Itai Cohen

List of Publications by Year
in descending order

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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	Using origami design principles to fold reprogrammable mechanical metamaterials. Science, 2014, 345, 647-650.	12.6	714
2	Imaging the Microscopic Structure of Shear Thinning and Thickening Colloidal Suspensions. Science, 2011, 333, 1276-1279.	12.6	414
3	Origami structures with a critical transition to bistability arising from hidden degrees of freedom. Nature Materials, 2015, 14, 389-393.	27.5	382
4	Hydrodynamic and Contact Contributions to Continuous Shear Thickening in Colloidal Suspensions. Physical Review Letters, 2015, 115, 228304.	7.8	267
5	Stretchable surfaces with programmable 3D texture morphing for synthetic camouflaging skins. Science, 2017, 358, 210-214.	12.6	210
6	Visualization of Dislocation Dynamics in Colloidal Crystals. Science, 2004, 305, 1944-1948.	12.6	196
7	Visualizing dislocation nucleation by indenting colloidal crystals. Nature, 2006, 440, 319-323.	27.8	193
8	Electronically integrated, mass-manufactured, microscopic robots. Nature, 2020, 584, 557-561.	27.8	192
9	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
10	Topological Mechanics of Origami and Kirigami. Physical Review Letters, 2016, 116, 135501.	7.8	156
11	Two Fluid Drop Snap-Off Problem: Experiments and Theory. Physical Review Letters, 1999, 83, 1147-1150.	7.8	148
12	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
13	Using Selective Withdrawal to Coat Microparticles. Science, 2001, 292, 265-267.	12.6	142
14	Fruit Flies Modulate Passive Wing Pitching to Generate In-Flight Turns. Physical Review Letters, 2010, 104, 148101.	7.8	137
15	Persistence of Memory in Drop Breakup: The Breakdown of Universality. Science, 2003, 302, 1185-1188.	12.6	135
16	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
17	Active and passive stabilization of body pitch in insect flight. Journal of the Royal Society Interface, 2013, 10, 20130237.	3.4	132
18	Mapping the depth dependence of shear properties in articular cartilage. Journal of Biomechanics, 2008, 41, 2430-2437.	2.1	131

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19	Collective Motion of Humans in Mosh and Circle Pits at Heavy Metal Concerts. Physical Review Letters, 2013, 110, 228701.	7.8	131
20	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
21	Elastoviscous Transitions of Articular Cartilage Reveal a Mechanism of Synergy between Lubricin and Hyaluronic Acid. PLoS ONE, 2015, 10, e0143415.	2.5	105
22	Direct Measurements of Island Growth and Step-Edge Barriers in Colloidal Epitaxy. Science, 2010, 327, 445-448.	12.6	99
23	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
24	Controlling roll perturbations in fruit flies. Journal of the Royal Society Interface, 2015, 12, 20150075.	3.4	89
25	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
26	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
27	Topological kinematics of origami metamaterials. Nature Physics, 2018, 14, 811-815.	16.7	74
28	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
29	High-resolution spatial mapping of shear properties in cartilage. Journal of Biomechanics, 2010, 43, 796-800.	2.1	68
30	Structure-Function Relations and Rigidity Percolation in the Shear Properties of Articular Cartilage. Biophysical Journal, 2014, 107, 1721-1730.	0.5	68
31	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
32	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
33	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
34	Micrometer-sized electrically programmable shape-memory actuators for low-power microrobotics. Science Robotics, 2021, 6, .	17.6	62
35	Slip, Yield, and Bands in Colloidal Crystals under Oscillatory Shear. Physical Review Letters, 2006, 97, 215502.	7.8	59
36	Airborne Acoustic Perception by a Jumping Spider. Current Biology, 2016, 26, 2913-2920.	3.9	55

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37	Paddling Mode of Forward Flight in Insects. Physical Review Letters, 2011, 106, 178103.	7.8	54
38	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
39	Synthesis and assembly of nonspherical hollow silica colloids under confinement. Journal of Materials Chemistry, 2008, 18, 4912.	6.7	52
40	Cilia metasurfaces for electronically programmable microfluidic manipulation. Nature, 2022, 605, 681-686.	27.8	50
41	Microscale frictional strains determine chondrocyte fate in loaded cartilage. Journal of Biomechanics, 2018, 74, 72-78.	2.1	47
42	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
43	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
44	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
45	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
46	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
47	A multi-axis confocal rheoscope for studying shear flow of structured fluids. Review of Scientific Instruments, 2014, 85, 033905.	1.3	36
48	Pitch perfect: how fruit flies control their body pitch angle. Journal of Experimental Biology, 2015, 218, 3508-19.	1.7	33
49	Capillary Origami with Atomically Thin Membranes. Nano Letters, 2019, 19, 6221-6226.	9.1	33
50	Anatomic variation of depthâ€dependent mechanical properties in neonatal bovine articular cartilage. Journal of Orthopaedic Research, 2013, 31, 686-691.	2.3	31
51	Measuring nonlinear stresses generated by defects in 3D colloidal crystals. Nature Materials, 2016, 15, 1172-1176.	27.5	31
52	Mitoprotective therapy prevents rapid, strainâ€dependent mitochondrial dysfunction after articular cartilage injury. Journal of Orthopaedic Research, 2020, 38, 1257-1267.	2.3	31
53	Partial universality: pinch-off dynamics in fluids with smectic liquid crystalline order. Soft Matter, 2010, 6, 892.	2.7	30
54	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

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55	Automated home cage training of mice in a hold-still center-out reach task. Journal of Neurophysiology, 2019, 121, 500-512.	1.8	28
56	Wall Slip of Bidisperse Linear Polymer Melts. Macromolecules, 2014, 47, 3154-3160.	4.8	27
57	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
58	Human talar and femoral cartilage have distinct mechanical properties near the articular surface. Journal of Biomechanics, 2016, 49, 3320-3327.	2.1	26
59	Measuring and Manipulating the Adhesion of Graphene. Nano Letters, 2018, 18, 449-454.	9.1	25
60	Kirigami Mechanics as Stress Relief by Elastic Charges. Physical Review Letters, 2019, 122, 048001.	7.8	24
61	Atomic Layer Deposition for Membranes, Metamaterials, and Mechanisms. Advanced Materials, 2019, 31, e1901944.	21.0	24
62	High Resolution Shear Profile Measurements in Entangled Polymers. Physical Review Letters, 2008, 101, 218301.	7.8	23
63	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
64	Fiber Embroidery of Self-Sensing Soft Actuators. Biomimetics, 2018, 3, 24.	3.3	22
65	Liquid interfaces in viscous straining flows: numerical studies of the selective withdrawal transition. Journal of Fluid Mechanics, 2008, 613, 171-203.	3.4	21
66	Micelles in a crystal. Nature Materials, 2011, 10, 810-811.	27.5	21
67	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
68	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
69	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
70	Density-functional fluctuation theory of crowds. Nature Communications, 2018, 9, 3538.	12.8	20
71	Constitutive Curve and Velocity Profile in Entangled Polymers during Start-Up of Steady Shear Flow. Macromolecules, 2010, 43, 4412-4417.	4.8	18
72	Stress decomposition in LAOS of dense colloidal suspensions. Journal of Rheology, 2020, 64, 343-351.	2.6	18

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73	Facilitated recruitment of mesenchymal stromal cells by bone marrow concentrate and platelet rich plasma. PLoS ONE, 2018, 13, e0194567.	2.5	18
74	Far-from-equilibrium sheared colloidal liquids: Disentangling relaxation, advection, and shear-induced diffusion. Physical Review E, 2013, 88, 062309.	2.1	17
75	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
76	Using Acoustic Perturbations to Dynamically Tune Shear Thickening in Colloidal Suspensions. Physical Review Letters, 2019, 123, 128001.	7.8	17
77	Enhancing Rotational Diffusion Using Oscillatory Shear. Physical Review Letters, 2013, 110, 228301.	7.8	16
78	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
79	Bidirectional Self-Folding with Atomic Layer Deposition Nanofilms for Microscale Origami. Nano Letters, 2020, 20, 4850-4856.	9.1	15
80	Multiscale Strain as a Predictor of Impact-Induced Fissuring in Articular Cartilage. Journal of Biomechanical Engineering, 2017, 139, .	1.3	14
81	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
82	Nonlinear mechanics of thin frames. Physical Review E, 2019, 99, 013002.	2.1	14
83	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
84	Cartilage articulation exacerbates chondrocyte damage and death after impact injury. Journal of Orthopaedic Research, 2021, 39, 2130-2140.	2.3	13
85	Spatial periodicity in growth plate shear mechanical properties is disrupted by vitamin D deficiency. Journal of Biomechanics, 2013, 46, 1597-1603.	2.1	12
86	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
87	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
88	Wall Slip of Tridisperse Polymer Melts and the Effect of Unentangled versus Weakly Entangled Chains. Macromolecules, 2014, 47, 8033-8040.	4.8	11
89	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
90	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

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91	Embedding orthogonal memories in a colloidal gel through oscillatory shear. Soft Matter, 2020, 16, 3746-3752.	2.7	10
92	Visualization, coarsening, and flow dynamics of focal conic domains in simulated smectic-Aliquid crystals. Physical Review E, 2015, 92, 062511.	2.1	9
93	Chondrocyte death and mitochondrial dysfunction are mediated by cartilage friction and shear strain. Osteoarthritis and Cartilage, 2016, 24, S46.	1.3	9
94	Tunable solidification of cornstarch under impact: How to make someone walking on cornstarch sink. Science Advances, 2020, 6, eaay6661.	10.3	9
95	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
96	Structural origins of cartilage shear mechanics. Science Advances, 2022, 8, eabk2805.	10.3	8
97	Controlling the alignment of rodlike colloidal particles with time-dependent shear flows. Journal of Rheology, 2017, 61, 979-996.	2.6	7
98	Multivalued Inverse Design: Multiple Surface Geometries from One Flat Sheet. Physical Review Letters, 2021, 127, 128001.	7.8	7
99	Rigidity and fracture of biopolymer double networks. Soft Matter, 2022, 18, 322-327.	2.7	7
100	Determining Quiescent Colloidal Suspension Viscosities Using the Green-Kubo Relation and Image-Based Stress Measurements. Physical Review Letters, 2017, 119, 138001.	7.8	6
101	Microscale strain mapping demonstrates the importance of interface slope in the mechanics of cartilage repair. Journal of Biomechanics, 2021, 114, 110159.	2.1	6
102	Relating microstructure and particle-level stress in colloidal crystals under increased confinement. Soft Matter, 2016, 12, 9058-9067.	2.7	4
103	The Role of Buckling Instabilities in the Global and Local Mechanical Response in Porous Collagen Scaffolds. Experimental Mechanics, 0, , .	2.0	2
104	Nonlinear Rheology of Entangled Polymer Solutions in Narrow Gaps Probed by Confocal Microscopy. AIP Conference Proceedings, 2008, , .	0.4	1
105	Fluid dynamics and control of insect flight. Nature Reviews Physics, 2019, 1, 638-639.	26.6	1
106	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
107	Flight of the fruit fly. Physical Review Fluids, 2019, 4, .	2.5	1
108	Three-dimensional microscale flow of polymer coatings on glass during indentation. MRS Communications, 2017, 7, 896-903.	1.8	0

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109	Micromechanical Systems: Atomic Layer Deposition for Membranes, Metamaterials, and Mechanisms (Adv. Mater. 29/2019). Advanced Materials, 2019, 31, 1970212.	21.0	0
110	Audio cues enhance mirroring of arm motion when visual cues are scarce. Journal of the Royal Society Interface, 2019, 16, 20180903.	3.4	0
111	The influence of chondrocyte source on the manufacturing reproducibility of human tissue engineered cartilage. Acta Biomaterialia, 2021, 131, 276-285.	8.3	0
112	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