Christian Franck

List of Publications by Year
in descending order

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57 papers	2,397 citations	257450 24 h-index	214800 47 g-index
61 all docs	61 docs citations	61 times ranked	2732 citing authors

#	Article	IF	Citations
1	Quantifying cellular traction forces in three dimensions. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 22108-22113.	7.1	251
2	Three-Dimensional Traction Force Microscopy: A New Tool for Quantifying Cell-Matrix Interactions. PLoS ONE, 2011, 6, e17833.	2.5	208
3	Three-dimensional Full-field Measurements of Large Deformations in Soft Materials Using Confocal Microscopy and Digital Volume Correlation. Experimental Mechanics, 2007, 47, 427-438.	2.0	203
4	A Fast Iterative Digital Volume Correlation Algorithm for Large Deformations. Experimental Mechanics, 2015, 55, 261-274.	2.0	180
5	Strain and rate-dependent neuronal injury in a 3D in vitro compression model of traumatic brain injury. Scientific Reports, 2016, 6, 30550.	3.3	132
6	Lithographic Patterning of Photoreactive Cell-Adhesive Proteins. Journal of the American Chemical Society, 2007, 129, 4874-4875.	13.7	108
7	The 2018 correlative microscopy techniques roadmap. Journal Physics D: Applied Physics, 2018, 51, 443001.	2.8	99
8	A Possible Role for Integrin Signaling in Diffuse Axonal Injury. PLoS ONE, 2011, 6, e22899.	2.5	97
9	High strain-rate soft material characterization via inertial cavitation. Journal of the Mechanics and Physics of Solids, 2018, 112, 291-317.	4.8	96
10	High Resolution, Large Deformation 3D Traction Force Microscopy. PLoS ONE, 2014, 9, e90976.	2.5	71
11	The pressure-induced deformation response of the human lamina cribrosa: Analysis of regional variations. Acta Biomaterialia, 2017, 53, 123-139.	8.3	68
12	A cytoskeletal clutch mediates cellular force transmission in a soft, three-dimensional extracellular matrix. Molecular Biology of the Cell, 2017, 28, 1959-1974.	2.1	63
13	Mean deformation metrics for quantifying 3D cellâ€“matrix interactions without requiring information about matrix material properties. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 2898-2903.	7.1	60
14	3D Viscoelastic traction force microscopy. Soft Matter, 2014, 10, 8095-8106.	2.7	43
15	Modeling tissue-selective cavitation damage. Physics in Medicine and Biology, 2019, 64, 225001.	3.0	41
16	Mechanically Tunable Thin Films of Photosensitive Artificial Proteins:â€‰ Preparation and Characterization by Nanoindentation. Macromolecules, 2008, 41, 1839-1845.	4.8	40
17	Three-dimensional traction forces of Schwann cells on compliant substrates. Journal of the Royal Society Interface, 2014, 11, 20140247.	3.4	39
18	Matrix Confinement Plays a Pivotal Role in Regulating Neutrophil-generated Tractions, Speed, and Integrin Utilization. Journal of Biological Chemistry, 2015, 290, 3752-3763.	3.4	36

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19	Rapid, topology-based particle tracking for high-resolution measurements of large complex 3D motion fields. Scientific Reports, 2018, 8, 5581.	3.3	36
20	A q-Factor-Based Digital Image Correlation Algorithm (qDIC) for Resolving Finite Deformations with Degenerate Speckle Patterns. Experimental Mechanics, 2018, 58, 815-830.	2.0	36
21	Harnessing cellular-derived forces in self-assembled microtissues to control the synthesis and alignment of ECM. Biomaterials, 2016, 77, 120-129.	11.4	34
22	Extracting non-linear viscoelastic material properties from violently-collapsing cavitation bubbles. Extreme Mechanics Letters, 2020, 39, 100839.	4.1	31
23	Augmented Lagrangian Digital Volume Correlation (ALDVC). Experimental Mechanics, 2020, 60, 1205-1223.	2.0	30
24	Comparative study of the dynamics of laser and acoustically generated bubbles in viscoelastic media. Physical Review E, 2019, 99, 043103.	2.1	29
25	Breast tumor stiffness instructs bone metastasis via maintenance of mechanical conditioning. Cell Reports, 2021, 35, 109293.	6.4	29
26	Mechanophenotyping of 3D multicellular clusters using displacement arrays of rendered tractions. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 5655-5663.	7.1	27
27	Experimental characterization and hyperelastic constitutive modeling of open-cell elastomeric foams. Journal of the Mechanics and Physics of Solids, 2019, 133, 103701.	4.8	26
28	A quantitative relationship between rotational head kinematics and brain tissue strain from a 2-D parametric finite element analysis. Brain Multiphysics, 2021, 2, 100024.	2.3	26
29	Characterization of domain walls in BaTiO3 using simultaneous atomic force and piezo response force microscopy. Applied Physics Letters, 2006, 88, 102907.	3.3	23
30	Epifluorescence-based three-dimensional traction force microscopy. Scientific Reports, 2020, 10, 16599.	3.3	21
31	Neural cell injury pathology due to high-rate mechanical loading. Brain Multiphysics, 2021, 2, 100034.	2.3	21
32	Microcavitation: the key to modeling blast traumatic brain injury?. Concussion, 2017, 2, CNC47.	1.0	17
33	Context-Dependent Role of Vinculin in Neutrophil Adhesion, Motility and Trafficking. Scientific Reports, 2020, 10, 2142.	3.3	17
34	Acoustic cavitation rheometry. Soft Matter, 2021, 17, 2931-2941.	2.7	17
35	Intuitive Interface for the Quantitative Evaluation of Speckle Patterns for Use in Digital Image and Volume Correlation Techniques. Journal of Applied Mechanics, Transactions ASME, 2015, 82, .	2.2	16
36	Mechanical characterization of agarose hydrogels and their inherent dynamic instabilities at ballistic to ultra-high strain-rates via inertial microcavitation. Extreme Mechanics Letters, 2022, 51, 101572.	4.1	14

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37	Differences in Morphology and Traction Generation of Cell Lines Representing Different Stages of Osteogenesis. Journal of Biomechanical Engineering, 2015, 137, 124503.	1.3	13
38	Modular approach for resolving and mapping complex neural and other cellular structures and their associated deformation fields in three dimensions. Nature Protocols, 2018, 13, 3042-3064.	12.0	10
39	Flagellar kinematics reveals the role of environment in shaping sperm motility. Journal of the Royal Society Interface, 2020, 17, 20200525.	3.4	10
40	Smart Digital Image Correlation Patterns via 3D Printing. Experimental Mechanics, 2021, 61, 1181-1191.	2.0	10
41	Characterizing viscoelastic materials via ensemble-based data assimilation of bubble collapse observations. Journal of the Mechanics and Physics of Solids, 2021, 152, 104455.	4.8	9
42	Large-deformation constitutive modeling of viscoelastic foams: Application to a closed-cell foam material. Journal of the Mechanics and Physics of Solids, 2022, 161, 104807.	4.8	8
43	Application of mild hypothermia successfully mitigates neural injury in a 3D in-vitro model of traumatic brain injury. PLoS ONE, 2020, 15, e0229520.	2.5	7
44	Predicting complex nonspherical instability shapes of inertial cavitation bubbles in viscoelastic soft matter. Physical Review E, 2021, 104, 045108.	2.1	7
45	In Situ Hydrodynamic Lateral Force Calibration of AFM Colloidal Probes. Langmuir, 2011, 27, 13390-13399.	3.5	6
46	SpatioTemporally Adaptive Quadtree Mesh (STAQ) Digital Image Correlation for Resolving Large Deformations Around Complex Geometries and Discontinuities. Experimental Mechanics, 2022, 62, 1191-1215.	2.0	6
47	Three-dimensional Traction Force Microscopy for Studying Cellular Interactions with Biomaterials. Procedia IUTAM, 2012, 4, 144-150.	1.2	5
48	Head Impact Modeling to Support a Rotational Combat Helmet Drop Test. Military Medicine, 2023, 188, e745-e752.	0.8	5
49	The Penetration Dynamics of a Violent Cavitation Bubble Through a Hydrogelâ€“Water Interface. Conference Proceedings of the Society for Experimental Mechanics, 2022, , 65-71.	0.5	5
50	Planar Gradient Diffusion System to Investigate Chemotaxis in a 3D Collagen Matrix. Journal of Visualized Experiments, 2015, , e52948.	0.3	3
51	Dynamic Rugae Strain Localizations and Instabilities in Soft Viscoelastic Materials During Inertial Microcavitation. Conference Proceedings of the Society for Experimental Mechanics, 2021, , 45-49.	0.5	3
52	Probing Inertial Cavitation Damage in Viscoelastic Hydrogels Using Dynamic Bubble Pairs. Conference Proceedings of the Society for Experimental Mechanics, 2022, , 47-52.	0.5	2
53	Generating Cell Type-Specific Protein Signatures from Non-symptomatic and Diseased Tissues. Annals of Biomedical Engineering, 2020, 48, 2218-2232.	2.5	1
54	Particle-Assisted Laser-Induced Inertial Cavitation for High Strain-Rate Soft Material Characterization. Experimental Mechanics, 2022, 62, 1037-1050.	2.0	1

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55	Quantifying Cell-Matrix Deformations in Three Dimensions. , 2011, , 211-232.		0
56	Traction Force Microscopy of Human Neutrophils During Critical Illness. FASEB Journal, 2021, 35, .	0.5	0
57	3D Neutrophil Tractions in Changing Microenvironments. Conference Proceedings of the Society for Experimental Mechanics, 2014, , 147-154.	0.5	0