Franck J Vernerey

List of Publications by Year
in descending order

90 papers	2,811 citations	186265 28 h-index	189892 50 g-index
91 all docs	91 docs citations	91 times ranked	2069 citing authors

#	Article	IF	Citations
1	A Transient Microsphere Model for Nonlinear Viscoelasticity in Dynamic Polymer Networks. Journal of Applied Mechanics, Transactions ASME, 2022, 89, .	2.2	9
2	Mechanics of transient semi-flexible networks: Soft-elasticity, stress relaxation and remodeling. Journal of the Mechanics and Physics of Solids, 2022, 160, 104776.	4.8	10
3	Computational exploration of treadmilling and protrusion growth observed in fire ant rafts. PLoS Computational Biology, 2022, 18, e1009869.	3.2	4
4	A mesoscale model for the micromechanical study of gels. Journal of the Mechanics and Physics of Solids, 2022, 167, 104982.	4.8	6
5	Transient mechanics of slide-ring networks: A continuum model. Journal of the Mechanics and Physics of Solids, 2021, 146, 104212.	4.8	12
6	Moving while youâ€™re stuck: a macroscopic demonstration of an active system inspired by binding-mediated transport in biology. Soft Matter, 2021, 17, 2957-2962.	2.7	3
7	A network model of transient polymers: exploring the micromechanics of nonlinear viscoelasticity. Soft Matter, 2021, 17, 8742-8757.	2.7	8
8	Enhanced Diffusion by Reversible Binding to Active Polymers. Macromolecules, 2021, 54, 1850-1858.	4.8	8
9	Helical growth during the phototropic response, avoidance response, and in stiff mutants of Phycomyces blakesleeanus. Scientific Reports, 2021, 11, 3653.	3.3	5
10	Treadmilling and dynamic protrusions in fire ant rafts. Journal of the Royal Society Interface, 2021, 18, 20210213.	3.4	12
11	Recellularization and Integration of Dense Extracellular Matrix by Percolation of Tissue Microparticles. Advanced Functional Materials, 2021, 31, 2103355.	14.9	26
12	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
13	Mechanics of 3D Cellâ€"Hydrogel Interactions: Experiments, Models, and Mechanisms. Chemical Reviews, 2021, 121, 11085-11148.	47.7	62
14	Force-dependent bond dissociation explains the rate-dependent fracture of vitrimers. Soft Matter, 2021, 17, 6669-6674.	2.7	10
15	Physically motivated models of polymer networks with dynamic cross-links: comparative study and future outlook. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2021, 477, .	2.1	6
16	Rate-Dependent Damage Mechanics of Polymer Networks with Reversible Bonds. Macromolecules, 2021, 54, 10801-10813.	4.8	20
17	Smart Polymers for Advanced Applications: A Mechanical Perspective Review. Frontiers in Materials, 2020, 7, .	2.4	40
18	Mechanics of transiently cross-linked nematic networks. Journal of the Mechanics and Physics of Solids, 2020, 141, 104021.	4.8	7

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19	Rate-dependent fracture of transient networks. Journal of the Mechanics and Physics of Solids, 2020, 143, 104028.	4.8	27
20	Spatiotemporal neocartilage growth in matrix-metalloproteinase-sensitive poly(ethylene glycol) hydrogels under dynamic compressive loading: an experimental and computational approach. Journal of Materials Chemistry B, 2020, 8, 2775-2791.	5.8	6
21	â€˜The role of percolation in hydrogel-based tissue engineering and bioprintingâ€™. Current Opinion in Biomedical Engineering, 2020, 15, 68-74.	3.4	15
22	Computational modeling of the large deformation and flow of viscoelastic polymers. Computational Mechanics, 2019, 63, 725-745.	4.0	13
23	Dynamic competition of inflation and delamination in the finite deformation of thin membranes. Soft Matter, 2019, 15, 6630-6641.	2.7	2
24	On the blistering of thermo-sensitive hydrogel: the volume phase transition and mechanical instability. Soft Matter, 2019, 15, 5842-5853.	2.7	7
25	The role of surface properties on the penetration resistance of scaled skins. Mechanics Research Communications, 2019, 98, 1-8.	1.8	3
26	Interplay of elastic instabilities and viscoelasticity in the finite deformation of thin membranes. Physical Review E, 2019, 99, 042502.	2.1	9
27	Separating the contributions of zona pellucida and cytoplasm in the viscoelastic response of human oocytes. Acta Biomaterialia, 2019, 85, 253-262.	8.3	23
28	Computational modeling of the large deformation and flow of viscoelastic polymers. Computational Mechanics, 2019, 63, 725-745.	4.0	1
29	Transient response of nonlinear polymer networks: A kinetic theory. Journal of the Mechanics and Physics of Solids, 2018, 115, 230-247.	4.8	58
30	Mechanical instability and percolation of deformable particles through porous networks. Physical Review E, 2018, 97, 042607.	2.1	4
31	Armours for soft bodies: how far can bioinspiration take us?. Bioinspiration and Biomimetics, 2018, 13, 041004.	2.9	27
32	Mechanics of responsive polymers via conformationally switchable molecules. Journal of the Mechanics and Physics of Solids, 2018, 113, 65-81.	4.8	10
33	Localized Enzymatic Degradation of Polymers: Physics and Scaling Laws. Physical Review Applied, 2018, 9, .	3.8	6
34	Programmable Hydrogels for Cell Encapsulation and Neoâ€Tissue Growth to Enable Personalized Tissue Engineering. Advanced Healthcare Materials, 2018, 7, 1700605.	7.6	63
35	How do fire ants control the rheology of their aggregations? A statistical mechanics approach. Journal of the Royal Society Interface, 2018, 15, 20180642.	3.4	29
36	A Statistical Model of Expansive Growth in Plant and Fungal Cells: The Case of Phycomyces. Biophysical Journal, 2018, 115, 2428-2442.	0.5	19

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37	The Chain Distribution Tensor: Linking Nonlinear Rheology and Chain Anisotropy in Transient Polymers. Polymers, 2018, 10, 848.	4.5	20
38	A physics-based micromechanical model for electroactive viscoelastic polymers. Journal of Intelligent Material Systems and Structures, 2018, 29, 2902-2918.	2.5	5
39	Statistical Damage Mechanics of Polymer Networks. Macromolecules, 2018, 51, 6609-6622.	4.8	74
40	Structural Modeling of Mechanosensitivity in Non-Muscle Cells: Multiscale Approach to Understand Cell Sensing. ACS Biomaterials Science and Engineering, 2017, 3, 2934-2942.	5.2	8
41	The porous media's effect on the permeation of elastic (soft) particles. Journal of Membrane Science, 2017, 535, 10-19.	8.2	21
42	Rate-dependent failure mechanism of elastomers. International Journal of Mechanical Sciences, 2017, 130, 448-457.	6.7	9
43	Heterogeneity is key to hydrogel-based cartilage tissue regeneration. Soft Matter, 2017, 13, 4841-4855.	2.7	47
44	A statistically-based continuum theory for polymers with transient networks. Journal of the Mechanics and Physics of Solids, 2017, 107, 1-20.	4.8	110
45	<sup />Understanding the Spatiotemporal Degradation Behavior of Aggrecanase-Sensitive Poly(ethylene glycol) Hydrogels for Use in Cartilage Tissue Engineering. Tissue Engineering - Part A, 2017, 23, 795-810.	3.1	19
46	Local Heterogeneities Improve Matrix Connectivity in Degradable and Photoclickable Poly(ethylene) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 5 2017, 3, 2480-2492.	5.2	17
47	Remotely Triggered Locomotion of Hydrogel Mag-bots in Confined Spaces. Scientific Reports, 2017, 7, 16178.	3.3	38
48	Phoretic motion of soft vesicles and droplets: an XFEM/particle-based numerical solution. Computational Mechanics, 2017, 60, 143-161.	4.0	8
49	A simple statistical approach to model the time-dependent response of polymers with reversible cross-links. Composites Part B: Engineering, 2017, 115, 257-265.	12.0	17
50	The mechanics of hydrogel crawlers in confined environment. Journal of the Royal Society Interface, 2017, 14, 20170242.	3.4	20
51	Mechanics and stability of vesicles and droplets in confined spaces. Physical Review E, 2016, 94, 062613.	2.1	24
52	Tuning tissue growth with scaffold degradation in enzyme-sensitive hydrogels: a mathematical model. Soft Matter, 2016, 12, 7505-7520.	2.7	63
53	Role of catch bonds in actomyosin mechanics and cell mechanosensitivity. Physical Review E, 2016, 94, 012403.	2.1	26
54	A particleâ€based moving interface method (PMIM) for modeling the large deformation of boundaries in soft matter systems. International Journal for Numerical Methods in Engineering, 2016, 107, 923-946.	2.8	8

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55	Tuning Reaction and Diffusion Mediated Degradation of Enzymeâ€Sensitive Hydrogels. Advanced Healthcare Materials, 2016, 5, 432-438.	7.6	38
56	A mixture approach to investigate interstitial growth in engineering scaffolds. Biomechanics and Modeling in Mechanobiology, 2016, 15, 259-278.	2.8	21
57	Determination of the polymer-solvent interaction parameter for PEG hydrogels in water: Application of a self learning algorithm. Polymer, 2015, 66, 135-147.	3.8	30
58	Bioinspired Fabrication and Characterization of a Synthetic Fish Skin for the Protection of Soft Materials. ACS Applied Materials & Interfaces, 2015, 7, 5972-5983.	8.0	56
59	A coupled Eulerianâ€"Lagrangian extended finite element formulation for simulating large deformations in hyperelastic media with moving free boundaries. Computer Methods in Applied Mechanics and Engineering, 2015, 283, 280-302.	6.6	18
60	Development of Processing Methods to Improve Strength of Concrete with 100% Recycled Coarse Aggregate. Journal of Materials in Civil Engineering, 2015, 27, .	2.9	78
61	An Xâ€FEMâ€based numericalâ€"asymptotic expansion for simulating a Stokes flow near a sharp corner. International Journal for Numerical Methods in Engineering, 2015, 102, 79-98.	2.8	9
62	A mathematical model of the coupled mechanisms of cell adhesion, contraction and spreading. Journal of Mathematical Biology, 2014, 68, 989-1022.	1.9	43
63	Mathematical model of the role of degradation on matrix development in hydrogel scaffold. Biomechanics and Modeling in Mechanobiology, 2014, 13, 167-183.	2.8	36
64	Skin and scales of teleost fish: Simple structure but high performance and multiple functions. Journal of the Mechanics and Physics of Solids, 2014, 68, 66-76.	4.8	87
65	Adaptive concurrent multiscale model for fracture and crack propagation in heterogeneous media. Computer Methods in Applied Mechanics and Engineering, 2014, 276, 566-588.	6.6	20
66	A Microstructure-Based Continuum Model for Multiphase Solids. Mechanics of Advanced Materials and Structures, 2014, 21, 441-456.	2.6	2
67	Mechanics of fish skin: A computational approach for bio-inspired flexible composites. International Journal of Solids and Structures, 2014, 51, 274-283.	2.7	49
68	On the role of hydrogel structure and degradation in controlling the transport of cell-secreted matrix molecules for engineered cartilage. Journal of the Mechanical Behavior of Biomedical Materials, 2013, 19, 61-74.	3.1	50
69	Puncture resistance of the scaled skin from striped bass: Collective mechanisms and inspiration for new flexible armor designs. Journal of the Mechanical Behavior of Biomedical Materials, 2013, 24, 30-40.	3.1	105
70	Structure and Mechanical Performance of Teleost Fish Scales. Materials Research Society Symposia Proceedings, 2012, 1420, 30.	0.1	0
71	A thermodynamical model for stress-fiber organization in contractile cells. Applied Physics Letters, 2012, 100, 13702-137024.	3.3	23
72	Triphasic mixture model of cell-mediated enzymatic degradation of hydrogels. Computer Methods in Biomechanics and Biomedical Engineering, 2012, 15, 1197-1210.	1.6	26

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73	Dynamics of Stress Fibers Turnover in Contractile Cells. Journal of Engineering Mechanics - ASCE, 2012, 138, 1282-1287.	2.9	5
74	An XFEMâ€based numerical strategy to model mechanical interactions between biological cells and a deformable substrate. International Journal for Numerical Methods in Engineering, 2012, 92, 238-267.	2.8	24
75	Structure and Mechanical Performance of a â€œModernâ€• Fish Scale. Advanced Engineering Materials, 2012, 14, B185.	3.5	166
76	Front Cover Advanced Materials 4/2012. Advanced Engineering Materials, 2012, 14, n/a-n/a.	3.5	1
77	The Effective Permeability of Cracks and Interfaces in Porous Media. Transport in Porous Media, 2012, 93, 815-829.	2.6	17
78	An Eulerian/XFEM formulation for the large deformation of cortical cell membrane. Computer Methods in Biomechanics and Biomedical Engineering, 2011, 14, 433-445.	1.6	25
79	Bridging the Scales to Explore Cellular Adaptation and Remodeling. BioNanoScience, 2011, 1, 110-115.	3.5	7
80	A constrained mixture approach to mechano-sensing and force generation in contractile cells. Journal of the Mechanical Behavior of Biomedical Materials, 2011, 4, 1683-1699.	3.1	78
81	A theoretical treatment on the mechanics of interfaces in deformable porous media. International Journal of Solids and Structures, 2011, 48, 3129-3141.	2.7	15
82	Analysis of Soft Fibers with Kinematic Constraints and Cross-Links by Finite Deformation Beam Theory. Journal of Engineering Mechanics - ASCE, 2011, 137, 527-536.	2.9	4
83	An extended finite element/level set method to study surface effects on the mechanical behavior and properties of nanomaterials. International Journal for Numerical Methods in Engineering, 2010, 84, 1466-1489.	2.8	59
84	On the mechanics of fishscale structures. International Journal of Solids and Structures, 2010, 47, 2268-2275.	2.7	119
85	Nonlinear, Large Deformation Finite-Element Beam/Column Formulation for the Study of the Human Spine: Investigation of the Role of Muscle on Spine Stability. Journal of Engineering Mechanics - ASCE, 2010, 136, 1319-1328.	2.9	3
86	Multi-length scale micromorphic process zone model. Computational Mechanics, 2009, 44, 433-445.	4.0	23
87	A micromorphic model for the multiple scale failure of heterogeneous materials. Journal of the Mechanics and Physics of Solids, 2008, 56, 1320-1347.	4.8	94
88	Multi-scale micromorphic theory for hierarchical materials. Journal of the Mechanics and Physics of Solids, 2007, 55, 2603-2651.	4.8	161
89	Multiresolution analysis for material design. Computer Methods in Applied Mechanics and Engineering, 2006, 195, 5053-5076.	6.6	85
90	Multi-scale constitutive model and computational framework for the design of ultra-high strength, high toughness steels. Computer Methods in Applied Mechanics and Engineering, 2004, 193, 1865-1908.	6.6	112