 42-79.	3.4	21
66	Controlling roll perturbations in fruit flies. Journal of the Royal Society Interface, 2015, 12, 20150075.	3.4	89
67	Pitch perfect: how fruit flies control their body pitch angle. Journal of Experimental Biology, 2015, 218, 3508-19.	1.7	33
68	How grow-and-switch gravitropism generates root coiling and root waving growth responses in Medicago truncatula. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 12938-12943.	7.1	13
69	Geometrically controlled snapping transitions in shells with curved creases. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 11175-11180.	7.1	67
70	Effects of enzymatic treatments on the depth-dependent viscoelastic shear properties of articular cartilage. Journal of Orthopaedic Research, 2014, 32, 1652-1657.	2.3	53
71	A multi-axis confocal rheoscope for studying shear flow of structured fluids. Review of Scientific Instruments, 2014, 85, 033905.	1.3	36
72	Wall Slip of Bidisperse Linear Polymer Melts. Macromolecules, 2014, 47, 3154-3160.	4.8	27

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73	Wall Slip of Tridisperse Polymer Melts and the Effect of Unentangled versus Weakly Entangled Chains. Macromolecules, 2014, 47, 8033-8040.	4.8	11
74	Biaxial shear of confined colloidal hard spheres: the structure and rheology of the vorticity-aligned string phase. Soft Matter, 2014, 10, 1969.	2.7	17
75	Using origami design principles to fold reprogrammable mechanical metamaterials. Science, 2014, 345, 647-650.	12.6	714
76	Structure-Function Relations and Rigidity Percolation in the Shear Properties of Articular Cartilage. Biophysical Journal, 2014, 107, 1721-1730.	0.5	68
77	Anatomic variation of depthâ€dependent mechanical properties in neonatal bovine articular cartilage. Journal of Orthopaedic Research, 2013, 31, 686-691.	2.3	31
78	Spatial periodicity in growth plate shear mechanical properties is disrupted by vitamin D deficiency. Journal of Biomechanics, 2013, 46, 1597-1603.	2.1	12
79	Collective Motion of Humans in Mosh and Circle Pits at Heavy Metal Concerts. Physical Review Letters, 2013, 110, 228701.	7.8	131
80	Enhancing Rotational Diffusion Using Oscillatory Shear. Physical Review Letters, 2013, 110, 228301.	7.8	16
81	Localization of Viscous Behavior and Shear Energy Dissipation in Articular Cartilage Under Dynamic Shear Loading. Journal of Biomechanical Engineering, 2013, 135, 31002.	1.3	46
82	Active and passive stabilization of body pitch in insect flight. Journal of the Royal Society Interface, 2013, 10, 20130237.	3.4	132
83	Far-from-equilibrium sheared colloidal liquids: Disentangling relaxation, advection, and shear-induced diffusion. Physical Review E, 2013, 88, 062309.	2.1	17
84	Entropy-driven crystal formation on highly strained substrates. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 9301-9304.	7.1	22
85	3D imaging and mechanical modeling of helical buckling in Medicago truncatula plant roots. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 16794-16799.	7.1	67
86	Assembly of vorticity-aligned hard-sphere colloidal strings in a simple shear flow. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 63-67.	7.1	72
87	Implanted adipose progenitor cells as physicochemical regulators of breast cancer. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 9786-9791.	7.1	134
88	Insights into interstitial flow, shear stress, and mass transport effects on ECM heterogeneity in bioreactor-cultivated engineered cartilage hydrogels. Biomechanics and Modeling in Mechanobiology, 2012, 11, 689-702.	2.8	40
89	Imaging the Microscopic Structure of Shear Thinning and Thickening Colloidal Suspensions. Science, 2011, 333, 1276-1279.	12.6	414
90	Paddling Mode of Forward Flight in Insects. Physical Review Letters, 2011, 106, 178103.	7.8	54

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91	Micelles in a crystal. Nature Materials, 2011, 10, 810-811.	27.5	21
92	High-resolution spatial mapping of shear properties in cartilage. Journal of Biomechanics, 2010, 43, 796-800.	2.1	68
93	Fruit Flies Modulate Passive Wing Pitching to Generate In-Flight Turns. Physical Review Letters, 2010, 104, 148101.	7.8	137
94	Direct Measurements of Island Growth and Step-Edge Barriers in Colloidal Epitaxy. Science, 2010, 327, 445-448.	12.6	99
95	Discovering the flight autostabilizer of fruit flies by inducing aerial stumbles. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 4820-4824.	7.1	183
96	Constitutive Curve and Velocity Profile in Entangled Polymers during Start-Up of Steady Shear Flow. Macromolecules, 2010, 43, 4412-4417.	4.8	18
97	The effects of needle puncture injury on microscale shear strain in the intervertebral disc annulus fibrosus. Spine Journal, 2010, 10, 1098-1105.	1.3	78
98	Partial universality: pinch-off dynamics in fluids with smectic liquid crystalline order. Soft Matter, 2010, 6, 892.	2.7	30
99	Automated hull reconstruction motion tracking (HRMT) applied to sideways maneuvers of free-flying insects. Journal of Experimental Biology, 2009, 212, 1324-1335.	1.7	98
100	Measurement of local strains in intervertebral disc anulus fibrosus tissue under dynamic shear: Contributions of matrix fiber orientation and elastin content. Journal of Biomechanics, 2009, 42, 2279-2285.	2.1	122
101	Mapping the depth dependence of shear properties in articular cartilage. Journal of Biomechanics, 2008, 41, 2430-2437.	2.1	131
102	Synthesis and assembly of nonspherical hollow silica colloids under confinement. Journal of Materials Chemistry, 2008, 18, 4912.	6.7	52
103	Nonlinear Rheology of Entangled Polymer Solutions in Narrow Gaps Probed by Confocal Microscopy. AIP Conference Proceedings, 2008, , .	0.4	1
104	High Resolution Shear Profile Measurements in Entangled Polymers. Physical Review Letters, 2008, 101, 218301.	7.8	23
105	Liquid interfaces in viscous straining flows: numerical studies of the selective withdrawal transition. Journal of Fluid Mechanics, 2008, 613, 171-203.	3.4	21
106	Visualizing dislocation nucleation by indenting colloidal crystals. Nature, 2006, 440, 319-323.	27.8	193
107	Slip, Yield, and Bands in Colloidal Crystals under Oscillatory Shear. Physical Review Letters, 2006, 97, 215502.	7.8	59
108	Visualization of Dislocation Dynamics in Colloidal Crystals. Science, 2004, 305, 1944-1948.	12.6	196

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109	Persistence of Memory in Drop Breakup: The Breakdown of Universality. Science, 2003, 302, 1185-1188.	12.6	135
110	Using Selective Withdrawal to Coat Microparticles. Science, 2001, 292, 265-267.	12.6	142
111	Two Fluid Drop Snap-Off Problem: Experiments and Theory. Physical Review Letters, 1999, 83, 1147-1150.	7.8	148
112	The Role of Buckling Instabilities in the Global and Local Mechanical Response in Porous Collagen Scaffolds. Experimental Mechanics, 0, , .	2.0	2