

Franck J Vernerey

List of Publications by Year in descending order

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90
papers

2,811
citations

185998

28
h-index

189595

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. <i>Journal of Applied Mechanics, Transactions ASME</i> , 2022, 89, .	1.1	9
2	Mechanics of transient semi-flexible networks: Soft-elasticity, stress relaxation and remodeling. <i>Journal of the Mechanics and Physics of Solids</i> , 2022, 160, 104776.	2.3	10
3	Computational exploration of treadmilling and protrusion growth observed in fire ant rafts. <i>PLoS Computational Biology</i> , 2022, 18, e1009869.	1.5	4
4	A mesoscale model for the micromechanical study of gels. <i>Journal of the Mechanics and Physics of Solids</i> , 2022, 167, 104982.	2.3	6
5	Transient mechanics of slide-ring networks: A continuum model. <i>Journal of the Mechanics and Physics of Solids</i> , 2021, 146, 104212.	2.3	12
6	Moving while you're stuck: a macroscopic demonstration of an active system inspired by binding-mediated transport in biology. <i>Soft Matter</i> , 2021, 17, 2957-2962.	1.2	3
7	A network model of transient polymers: exploring the micromechanics of nonlinear viscoelasticity. <i>Soft Matter</i> , 2021, 17, 8742-8757.	1.2	8
8	Enhanced Diffusion by Reversible Binding to Active Polymers. <i>Macromolecules</i> , 2021, 54, 1850-1858.	2.2	8
9	Helical growth during the phototropic response, avoidance response, and in stiff mutants of <i>Phycomyces blakesleeanus</i> . <i>Scientific Reports</i> , 2021, 11, 3653.	1.6	5
10	Treadmilling and dynamic protrusions in fire ant rafts. <i>Journal of the Royal Society Interface</i> , 2021, 18, 20210213.	1.5	12
11	Recellularization and Integration of Dense Extracellular Matrix by Percolation of Tissue Microparticles. <i>Advanced Functional Materials</i> , 2021, 31, 2103355.	7.8	26
12	Nonsteady fracture of transient networks: The case of vitrimer. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2021, 118, .	3.3	14
13	Mechanics of 3D Cell-Hydrogel Interactions: Experiments, Models, and Mechanisms. <i>Chemical Reviews</i> , 2021, 121, 11085-11148.	23.0	62
14	Force-dependent bond dissociation explains the rate-dependent fracture of vitrimers. <i>Soft Matter</i> , 2021, 17, 6669-6674.	1.2	10
15	Physically motivated models of polymer networks with dynamic cross-links: comparative study and future outlook. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 2021, 477, .	1.0	6
16	Rate-Dependent Damage Mechanics of Polymer Networks with Reversible Bonds. <i>Macromolecules</i> , 2021, 54, 10801-10813.	2.2	20
17	Smart Polymers for Advanced Applications: A Mechanical Perspective Review. <i>Frontiers in Materials</i> , 2020, 7, .	1.2	40
18	Mechanics of transiently cross-linked nematic networks. <i>Journal of the Mechanics and Physics of Solids</i> , 2020, 141, 104021.	2.3	7

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19	Rate-dependent fracture of transient networks. <i>Journal of the Mechanics and Physics of Solids</i> , 2020, 143, 104028.	2.3	27
20	Spatiotemporal neocartilage growth in matrix-metalloproteinase-sensitive poly(ethylene glycol) hydrogels under dynamic compressive loading: an experimental and computational approach. <i>Journal of Materials Chemistry B</i> , 2020, 8, 2775-2791.	2.9	6
21	“The role of percolation in hydrogel-based tissue engineering and bioprinting”™. <i>Current Opinion in Biomedical Engineering</i> , 2020, 15, 68-74.	1.8	15
22	Computational modeling of the large deformation and flow of viscoelastic polymers. <i>Computational Mechanics</i> , 2019, 63, 725-745.	2.2	13
23	Dynamic competition of inflation and delamination in the finite deformation of thin membranes. <i>Soft Matter</i> , 2019, 15, 6630-6641.	1.2	2
24	On the blistering of thermo-sensitive hydrogel: the volume phase transition and mechanical instability. <i>Soft Matter</i> , 2019, 15, 5842-5853.	1.2	7
25	The role of surface properties on the penetration resistance of scaled skins. <i>Mechanics Research Communications</i> , 2019, 98, 1-8.	1.0	3
26	Interplay of elastic instabilities and viscoelasticity in the finite deformation of thin membranes. <i>Physical Review E</i> , 2019, 99, 042502.	0.8	9
27	Separating the contributions of zona pellucida and cytoplasm in the viscoelastic response of human oocytes. <i>Acta Biomaterialia</i> , 2019, 85, 253-262.	4.1	23
28	Computational modeling of the large deformation and flow of viscoelastic polymers. <i>Computational Mechanics</i> , 2019, 63, 725-745.	2.2	1
29	Transient response of nonlinear polymer networks: A kinetic theory. <i>Journal of the Mechanics and Physics of Solids</i> , 2018, 115, 230-247.	2.3	58
30	Mechanical instability and percolation of deformable particles through porous networks. <i>Physical Review E</i> , 2018, 97, 042607.	0.8	4
31	Armours for soft bodies: how far can bioinspiration take us?. <i>Bioinspiration and Biomimetics</i> , 2018, 13, 041004.	1.5	27
32	Mechanics of responsive polymers via conformationally switchable molecules. <i>Journal of the Mechanics and Physics of Solids</i> , 2018, 113, 65-81.	2.3	10
33	Localized Enzymatic Degradation of Polymers: Physics and Scaling Laws. <i>Physical Review Applied</i> , 2018, 9, .	1.5	6
34	Programmable Hydrogels for Cell Encapsulation and Neo-tissue Growth to Enable Personalized Tissue Engineering. <i>Advanced Healthcare Materials</i> , 2018, 7, 1700605.	3.9	63
35	How do fire ants control the rheology of their aggregations? A statistical mechanics approach. <i>Journal of the Royal Society Interface</i> , 2018, 15, 20180642.	1.5	29
36	A Statistical Model of Expansive Growth in Plant and Fungal Cells: The Case of <i>Phycomyces</i> . <i>Biophysical Journal</i> , 2018, 115, 2428-2442.	0.2	19

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37	The Chain Distribution Tensor: Linking Nonlinear Rheology and Chain Anisotropy in Transient Polymers. <i>Polymers</i> , 2018, 10, 848.	2.0	20
38	A physics-based micromechanical model for electroactive viscoelastic polymers. <i>Journal of Intelligent Material Systems and Structures</i> , 2018, 29, 2902-2918.	1.4	5
39	Statistical Damage Mechanics of Polymer Networks. <i>Macromolecules</i> , 2018, 51, 6609-6622.	2.2	74
40	Structural Modeling of Mechanosensitivity in Non-Muscle Cells: Multiscale Approach to Understand Cell Sensing. <i>ACS Biomaterials Science and Engineering</i> , 2017, 3, 2934-2942.	2.6	8
41	The porous media's effect on the permeation of elastic (soft) particles. <i>Journal of Membrane Science</i> , 2017, 535, 10-19.	4.1	21
42	Rate-dependent failure mechanism of elastomers. <i>International Journal of Mechanical Sciences</i> , 2017, 130, 448-457.	3.6	9
43	Heterogeneity is key to hydrogel-based cartilage tissue regeneration. <i>Soft Matter</i> , 2017, 13, 4841-4855.	1.2	47
44	A statistically-based continuum theory for polymers with transient networks. <i>Journal of the Mechanics and Physics of Solids</i> , 2017, 107, 1-20.	2.3	110
45	<sup />Understanding the Spatiotemporal Degradation Behavior of Aggrecanase-Sensitive Poly(ethylene glycol) Hydrogels for Use in Cartilage Tissue Engineering. <i>Tissue Engineering - Part A</i> , 2017, 23, 795-810.	1.6	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.	2.6	17
47	Remotely Triggered Locomotion of Hydrogel Mag-bots in Confined Spaces. <i>Scientific Reports</i> , 2017, 7, 16178.	1.6	38
48	Phoretic motion of soft vesicles and droplets: an XFEM/particle-based numerical solution. <i>Computational Mechanics</i> , 2017, 60, 143-161.	2.2	8
49	A simple statistical approach to model the time-dependent response of polymers with reversible cross-links. <i>Composites Part B: Engineering</i> , 2017, 115, 257-265.	5.9	17
50	The mechanics of hydrogel crawlers in confined environment. <i>Journal of the Royal Society Interface</i> , 2017, 14, 20170242.	1.5	20
51	Mechanics and stability of vesicles and droplets in confined spaces. <i>Physical Review E</i> , 2016, 94, 062613.	0.8	24
52	Tuning tissue growth with scaffold degradation in enzyme-sensitive hydrogels: a mathematical model. <i>Soft Matter</i> , 2016, 12, 7505-7520.	1.2	63
53	Role of catch bonds in actomyosin mechanics and cell mechanosensitivity. <i>Physical Review E</i> , 2016, 94, 012403.	0.8	26
54	A particle-based moving interface method (PMIM) for modeling the large deformation of boundaries in soft matter systems. <i>International Journal for Numerical Methods in Engineering</i> , 2016, 107, 923-946.	1.5	8

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55	Tuning Reaction and Diffusion Mediated Degradation of Enzyme-Sensitive Hydrogels. <i>Advanced Healthcare Materials</i> , 2016, 5, 432-438.	3.9	38
56	A mixture approach to investigate interstitial growth in engineering scaffolds. <i>Biomechanics and Modeling in Mechanobiology</i> , 2016, 15, 259-278.	1.4	21
57	Determination of the polymer-solvent interaction parameter for PEG hydrogels in water: Application of a self learning algorithm. <i>Polymer</i> , 2015, 66, 135-147.	1.8	30
58	Bioinspired Fabrication and Characterization of a Synthetic Fish Skin for the Protection of Soft Materials. <i>ACS Applied Materials & Interfaces</i> , 2015, 7, 5972-5983.	4.0	56
59	A coupled Eulerian-Lagrangian extended finite element formulation for simulating large deformations in hyperelastic media with moving free boundaries. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2015, 283, 280-302.	3.4	18
60	Development of Processing Methods to Improve Strength of Concrete with 100% Recycled Coarse Aggregate. <i>Journal of Materials in Civil Engineering</i> , 2015, 27, .	1.3	78
61	An FEM-based numerical asymptotic expansion for simulating a Stokes flow near a sharp corner. <i>International Journal for Numerical Methods in Engineering</i> , 2015, 102, 79-98.	1.5	9
62	A mathematical model of the coupled mechanisms of cell adhesion, contraction and spreading. <i>Journal of Mathematical Biology</i> , 2014, 68, 989-1022.	0.8	43
63	Mathematical model of the role of degradation on matrix development in hydrogel scaffold. <i>Biomechanics and Modeling in Mechanobiology</i> , 2014, 13, 167-183.	1.4	36
64	Skin and scales of teleost fish: Simple structure but high performance and multiple functions. <i>Journal of the Mechanics and Physics of Solids</i> , 2014, 68, 66-76.	2.3	87
65	Adaptive concurrent multiscale model for fracture and crack propagation in heterogeneous media. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2014, 276, 566-588.	3.4	20
66	A Microstructure-Based Continuum Model for Multiphase Solids. <i>Mechanics of Advanced Materials and Structures</i> , 2014, 21, 441-456.	1.5	2
67	Mechanics of fish skin: A computational approach for bio-inspired flexible composites. <i>International Journal of Solids and Structures</i> , 2014, 51, 274-283.	1.3	49
68	On the role of hydrogel structure and degradation in controlling the transport of cell-secreted matrix molecules for engineered cartilage. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2013, 19, 61-74.	1.5	50
69	Puncture resistance of the scaled skin from striped bass: Collective mechanisms and inspiration for new flexible armor designs. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2013, 24, 30-40.	1.5	105
70	Structure and Mechanical Performance of Teleost Fish Scales. <i>Materials Research Society Symposia Proceedings</i> , 2012, 1420, 30.	0.1	0
71	A thermodynamical model for stress-fiber organization in contractile cells. <i>Applied Physics Letters</i> , 2012, 100, 13702-137024.	1.5	23
72	Triphasic mixture model of cell-mediated enzymatic degradation of hydrogels. <i>Computer Methods in Biomechanics and Biomedical Engineering</i> , 2012, 15, 1197-1210.	0.9	26

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73	Dynamics of Stress Fibers Turnover in Contractile Cells. Journal of Engineering Mechanics - ASCE, 2012, 138, 1282-1287.	1.6	5
74	An XFEM-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.	1.5	24
75	Structure and Mechanical Performance of a "Modern" Fish Scale. Advanced Engineering Materials, 2012, 14, B185.	1.6	166
76	Front Cover Advanced Materials 4/2012. Advanced Engineering Materials, 2012, 14, n/a-n/a.	1.6	1
77	The Effective Permeability of Cracks and Interfaces in Porous Media. Transport in Porous Media, 2012, 93, 815-829.	1.2	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.	0.9	25
79	Bridging the Scales to Explore Cellular Adaptation and Remodeling. BioNanoScience, 2011, 1, 110-115.	1.5	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.	1.5	78
81	A theoretical treatment on the mechanics of interfaces in deformable porous media. International Journal of Solids and Structures, 2011, 48, 3129-3141.	1.3	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.	1.6	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.	1.5	59
84	On the mechanics of fishscale structures. International Journal of Solids and Structures, 2010, 47, 2268-2275.	1.3	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.	1.6	3
86	Multi-length scale micromorphic process zone model. Computational Mechanics, 2009, 44, 433-445.	2.2	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.	2.3	94
88	Multi-scale micromorphic theory for hierarchical materials. Journal of the Mechanics and Physics of Solids, 2007, 55, 2603-2651.	2.3	161
89	Multiresolution analysis for material design. Computer Methods in Applied Mechanics and Engineering, 2006, 195, 5053-5076.	3.4	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.	3.4	112