Markus J Buehler

List of Publications by Year
in descending order

550 papers	37,253 citations	1893 102 h-index	4432 172 g-index
564 all docs	564 docs citations	564 times ranked	30820 citing authors

#	Article	IF	Citations
1	Nanoconfinement controls stiffness, strength and mechanical toughness of Î²-sheet crystals in silk. Nature Materials, 2010, 9, 359-367.	27.5	1,131
2	Current issues in research on structureâ€“property relationships in polymer nanocomposites. Polymer, 2010, 51, 3321-3343.	3.8	773
3	Multifunctionality and control of the crumpling and unfolding of large-area graphene. Nature Materials, 2013, 12, 321-325.	27.5	735
4	A realistic molecular model of cement hydrates. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 16102-16107.	7.1	734
5	Nanomechanics of functional and pathological amyloid materials. Nature Nanotechnology, 2011, 6, 469-479.	31.5	703
6	Merger of structure and material in nacre and bone â€“ Perspectives on de novo biomimetic materials. Progress in Materials Science, 2009, 54, 1059-1100.	32.8	659
7	Nature designs tough collagen: Explaining the nanostructure of collagen fibrils. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 12285-12290.	7.1	640
8	On the Mechanistic Origins of Toughness in Bone. Annual Review of Materials Research, 2010, 40, 25-53.	9.3	560
9	Hierarchical Structure and Nanomechanics of Collagen Microfibrils from the Atomistic Scale Up. Nano Letters, 2011, 11, 757-766.	9.1	550
10	Polydopamine and Eumelanin: From Structureâ€“Property Relationships to a Unified Tailoring Strategy. Accounts of Chemical Research, 2014, 47, 3541-3550.	15.6	514
11	Structure and mechanics of interfaces in biological materials. Nature Reviews Materials, 2016, 1, .	48.7	486
12	Nanofibrils in nature and materials engineering. Nature Reviews Materials, 2018, 3, .	48.7	455
13	Tuning the Mechanical Properties of Graphene Oxide Paper and Its Associated Polymer Nanocomposites by Controlling Cooperative Intersheet Hydrogen Bonding. ACS Nano, 2012, 6, 2008-2019.	14.6	409
14	Mechanical properties of graphyne. Carbon, 2011, 49, 4111-4121.	10.3	385
15	Nonlinear material behaviour of spider silk yields robust webs. Nature, 2012, 482, 72-76.	27.8	383
16	Molecular mechanics of mineralized collagen fibrils in bone. Nature Communications, 2013, 4, 1724.	12.8	381
17	Molecular and Nanostructural Mechanisms of Deformation, Strength and Toughness of Spider Silk Fibrils. Nano Letters, 2010, 10, 2626-2634.	9.1	362
18	Combinatorial molecular optimization of cement hydrates. Nature Communications, 2014, 5, 4960.	12.8	358

#	Article	IF	Citations
19	Bioinspired hierarchical composite design using machine learning: simulation, additive manufacturing, and experiment. Materials Horizons, 2018, 5, 939-945.	12.2	354
20	The mechanics and design of a lightweight three-dimensional graphene assembly. Science Advances, 2017, 3, e1601536.	10.3	331
21	Nanomechanics of collagen fibrils under varying cross-link densities: Atomistic and continuum studies. Journal of the Mechanical Behavior of Biomedical Materials, 2008, 1, 59-67.	3.1	317
22	Biopolymer nanofibrils: Structure, modeling, preparation, and applications. Progress in Polymer Science, 2018, 85, 1-56.	24.7	312
23	Tough Composites Inspired by Mineralized Natural Materials: Computation, 3D printing, and Testing. Advanced Functional Materials, 2013, 23, 4629-4638.	14.9	310
24	Deformation and failure of protein materials in physiologically extreme conditions and disease. Nature Materials, 2009, 8, 175-188.	27.5	307
25	De novo composite design based on machine learning algorithm. Extreme Mechanics Letters, 2018, 18, 19-28.	4.1	306
26	Influence of cross-link structure, density and mechanical properties in the mesoscale deformation mechanisms of collagen fibrils. Journal of the Mechanical Behavior of Biomedical Materials, 2015, 52, 1-13.	3.1	300
27	Hyperelasticity governs dynamic fracture at a critical length scale. Nature, 2003, 426, 141-146.	27.8	292
28	Plasticity and toughness in bone. Physics Today, 2009, 62, 41-47.	0.3	281
29	Hierarchically Enhanced Impact Resistance of Bioinspired Composites. Advanced Materials, 2017, 29, 1700060.	21.0	259
30	Atomistic and continuum modeling of mechanical properties of collagen: Elasticity, fracture, and self-assembly. Journal of Materials Research, 2006, 21, 1947-1961.	2.6	256
31	Dynamical fracture instabilities due to local hyperelasticity at crack tips. Nature, 2006, 439, 307-310.	27.8	251
32	Molecular nanomechanics of nascent bone: fibrillar toughening by mineralization. Nanotechnology, 2007, 18, 295102.	2.6	243
33	Artificial intelligence and machine learning in design of mechanical materials. Materials Horizons, 2021, 8, 1153-1172.	12.2	237
34	Nanostructure and molecular mechanics of spider dragline silk protein assemblies. Journal of the Royal Society Interface, 2010, 7, 1709-1721.	3.4	234
35	Geometry Controls Conformation of Graphene Sheets: Membranes, Ribbons, and Scrolls. ACS Nano, 2010, 4, 3869-3876.	14.6	227
36	Nanoconfinement of Spider Silk Fibrils Begets Superior Strength, Extensibility, and Toughness. Nano Letters, 2011, 11, 5038-5046.	9.1	222

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37	Design and function of biomimetic multilayer water purification membranes. Science Advances, 2017, 3, e1601939.	10.3	221
38	Multiparadigm Modeling of Dynamical Crack Propagation in Silicon Using a Reactive Force Field. Physical Review Letters, 2006, 96, 095505.	7.8	214
39	Geometric Confinement Governs the Rupture Strength of H-bond Assemblies at a Critical Length Scale. Nano Letters, 2008, 8, 743-748.	9.1	213
40	Fracture mechanics of protein materials. Materials Today, 2007, 10, 46-58.	14.2	209
41	Polymorphic regenerated silk fibers assembled through bioinspired spinning. Nature Communications, 2017, 8, 1387.	12.8	208
42	Nanoengineering Heat Transfer Performance at Carbon Nanotube Interfaces. ACS Nano, 2009, 3, 2767-2775.	14.6	207
43	Interface structure and mechanics between graphene and metal substrates: a first-principles study. Journal of Physics Condensed Matter, 2010, 22, 485301.	1.8	206
44	Structureâ€"functionâ€"propertyâ€"design interplay in biopolymers: Spider silk. Acta Biomaterialia, 2014, 10, 1612-1626.	8.3	206
45	Selective hydrogen purification through graphdiyne under ambient temperature and pressure. Nanoscale, 2012, 4, 4587.	5.6	194
46	Hierarchies, multiple energy barriers, and robustness govern the fracture mechanics of Î±-helical and Î²-sheet protein domains. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 16410-16415.	7.1	193
47	Firstâ€Principles Study of Elastic Constants and Interlayer Interactions of Complex Hydrated Oxides: Case Study of Tobermorite and Jennite. Journal of the American Ceramic Society, 2009, 92, 2323-2330.	3.8	190
48	Hydration of Calcium Oxide Surface Predicted by Reactive Force Field Molecular Dynamics. Langmuir, 2012, 28, 4187-4197.	3.5	190
49	Entropic Elasticity Controls Nanomechanics of Single Tropocollagen Molecules. Biophysical Journal, 2007, 93, 37-43.	0.5	189
50	Paraffin-enabled graphene transfer. Nature Communications, 2019, 10, 867.	12.8	185
51	Molecular level detection and localization of mechanical damage in collagen enabled by collagen hybridizing peptides. Nature Communications, 2017, 8, 14913.	12.8	183
52	Meso-origami: Folding multilayer graphene sheets. Applied Physics Letters, 2009, 95, .	3.3	181
53	Mesoscale modeling of mechanics of carbon nanotubes: Self-assembly, self-folding, and fracture. Journal of Materials Research, 2006, 21, 2855-2869.	2.6	179
54	Theoretical and computational hierarchical nanomechanics of protein materials: Deformation and fracture. Progress in Materials Science, 2008, 53, 1101-1241.	32.8	168

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55	Extended graphynes: simple scaling laws for stiffness, strength and fracture. Nanoscale, 2012, 4, 7797.	5.6	167
56	Osmotic pressure induced tensile forces in tendon collagen. Nature Communications, 2015, 6, 5942.	12.8	167
57	Hierarchical Structure Controls Nanomechanical Properties of Vimentin Intermediate Filaments. PLoS ONE, 2009, 4, e7294.	2.5	163
58	Tearing Graphene Sheets From Adhesive Substrates Produces Tapered Nanoribbons. Small, 2010, 6, 1108-1116.	10.0	163
59	Structural hierarchies define toughness and defect-tolerance despite simple and mechanically inferior brittle building blocks. Scientific Reports, 2011, 1, 35.	3.3	163
60	Polydopamine and eumelanin molecular structures investigated with ab initio calculations. Chemical Science, 2017, 8, 1631-1641.	7.4	162
61	Protective role of Arapaima gigas fish scales: Structure and mechanical behavior. Acta Biomaterialia, 2014, 10, 3599-3614.	8.3	161
62	Deformation rate controls elasticity and unfolding pathway of single tropocollagen molecules. Journal of the Mechanical Behavior of Biomedical Materials, 2009, 2, 130-137.	3.1	155
63	Integration of Stiff Graphene and Tough Silk for the Design and Fabrication of Versatile Electronic Materials. Advanced Functional Materials, 2018, 28, 1705291.	14.9	148
64	Transition-metal coordinate bonds for bioinspired macromolecules with tunable mechanical properties. Nature Reviews Materials, 2021, 6, 421-436.	48.7	148
65	Ultrathin Free-Standing <i>Bombyx mori</i> Silk Nanofibril Membranes. Nano Letters, 2016, 16, 3795-3800.	9.1	146
66	Self-Assembly of Tetramers of 5,6-Dihydroxyindole Explains the Primary Physical Properties of Eumelanin: Experiment, Simulation, and Design. ACS Nano, 2013, 7, 1524-1532.	14.6	145
67	Viscoelastic properties of model segments of collagen molecules. Matrix Biology, 2012, 31, 141-149.	3.6	144
68	Ultrathin thermoresponsive self-folding 3D graphene. Science Advances, 2017, 3, e1701084.	10.3	144
69	Mechanical exfoliation of two-dimensional materials. Journal of the Mechanics and Physics of Solids, 2018, 115, 248-262.	4.8	143
70	Deposition Mechanism and Properties of Thin Polydopamine Films for High Added Value Applications in Surface Science at the Nanoscale. BioNanoScience, 2012, 2, 16-34.	3.5	139
71	Boneâ€Inspired Materials by Design: Toughness Amplification Observed Using 3D Printing and Testing. Advanced Engineering Materials, 2016, 18, 1354-1363.	3.5	138
72	Structural solution using molecular dynamics: Fundamentals and a case study of epoxy-silica interface. International Journal of Solids and Structures, 2011, 48, 2131-2140.	2.7	137

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73	Geometric confinement governs the rupture strength of H-bond assemblies at a critical length scale. Materials Research Society Symposia Proceedings, 2007, 1061, 1.	0.1	136
74	Molecular Dynamics Simulation of the<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>Î±</mml:mi></mml:math>-Helix to<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>Î²</mml:mi></mml:math>-Sheet Transition in Coiled Protein Filaments: Evidence for a Critical Filament Length Scale. Physical Review Letters, 2010, 104, 198304.	7.8	136
75	Structural optimization of 3D-printed synthetic spider webs for high strength. Nature Communications, 2015, 6, 7038.	12.8	136
76	Mechanics and molecular filtration performance of graphyne nanoweb membranes for selective water purification. Nanoscale, 2013, 5, 11801.	5.6	135
77	Materiomics: An â€<i>omics</i> Approach to Biomaterials Research. Advanced Materials, 2013, 25, 802-824.	21.0	134
78	Liquid Exfoliated Natural Silk Nanofibrils: Applications in Optical and Electrical Devices. Advanced Materials, 2016, 28, 7783-7790.	21.0	134
79	The hidden structure of human enamel. Nature Communications, 2019, 10, 4383.	12.8	134
80	Highâ€Strength, Durable Allâ€Silk Fibroin Hydrogels with Versatile Processability toward Multifunctional Applications. Advanced Functional Materials, 2018, 28, 1704757.	14.9	133
81	Strain controlled thermomutability of single-walled carbon nanotubes. Nanotechnology, 2009, 20, 185701.	2.6	130
82	Atomically Sharp Crack Tips in Monolayer MoS₂ and Their Enhanced Toughness by Vacancy Defects. ACS Nano, 2016, 10, 9831-9839.	14.6	130
83	The Rise of Hierarchical Nanostructured Materials from Renewable Sources: Learning from Nature. ACS Nano, 2018, 12, 7425-7433.	14.6	128
84	Excitonic effects from geometric order and disorder explain broadband optical absorption in eumelanin. Nature Communications, 2014, 5, 3859.	12.8	127
85	Deep learning model to predict complex stress and strain fields in hierarchical composites. Science Advances, 2021, 7, .	10.3	127
86	Biomimetic additive manufactured polymer composites for improved impact resistance. Extreme Mechanics Letters, 2016, 9, 317-323.	4.1	125
87	Molecular and Mesoscale Mechanisms of Osteogenesis Imperfecta Disease in Collagen Fibrils. Biophysical Journal, 2009, 97, 857-865.	0.5	123
88	Threshold Crack Speed Controls Dynamical Fracture of Silicon Single Crystals. Physical Review Letters, 2007, 99, 165502.	7.8	121
89	Biological Material Interfaces as Inspiration for Mechanical and Optical Material Designs. Chemical Reviews, 2019, 119, 12279-12336.	47.7	121
90	Melanin Biopolymers: Tailoring Chemical Complexity for Materials Design. Angewandte Chemie - International Edition, 2020, 59, 11196-11205.	13.8	121

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91	Alzheimer's Aî²(1-40) Amyloid Fibrils Feature Size-Dependent Mechanical Properties. Biophysical Journal, 2010, 98, 2053-2062.	0.5	120
92	Printing nature: Unraveling the role of nacre's mineral bridges. Journal of the Mechanical Behavior of Biomedical Materials, 2017, 76, 135-144.	3.1	119
93	Predictive modelling-based design and experiments for synthesis and spinning of bioinspired silk fibres. Nature Communications, 2015, 6, 6892.	12.8	118
94	Molecular mechanics of polycrystalline graphene with enhanced fracture toughness. Extreme Mechanics Letters, 2015, 2, 52-59.	4.1	118
95	Tu(r)ning weakness to strength. Nano Today, 2010, 5, 379-383.	11.9	117
96	Deformation micromechanisms of collagen fibrils under uniaxial tension. Journal of the Royal Society Interface, 2010, 7, 839-850.	3.4	113
97	Structural and Mechanical Differences between Collagen Homo- and Heterotrimers: Relevance for the Molecular Origin of Brittle Bone Disease. Biophysical Journal, 2012, 102, 640-648.	0.5	113
98	Age- and diabetes-related nonenzymatic crosslinks in collagen fibrils: Candidate amino acids involved in Advanced Glycation End-products. Matrix Biology, 2014, 34, 89-95.	3.6	113
99	Deformation Mechanisms of Very Long Single-Wall Carbon Nanotubes Subject to Compressive Loading. Journal of Engineering Materials and Technology, Transactions of the ASME, 2004, 126, 245-249.	1.4	111
100	Modeling and additive manufacturing of bio-inspired composites with tunable fracture mechanical properties. Soft Matter, 2014, 10, 4436.	2.7	111
101	Packing efficiency and accessible surface area of crumpled graphene. Physical Review B, 2011, 84, .	3.2	110
102	Additive Manufacturing Approaches for Hydroxyapatiteâ€Reinforced Composites. Advanced Functional Materials, 2019, 29, 1903055.	14.9	109
103	Spider dragline silk as torsional actuator driven by humidity. Science Advances, 2019, 5, eaau9183.	10.3	108
104	Dynamic pigmentary and structural coloration within cephalopod chromatophore organs. Nature Communications, 2019, 10, 1004.	12.8	105
105	Thickness of Hydroxyapatite Nanocrystal Controls Mechanical Properties of the Collagenâ€"Hydroxyapatite Interface. Langmuir, 2012, 28, 1982-1992.	3.5	103
106	Bio-Inspired Carbon Nanotubeâ€"Polymer Composite Yarns with Hydrogen Bond-Mediated Lateral Interactions. ACS Nano, 2013, 7, 3434-3446.	14.6	103
107	Advanced Structural Materials by Bioinspiration. Advanced Engineering Materials, 2017, 19, 1600787.	3.5	103
108	Twisted and coiled ultralong multilayer graphene ribbons. Modelling and Simulation in Materials Science and Engineering, 2011, 19, 054003.	2.0	100

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109	Printing of stretchable silk membranes for strain measurements. Lab on A Chip, 2016, 16, 2459-2466.	6.0	99
110	Design and Fabrication of Silk Templated Electronic Yarns and Applications in Multifunctional Textiles. Matter, 2019, 1, 1411-1425.	10.0	98
111	Sub-nanometre channels embedded in two-dimensional materials. Nature Materials, 2018, 17, 129-133.	27.5	97
112	Coarse-Grained Model of Collagen Molecules Using an Extended MARTINI Force Field. Journal of Chemical Theory and Computation, 2010, 6, 1210-1218.	5.3	94
113	<i>In silico</i>assembly and nanomechanical characterization of carbon nanotube buckypaper. Nanotechnology, 2010, 21, 265706.	2.6	93
114	Molecular biomechanics of collagen molecules. Materials Today, 2014, 17, 70-76.	14.2	93
115	Using Deep Learning to Predict Fracture Patterns in Crystalline Solids. Matter, 2020, 3, 197-211.	10.0	93
116	The effect of non-covalent functionalization on the thermal conductance of graphene/organic interfaces. Nanotechnology, 2013, 24, 165702.	2.6	92
117	Electrospinning Piezoelectric Fibers for Biocompatible Devices. Advanced Healthcare Materials, 2020, 9, e1901287.	7.6	90
118	Cyclic tensile strain triggers a sequence of autocrine and paracrine signaling to regulate angiogenic sprouting in human vascular cells. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 15279-15284.	7.1	89
119	Three-Dimensional-Printing of Bio-Inspired Composites. Journal of Biomechanical Engineering, 2016, 138, 021006.	1.3	89
120	Atomistic simulation of nanomechanical properties of Alzheimerâ€™s Aβ(1â€“40) amyloid fibrils under compressive and tensile loading. Journal of Biomechanics, 2010, 43, 1196-1201.	2.1	87
121	A Constitutive Model of Soft Tissue: From Nanoscale Collagen to Tissue Continuum. Annals of Biomedical Engineering, 2009, 37, 1117-1130.	2.5	86
122	Mechanism of friction in rotating carbon nanotube bearings. Journal of the Mechanics and Physics of Solids, 2013, 61, 652-673.	4.8	86
123	Silkâ€"Its Mysteries, How It Is Made, and How It Is Used. ACS Biomaterials Science and Engineering, 2015, 1, 864-876.	5.2	85
124	Tensan Silk-Inspired Hierarchical Fibers for Smart Textile Applications. ACS Nano, 2018, 12, 6968-6977.	14.6	85
125	A Self-Consistent Sonification Method to Translate Amino Acid Sequences into Musical Compositions and Application in Protein Design Using Artificial Intelligence. ACS Nano, 2019, 13, 7471-7482.	14.6	85
126	Atomistic model of the spider silk nanostructure. Applied Physics Letters, 2010, 96, .	3.3	84

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127	Remarkably Distinct Mechanical Flexibility in Three Structurally Similar Semiconducting Organic Crystals Studied by Nanoindentation and Molecular Dynamics. Chemistry of Materials, 2019, 31, 1391-1402.	6.7	84
128	Molecular structure, mechanical behavior and failure mechanism of the C-terminal cross-link domain in type I collagen. Journal of the Mechanical Behavior of Biomedical Materials, 2011, 4, 153-161.	3.1	83
129	Design of Multistimuli Responsive Hydrogels Using Integrated Modeling and Genetically Engineered Silkâ€“Elastinâ€Like Proteins. Advanced Functional Materials, 2016, 26, 4113-4123.	14.9	83
130	Mechanomutable properties of a PAA/PAH polyelectrolyte complex: rate dependence and ionization effects on tunable adhesion strength. Soft Matter, 2010, 6, 4175.	2.7	82
131	Molecular deformation mechanisms of the wood cell wall material. Journal of the Mechanical Behavior of Biomedical Materials, 2015, 42, 198-206.	3.1	82
132	Molecular asphaltene models based on Clar sextet theory. RSC Advances, 2015, 5, 753-759.	3.6	82
133	Effect of Wrinkles on the Surface Area of Graphene: Toward the Design of Nanoelectronics. Nano Letters, 2014, 14, 6520-6525.	9.1	81
134	The minimal nanowire: Mechanical properties of carbyne. Europhysics Letters, 2011, 95, 16002.	2.0	79
135	Geometry and temperature effects of the interfacial thermal conductance in copperâ€“ and nickelâ€“graphene nanocomposites. Journal of Physics Condensed Matter, 2012, 24, 245301.	1.8	79
136	Asymptotic Strength Limit of Hydrogen-Bond Assemblies in Proteins at Vanishing Pulling Rates. Physical Review Letters, 2008, 100, 198301.	7.8	77
137	Protein-free formation of bone-like apatite: New insights into the key role of carbonation. Biomaterials, 2017, 127, 75-88.	11.4	77
138	A review of combined experimental and computational procedures for assessing biopolymer structureâ€“processâ€“property relationships. Biomaterials, 2012, 33, 8240-8255.	11.4	76
139	Comparison of Synthetic Dopamineâ€“Eumelanin Formed in the Presence of Oxygen and Cu²⁺ Cations as Oxidants. Langmuir, 2013, 29, 12754-12761.	3.5	75
140	Defect-Tolerant Bioinspired Hierarchical Composites: Simulation and Experiment. ACS Biomaterials Science and Engineering, 2015, 1, 295-304.	5.2	75
141	Modelling the mechanics of partially mineralized collagen fibrils, fibres and tissue. Journal of the Royal Society Interface, 2014, 11, 20130835.	3.4	74
142	A single degree of freedom â€˜lollipopâ€™ model for carbon nanotube bundle formation. Journal of the Mechanics and Physics of Solids, 2010, 58, 409-427.	4.8	71
143	Impact tolerance in mussel thread networks by heterogeneous material distribution. Nature Communications, 2013, 4, 2187.	12.8	71
144	Sequence-structure correlations in silk: Poly-Ala repeat of N. clavipes MaSp1 is naturally optimized at a critical length scale. Journal of the Mechanical Behavior of Biomedical Materials, 2012, 7, 30-40.	3.1	69

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145	Optimization of Composite Fracture Properties: Method, Validation, and Applications. Journal of Applied Mechanics, Transactions ASME, 2016, 83, .	2.2	69
146	End-to-end deep learning method to predict complete strain and stress tensors for complex hierarchical composite microstructures. Journal of the Mechanics and Physics of Solids, 2021, 154, 104506.	4.8	68
147	Alpha-Helical Protein Networks Are Self-Protective and Flaw-Tolerant. PLoS ONE, 2009, 4, e6015.	2.5	68
148	Hydration and distance dependence of intermolecular shearing between collagen molecules in a model microfibril. Journal of Biomechanics, 2012, 45, 2079-2083.	2.1	67
149	Cracking and adhesion at small scales: atomistic and continuum studies of flaw tolerant nanostructures. Modelling and Simulation in Materials Science and Engineering, 2006, 14, 799-816.	2.0	65
150	Superelasticity, energy dissipation and strain hardening of vimentin coiled-coil intermediate filaments: atomistic and continuum studies. Journal of Materials Science, 2007, 42, 8771-8787.	3.7	64
151	Role of Intrafibrillar Collagen Mineralization in Defining the Compressive Properties of Nascent Bone. Biomacromolecules, 2014, 15, 2494-2500.	5.4	64
152	Failure of AÎ²(1-40) amyloid fibrils under tensile loading. Biomaterials, 2011, 32, 3367-3374.	11.4	62
153	Characterization of the intrinsic strength between epoxy and silica using a multiscale approach. Journal of Materials Research, 2012, 27, 1787-1796.	2.6	62
154	Influence of geometry on mechanical properties of bio-inspired silica-based hierarchical materials. Bioinspiration and Biomimetics, 2012, 7, 036024.	2.9	62
155	Mesoscale mechanics of wood cell walls under axial strain. Soft Matter, 2013, 9, 7138.	2.7	62
156	Thermal transport in monolayer graphene oxide: Atomistic insights into phonon engineering through surface chemistry. Carbon, 2014, 77, 351-359.	10.3	62
157	Single molecule effects of osteogenesis imperfecta mutations in tropocollagen protein domains. Protein Science, 2009, 18, 161-168.	7.6	61
158	Molecular mechanism of force induced stabilization of collagen against enzymatic breakdown. Biomaterials, 2012, 33, 3852-3859.	11.4	61
159	Sequenceâ€"Structureâ€"Property Relationships of Recombinant Spider Silk Proteins: Integration of Biopolymer Design, Processing, and Modeling. Advanced Functional Materials, 2013, 23, 241-253.	14.9	61
160	Self-folding of single- and multiwall carbon nanotubes. Applied Physics Letters, 2007, 90, 073107.	3.3	60
161	Secondary Structure Transition and Critical Stress for a Model of Spider Silk Assembly. Biomacromolecules, 2016, 17, 427-436.	5.4	60
162	Accumulation of collagen molecular unfolding is the mechanism of cyclic fatigue damage and failure in collagenous tissues. Science Advances, 2020, 6, eaba2795.	10.3	60

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163	A Materiomics Approach to Spider Silk: Protein Molecules to Webs. Jom, 2012, 64, 214-225.	1.9	58
164	Coupled continuum and discrete analysis of random heterogeneous materials: Elasticity and fracture. Journal of the Mechanics and Physics of Solids, 2014, 63, 481-490.	4.8	58
165	Large Deformation Mechanisms, Plasticity, and Failure of an Individual Collagen Fibril With Different Mineral Content. Journal of Bone and Mineral Research, 2016, 31, 380-390.	2.8	58
166	Multiscale Mechanics of Triply Periodic Minimal Surfaces of Three-Dimensional Graphene Foams. Nano Letters, 2018, 18, 4845-4853.	9.1	57
167	Artificial intelligence design algorithm for nanocomposites optimized for shear crack resistance. Nano Futures, 2019, 3, 035001.	2.2	57
168	Molecular mechanics of mussel adhesion proteins. Journal of the Mechanics and Physics of Solids, 2014, 62, 19-30.	4.8	56
169	Atomic plasticity: description and analysis of a one-billion atom simulation of ductile materials failure. Computer Methods in Applied Mechanics and Engineering, 2004, 193, 5257-5282.	6.6	55
170	Tuning heterogeneous poly(dopamine) structures and mechanics: in silico covalent cross-linking and thin film nanoindentation. Soft Matter, 2014, 10, 457-464.	2.7	55
171	A multi-scale approach to understand the mechanobiology of intermediate filaments. Journal of Biomechanics, 2010, 43, 15-22.	2.1	53
172	Tunable nanomechanics of protein disulfide bonds in redox microenvironments. Journal of the Mechanical Behavior of Biomedical Materials, 2012, 5, 32-40.	3.1	52
173	Intercalated water layers promote thermal dissipation at bioâ€“nano interfaces. Nature Communications, 2016, 7, 12854.	12.8	52
174	Conductive Silkâ€Based Composites Using Biobased Carbon Materials. Advanced Materials, 2019, 31, e1904720.	21.0	52
175	Nanomechanical properties of vimentin intermediate filament dimers. Nanotechnology, 2009, 20, 425101.	2.6	51
176	Bioinspired nanoporous silicon provides great toughness at great deformability. Computational Materials Science, 2010, 48, 303-309.	3.0	51
177	Structure and Mechanical Properties of Human Trichocyte Keratin Intermediate Filament Protein. Biomacromolecules, 2012, 13, 3522-3532.	5.4	51
178	Structureâ€“mechanics relationships of collagen fibrils in the osteogenesis imperfecta mouse model. Journal of the Royal Society Interface, 2015, 12, 20150701.	3.4	51
179	Mesoscale mechanics of twisting carbon nanotube yarns. Nanoscale, 2015, 7, 5435-5445.	5.6	51
180	Biomateriomics. Springer Series in Materials Science, 2012, , .	0.6	51

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181	Atomistic Study of Crack-Tip Cleavage to Dislocation Emission Transition in Silicon Single Crystals. Physical Review Letters, 2010, 104, 235502.	7.8	49
182	Set in stone? A perspective on the concrete sustainability challenge. MRS Bulletin, 2012, 37, 395-402.	3.5	49
183	Molecular mechanics of silk nanostructures under varied mechanical loading. Biopolymers, 2012, 97, 408-417.	2.4	49
184	Nanoindentation study of size effects in nickelâ€“graphene nanocomposites. Philosophical Magazine Letters, 2013, 93, 196-203.	1.2	49
185	Computational smart polymer design based on elastin protein mutability. Biomaterials, 2017, 127, 49-60.	11.4	49
186	Self-Folding Hybrid Graphene Skin for 3D Biosensing. Nano Letters, 2019, 19, 1409-1417.	9.1	49
187	Heat dissipation at a grapheneâ€“substrate interface. Journal of Physics Condensed Matter, 2012, 24, 475305.	1.8	48
188	Atomistic Investigation of Load Transfer Between DWNT Bundles â€œCrosslinkedâ€•by PMMA Oligomers. Advanced Functional Materials, 2013, 23, 1883-1892.	14.9	48
189	A robust nanoscale experimental quantification of fracture energy in a bilayer material system. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 11990-11995.	7.1	48
190	Category Theoretic Analysis of Hierarchical Protein Materials and Social Networks. PLoS ONE, 2011, 6, e23911.	2.5	48
191	Atomistic and continuum studies of crack-like diffusion wedges and associated dislocation mechanisms in thin films on substrates. Journal of the Mechanics and Physics of Solids, 2003, 51, 2105-2125.	4.8	47
192	Nanoconfinement and the Strength of Biopolymers. Annual Review of Biophysics, 2013, 42, 651-673.	10.0	47
193	Atomistic and continuum studies of stress and strain fields near a rapidly propagating crack in a harmonic lattice. Theoretical and Applied Fracture Mechanics, 2004, 41, 21-42.	4.7	46
194	Self-folding and aggregation of amyloid nanofibrils. Nanoscale, 2011, 3, 1748.	5.6	46
195	Synergetic Material and Structure Optimization Yields Robust Spider Web Anchorages. Small, 2013, 9, 2747-2756.	10.0	46
196	Strength in numbers. Nature Nanotechnology, 2010, 5, 172-174.	31.5	45
197	Materiomics: biological protein materials, from nano to macro. Nanotechnology, Science and Applications, 2010, 3, 127.	4.6	45
198	Aqueous Peptideâ€“TiO₂ Interfaces: Isoenergetic Binding via Either Entropically or Enthalpically Driven Mechanisms. ACS Applied Materials & Interfaces, 2016, 8, 18620-18630.	8.0	45

#	Article	IF	Citations
199	Synergistic Integration of Experimental and Simulation Approaches for the <i>de Novo</i> Design of Silk-Based Materials. Accounts of Chemical Research, 2017, 50, 866-876.	15.6	45
200	Synergistic Rollâ€toâ€Roll Transfer and Doping of CVDâ€Graphene Using Parylene for Ambientâ€Stable and Ultraâ€Lightweight Photovoltaics. Advanced Functional Materials, 2020, 30, 2001924.	14.9	45
201	Cooperative deformation of hydrogen bonds in beta-strands and beta-sheet nanocrystals. Physical Review E, 2010, 82, 061906.	2.1	44
202	Hierarchical Silica Nanostructures Inspired by Diatom Algae Yield Superior Deformability, Toughness, and Strength. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2011, 42, 3889-3897.	2.2	44
203	Variation of Weak Polyelectrolyte Persistence Length through an Electrostatic Contour Length. Macromolecules, 2012, 45, 8067-8082.	4.8	44
204	Elasticity, strength and resilience: A comparative study on mechanical signatures of Î±-Helix, Î²-sheet and tropocollagen domains. Nano Research, 2008, 1, 63.	10.4	43
205	Intermediate filament-deficient cells are mechanically softer at large deformation: A multi-scale simulation study. Acta Biomaterialia, 2010, 6, 2457-2466.	8.3	43
206	Structure and stability of the lamin A tail domain and HGPS mutant. Journal of Structural Biology, 2011, 175, 425-433.	2.8	43
207	Subtle balance of tropoelastin molecular shape and flexibility regulates dynamics and hierarchical assembly. Science Advances, 2016, 2, e1501145.	10.3	43
208	Deep learning model to predict fracture mechanisms of graphene. Npj 2D Materials and Applications, 2021, 5, .	7.9	43
209	<i>Colloquium</i>: Failure of molecules, bones, and the Earth itself. Reviews of Modern Physics, 2010, 82, 1459-1487.	45.6	42
210	Flaw Tolerance of Nuclear Intermediate Filament Lamina under Extreme Mechanical Deformation. ACS Nano, 2011, 5, 3034-3042.	14.6	42
211	Nonlinear Viscous Water at Nanoporous Two-Dimensional Interfaces Resists High-Speed Flow through Cooperativity. Nano Letters, 2015, 15, 3939-3944.	9.1	42
212	Nanomechanics of silk: the fundamentals of a strong, tough and versatile material. Nanotechnology, 2016, 27, 302001.	2.6	42
213	Mechanical behavior of nanocomposites. MRS Bulletin, 2019, 44, 19-24.	3.5	42
214	Mutations Alter the Geometry and Mechanical Properties of Alzheimerâ€™s AÎ²(1â€"40) Amyloid Fibrils. Biochemistry, 2010, 49, 8967-8977.	2.5	41
215	Nacre-inspired design of graphene oxideâ€"polydopamine nanocomposites for enhanced mechanical properties and multi-functionalities. Nano Futures, 2017, 1, 011003.	2.2	41
216	Reversible MoS₂ Origami with Spatially Resolved and Reconfigurable Photosensitivity. Nano Letters, 2019, 19, 7941-7949.	9.1	41

#	Article	IF	Citations
217	Mechanics of collagenâ€"hydroxyapatite model nanocomposites. Mechanics Research Communications, 2014, 58, 17-23.	1.8	40
218	Unraveling the Molecular Requirements for Macroscopic Silk Supercontraction. ACS Nano, 2017, 11, 9750-9758.	14.6	40
219	Interlocking Friction Governs the Mechanical Fracture of Bilayer MoS₂. ACS Nano, 2018, 12, 3600-3608.	14.6	40
220	Multiscale Modeling of Silk and Silkâ€Based Biomaterialsâ€"A Review. Macromolecular Bioscience, 2019, 19, e1800253.	4.1	40
221	Nonlinear mechanics of lamin filaments and the meshwork topology build an emergent nuclear lamina. Nature Communications, 2020, 11, 6205.	12.8	40
222	Alport Syndrome mutations in type IV tropocollagen alter molecular structure and nanomechanical properties. Journal of Structural Biology, 2009, 168, 503-510.	2.8	39
223	Hierarchical simulations for the design of supertough nanofibers inspired by spider silk. Physical Review E, 2010, 82, 056103.	2.1	39
224	Roadmap across the mesoscale for durable and sustainable cement paste â€" A bioinspired approach. Construction and Building Materials, 2016, 115, 13-31.	7.2	39
225	Multiscale modeling of keratin, collagen, elastin and related human diseases: Perspectives from atomistic to coarse-grained molecular dynamics simulations. Extreme Mechanics Letters, 2018, 20, 112-124.	4.1	39
226	Bioinspired noncovalently crosslinked â€œfuzzyâ€•carbon nanotube bundles with superior toughness and strength. Journal of Materials Chemistry, 2010, 20, 10465.	6.7	38
227	Materials by design: Merging proteins and music. Nano Today, 2012, 7, 488-495.	11.9	38
228	Algorithm-driven design of fracture resistant composite materials realized through additive manufacturing. Additive Manufacturing, 2017, 17, 47-54.	3.0	38
229	Unusually low and density-insensitive thermal conductivity of three-dimensional gyroid graphene. Nanoscale, 2017, 9, 13477-13484.	5.6	38
230	Topology Optimization of Smart Structures Using a Homogenization Approach. Journal of Intelligent Material Systems and Structures, 2004, 15, 655-667.	2.5	37
231	Self-Folding and Unfolding of Carbon Nanotubes. Journal of Engineering Materials and Technology, Transactions of the ASME, 2006, 128, 3-10.	1.4	37
232	Tensile deformation and failure of amyloid and amyloid-like protein fibrils. Nanotechnology, 2014, 25, 105703.	2.6	37
233	Observations of 3 nm Silk Nanofibrils Exfoliated from Natural Silkworm Silk Fibers. , 2020, 2, 153-160.		37
234	ROBUSTNESS-STRENGTH PERFORMANCE OF HIERARCHICAL ALPHA-HELICAL PROTEIN FILAMENTS. International Journal of Applied Mechanics, 2009, 01, 85-112.	2.2	36

#	Article	IF	Citations
235	Microscale structural model of Alzheimer Aî²(1â€“40) amyloid fibril. Applied Physics Letters, 2009, 94, .	3.3	36
236	Effect of sodium chloride on the structure and stability of spider silk's N-terminal protein domain. Biomaterials Science, 2013, 1, 276.	5.4	36
237	What's Inside the Box? â€“ Lengthâ€Scales that Govern Fracture Processes of Polymer Fibers. Advanced Materials, 2014, 26, 412-417.	21.0	36
238	Imaging and analysis of a three-dimensional spider web architecture. Journal of the Royal Society Interface, 2018, 15, 20180193.	3.4	36
239	Sonification based <i>de novo</i> protein design using artificial intelligence, structure prediction, and analysis using molecular modeling. APL Bioengineering, 2020, 4, 016108.	6.2	36
240	Strength limit of entropic elasticity in beta-sheet protein domains. Physical Review E, 2008, 78, 061913.	2.1	35
241	Reoccurring Patterns in Hierarchical Protein Materials and Music: The Power of Analogies. BioNanoScience, 2011, 1, 153-161.	3.5	35
242	Molecular model of human tropoelastin and implications of associated mutations. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 7338-7343.	7.1	35
243	A semi-supervised approach to architected materials design using graph neural networks. Extreme Mechanics Letters, 2020, 41, 101029.	4.1	35
244	Nanomechanical sequencing of collagen: tropocollagen features heterogeneous elastic properties at the nanoscale. Integrative Biology (United Kingdom), 2009, 1, 452-459.	1.3	34
245	The role of capture spiral silk properties in the diversification of orb webs. Journal of the Royal Society Interface, 2012, 9, 3240-3248.	3.4	34
246	Combining In Silico Design and Biomimetic Assembly: A New Approach for Developing Highâ€Performance Dynamic Responsive Bioâ€Nanomaterials. Advanced Materials, 2018, 30, e1802306.	21.0	34
247	Understanding Plant Biomass via Computational Modeling. Advanced Materials, 2021, 33, e2003206.	21.0	34
248	Chirality-Dependent Second Harmonic Generation of MoS₂ Nanoscroll with Enhanced Efficiency. ACS Nano, 2020, 14, 13333-13342.	14.6	34
249	Atomistic study of the effect of crack tip ledges on the nucleation of dislocations in silicon single crystals at elevated temperature. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2011, 528, 4357-4364.	5.6	33
250	Exploration of Biomass-Derived Activated Carbons for Use in Vanadium Redox Flow Batteries. ACS Sustainable Chemistry and Engineering, 2020, 8, 9472-9482.	6.7	33
251	Multiscale Modeling of Muscular-Skeletal Systems. Annual Review of Biomedical Engineering, 2017, 19, 435-457.	12.3	32
252	Predicting Silk Fiber Mechanical Properties through Multiscale Simulation and Protein Design. ACS Biomaterials Science and Engineering, 2017, 3, 1542-1556.	5.2	32

#	Article	IF	Citations
253	Materials-by-design: computation, synthesis, and characterization from atoms to structures. Physica Scripta, 2018, 93, 053003.	2.5	32
254	The Relationship of Functional Return to Varying Methods of Nerve Repair. Journal of Reconstructive Microsurgery, 1990, 6, 61-69.	1.8	31
255	The strength limit in a bio-inspired metallic nanocomposite. Journal of the Mechanics and Physics of Solids, 2008, 56, 1086-1104.	4.8	31
256	Vascularized free tissue transfer for reconstruction of ablative defects in oral and oropharyngeal cancer patients undergoing salvage surgery following concomitant chemoradiation. International Journal of Oral and Maxillofacial Surgery, 2012, 41, 733-738.	1.5	31
257	Fracture mechanics of hydroxyapatite single crystals under geometric confinement. Journal of the Mechanical Behavior of Biomedical Materials, 2013, 20, 184-191.	3.1	31
258	Tough and stiff composites with simple building blocks. Journal of Materials Research, 2013, 28, 1295-1303.	2.6	31
259	Delivering Single-Walled Carbon Nanotubes to the Nucleus Using Engineered Nuclear Protein Domains. ACS Applied Materials & Interfaces, 2016, 8, 3524-3534.	8.0	31
260	Artificial intelligence method to design and fold alpha-helical structural proteins from the primary amino acid sequence. Extreme Mechanics Letters, 2020, 36, 100652.	4.1	31
261	Intracellular Pathways Involved in Bone Regeneration Triggered by Recombinant Silkâ€“Silica Chimeras. Advanced Functional Materials, 2018, 28, 1702570.	14.9	31
262	FieldPerceiver: Domain agnostic transformer model to predict multiscale physical fields and nonlinear material properties through neural ologs. Materials Today, 2022, 57, 9-25.	14.2	31
263	Comparative analysis of nanomechanics of protein filaments under lateral loading. Nanoscale, 2012, 4, 1177-1183.	5.6	30
264	Structure and mechanism of maximum stability of isolated alpha-helical protein domains at a critical length scale. European Physical Journal E, 2013, 36, 53.	1.6	30
265	Webs measure up. Nature Materials, 2013, 12, 185-187.	27.5	30
266	Materials by designâ€”A perspective from atoms to structures. MRS Bulletin, 2013, 38, 169-176.	3.5	30
267	Molecular mechanics of elastic and bendable caffeine co-crystals. Physical Chemistry Chemical Physics, 2014, 16, 13165.	2.8	30
268	Multiscale Design of Graphyneâ€Based Materials for Highâ€Performance Separation Membranes. Advanced Materials, 2019, 31, e1805665.	21.0	30
269	Nano- and micromechanical properties of hierarchical biological materials and tissues. Journal of Materials Science, 2007, 42, 8765-8770.	3.7	29
270	Hierarchical Nanostructures Are Crucial To Mitigate Ultrasmall Thermal Point Loads. Nano Letters, 2009, 9, 2065-2072.	9.1	29

#	Article	IF	Citations
271	Solving the Controversy on the Wetting Transparency of Graphene. Scientific Reports, 2015, 5, 15526.	3.3	29
272	Serratus Fascia â€œSandwichâ€•Free-Tissue Transfer for Complex Dorsal Hand and Wrist Avulsion Injuries. Journal of Reconstructive Microsurgery, 1999, 15, 315-320.	1.8	28
273	Hierarchical multi-scale modelling of plasticity of submicron thin metal films. Modelling and Simulation in Materials Science and Engineering, 2004, 12, S391-S413.	2.0	28
274	The dynamical complexity of work-hardening: a large-scale molecular dynamics simulation. Acta Mechanica Sinica/Lixue Xuebao, 2005, 21, 103-111.	3.4	28
275	Hierarchical chemo-nanomechanics of proteins: entropic elasticity, protein unfolding and molecular fracture. Journal of Mechanics of Materials and Structures, 2007, 2, 1019-1057.	0.6	28
276	Dynamic mechanics. Nature Materials, 2016, 15, 1054-1055.	27.5	28
277	Evidence of the Most Stretchable Egg Sac Silk Stalk, of the European Spider of the Year Meta menardi. PLoS ONE, 2012, 7, e30500.	2.5	28
278	Large deformation and fracture mechanics of a beta-helical protein nanotube: Atomistic and continuum modeling. Computer Methods in Applied Mechanics and Engineering, 2008, 197, 3203-3214.	6.6	27
279	Hierarchical graphene nanoribbon assemblies feature unique electronic and mechanical properties. Nanotechnology, 2009, 20, 375704.	2.6	27
280	Alpha-helical protein domains unify strength and robustness through hierarchical nanostructures. Nanotechnology, 2009, 20, 075103.	2.6	27
281	Structure and dynamics of human vimentin intermediate filament dimer and tetramer in explicit and implicit solvent models. Journal of Molecular Modeling, 2011, 17, 37-48.	1.8	27
282	Molecular mechanics of dihydroxyphenylalanine at a silica interface. Applied Physics Letters, 2012, 101, 083702.	3.3	27
283	Effect of sequence features on assembly of spider silk block copolymers. Journal of Structural Biology, 2014, 186, 412-419.	2.8	27
284	The different distribution of enzymatic collagen cross-links found in adult and children bone result in different mechanical behavior of collagen. Bone, 2018, 110, 107-114.	2.9	27
285	Deep learning approach to assess damage mechanics of bone tissue. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 123, 104761.	3.1	27
286	Nanomechanical strength mechanisms of hierarchical biological materials and tissues. Computer Methods in Biomechanics and Biomedical Engineering, 2008, 11, 595-607.	1.6	26
287	Multiscale mechanics of biological and biologically inspired materials and structures. Acta Mechanica Solida Sinica, 2010, 23, 471-483.	1.9	26
288	Mechanical energy transfer and dissipation in fibrous beta-sheet-rich proteins. Physical Review E, 2010, 81, 061910.	2.1	26

#	Article	IF	Citations
289	Fabrication and Characterization of Recombinant Silkâ€Elastinâ€Likeâ€Protein (SELP) Fiber. Macromolecular Bioscience, 2018, 18, e1800265.	4.1	26
290	Category Theory Based Solution for the Building Block Replacement Problem in Materials Design. Advanced Engineering Materials, 2012, 14, 810-817.	3.5	25
291	Mechanics of fragmentation of crocodile skin and other thin films. Scientific Reports, 2014, 4, 4966.	3.3	25
292	Polydopamine and eumelanin models in various oxidation states. Physical Chemistry Chemical Physics, 2018, 20, 28135-28143.	2.8	25
293	Multiscale structural insights of load bearing bamboo: A computational modeling approach. Journal of the Mechanical Behavior of Biomedical Materials, 2020, 107, 103743.	3.1	25
294	Hierarchical Coexistence of Universality and Diversity Controls Robustness and Multi-Functionality in Protein Materials. Journal of Computational and Theoretical Nanoscience, 2008, 5, 1193-1204.	0.4	25
295	A deep learning augmented genetic algorithm approach to polycrystalline 2D material fracture discovery and design. Applied Physics Reviews, 2021, 8, .	11.3	25
296	Mind the helical crack. Nature, 2010, 464, 42-43.	27.8	24
297	Studies of chain substitution caused sub-fibril level differences in stiffness and ultrastructure of wildtype and oim/oim collagen fibers using multifrequency-AFM and molecular modeling. Biomaterials, 2016, 107, 15-22.	11.4	24
298	Ion Effect and Metal-Coordinated Cross-Linking for Multiscale Design of Nereis Jaw Inspired Mechanomutable Materials. ACS Nano, 2017, 11, 1858-1868.	14.6	24
299	Wave Propagation and Energy Dissipation in Collagen Molecules. ACS Biomaterials Science and Engineering, 2020, 6, 1367-1374.	5.2	24
300	Intermolecular slip mechanism in tropocollagen nanofibrils. International Journal of Materials Research, 2009, 100, 921-925.	0.3	23
301	Mechanics of Nano-Honeycomb Silica Structures: Size-Dependent Brittle-to-Ductile Transition. Journal of Nanomechanics & Micromechanics, 2011, 1, 112-118.	1.4	23
302	Molecular architecture of collagen fibrils: A critical length scale for tough fibrils. Current Applied Physics, 2008, 8, 440-442.	2.4	22
303	Mechanomutable carbon nanotube arrays. International Journal of Materials and Structural Integrity, 2009, 3, 161.	0.1	22
304	Graphene Nanocutting Through Nanopatterned Vacancy Defects. Journal of Computational and Theoretical Nanoscience, 2010, 7, 354-359.	0.4	22
305	ATOMISTICALLY-INFORMED MESOSCALE MODEL OF DEFORMATION AND FAILURE OF BIOINSPIRED HIERARCHICAL SILICA NANOCOMPOSITES. International Journal of Applied Mechanics, 2010, 02, 699-717.	2.2	22
306	Biological materials by design. Journal of Physics Condensed Matter, 2014, 26, 073101.	1.8	22

#	Article	IF	Citations
307	Computational Framework to Predict Failure and Performance of Bone-Inspired Materials. ACS Biomaterials Science and Engineering, 2017, 3, 3236-3243.	5.2	22
308	Mechanics of Mineralized Collagen Fibrils upon Transient Loads. ACS Nano, 2020, 14, 8307-8316.	14.6	22
309	End-to-End Deep Learning Model to Predict and Design Secondary Structure Content of Structural Proteins. ACS Biomaterials Science and Engineering, 2022, 8, 1156-1165.	5.2	22
310	Optimal Sensor Design and Control of Piezoelectric Laminate Beams. IEEE Transactions on Control Systems Technology, 2004, 12, 148-155.	5.2	21
311	Coiled-coil intermediate filament stutter instability and molecular unfolding. Computer Methods in Biomechanics and Biomedical Engineering, 2011, 14, 483-489.	1.6	21
312	Conformation Transitions of Recombinant Spidroins via Integration of Time-Resolved FTIR Spectroscopy and Molecular Dynamic Simulation. ACS Biomaterials Science and Engineering, 2016, 2, 1298-1308.	5.2	21
313	Predicting rates of <i>in vivo</i> degradation of recombinant spider silk proteins. Journal of Tissue Engineering and Regenerative Medicine, 2018, 12, e97-e105.	2.7	21
314	Unraveling the molecular mechanisms of thermo-responsive properties of silk-elastin-like proteins by integrating multiscale modeling and experiment. Journal of Materials Chemistry B, 2018, 6, 3727-3734.	5.8	21
315	Perspectives on three-dimensional printing of self-assembling materials and structures. Current Opinion in Biomedical Engineering, 2020, 15, 59-67.	3.4	21
316	A multi-timescale strength model of alpha-helical protein domains. Journal of Physics Condensed Matter, 2009, 21, 035111.	1.8	20
317	Comparative Study of Polymorphous Alzheimer's A<I>Î²</I>(1-40) Amyloid Nanofibrils and Microfibers. Journal of Computational and Theoretical Nanoscience, 2010, 7, 1279-1286.	0.4	20
318	Modeling and Experiment Reveal Structure and Nanomechanics across the Inverse Temperature Transition in B. mori Silk-Elastin-like Protein Polymers. ACS Biomaterials Science and Engineering, 2017, 3, 2889-2899.	5.2	20
319	Comparative Analysis of Nanomechanical Features of Coronavirus Spike Proteins and Correlation with Lethality and Infection Rate. Matter, 2021, 4, 265-275.	10.0	20
320	Frank-van der Merwe growth in bilayer graphene. Matter, 2021, 4, 3339-3353.	10.0	20
321	Generative design, manufacturing, and molecular modeling of 3D architected materials based on natural language input. APL Materials, 2022, 10, .	5.1	20
322	Atomistic and continuum studies of a suddenly stopping supersonic crack. Computational Materials Science, 2003, 28, 385-408.	3.0	19
323	Large-Scale Hierarchical Molecular Modeling of Nanostructured Biological Materials. Journal of Computational and Theoretical Nanoscience, 2006, 3, 603-623.	0.4	19
324	Molecular mechanics and performance of crosslinked amorphous polymer adhesives. Journal of Materials Research, 2014, 29, 1077-1085.	2.6	19

#	Article	IF	Citations
325	Folding creases through bending. Nature Materials, 2015, 14, 366-368.	27.5	19
326	Molecular characterization and atomistic model of biocrude oils from hydrothermal liquefaction of microalgae. Algal Research, 2018, 35, 262-273.	4.6	19
327	Improving the performance of pressure sensitive adhesives by tuning the crosslinking density and locations. Polymer, 2018, 154, 164-171.	3.8	19
328	Anisotropic Fracture Dynamics Due to Local Lattice Distortions. ACS Nano, 2019, 13, 5693-5702.	14.6	19
329	Tropoelastin is a Flexible Molecule that Retains its Canonical Shape. Macromolecular Bioscience, 2019, 19, 1800250.	4.1	19
330	Effect of the silica nanoparticle size on the osteoinduction of biomineralized silk-silica nanocomposites. Acta Biomaterialia, 2021, 120, 203-212.	8.3	19
331	End-to-end prediction of multimaterial stress fields and fracture patterns using cycle-consistent adversarial and transformer neural networks. Biomedical Engineering Advances, 2022, 4, 100038.	3.8	19
332	Superductile, Wavy Silica Nanostructures Inspired by Diatom Algae. Advanced Engineering Materials, 2011, 13, B405.	3.5	18
333	Molecular modeling of protein materials: case study of elastin. Modelling and Simulation in Materials Science and Engineering, 2013, 21, 063001.	2.0	18
334	De novo topology optimization of total ossicular replacement prostheses. Journal of the Mechanical Behavior of Biomedical Materials, 2020, 103, 103541.	3.1	18
335	Adverse effects of Alport syndrome-related Gly missense mutations on collagen type IV: Insights from molecular simulations and experiments. Biomaterials, 2020, 240, 119857.	11.4	18
336	Words to Matter: De novo Architected Materials Design Using Transformer Neural Networks. Frontiers in Materials, 2021, 8, .	2.4	18
337	Nanomechanical Characterization of the Triple Î²-Helix Domain in the Cell Puncture Needle of Bacteriophage T4 Virus. Cellular and Molecular Bioengineering, 2009, 2, 66-74.	2.1	17
338	Bioinspired design of functionalised graphene. Molecular Simulation, 2012, 38, 695-703.	2.0	17
339	Analysis of the vibrational and sound spectrum of over 100,000 protein structures and application in sonification. Extreme Mechanics Letters, 2019, 29, 100460.	4.1	17
340	Grain Boundaries as Electrical Conduction Channels in Polycrystalline Monolayer WS₂. ACS Applied Materials & Interfaces, 2019, 11, 10189-10197.	8.0	17
341	Sounds interesting: can sonification help us design new proteins?. Expert Review of Proteomics, 2019, 16, 875-879.	3.0	17
342	Multiscale Modeling of Deformation in Polycrystalline Thin Metal Films on Substrates. Advanced Engineering Materials, 2005, 7, 165-169.	3.5	16

#	Article	IF	Citations
343	Crumpling deformation regimes of monolayer graphene on substrate: a molecular mechanics study. Journal of Physics Condensed Matter, 2015, 27, 345401.	1.8	16
344	A Discrete Dislocation Plasticity Model of Creep in Polycrystalline Thin Films. Defect and Diffusion Forum, 2003, 224-225, 107-126.	0.4	15
345	Computational and Theoretical Materiomics: Properties of Biological and <I>de novo</I> Bioinspired Materials. Journal of Computational and Theoretical Nanoscience, 2010, 7, 1203-1209.	0.4	15
346	Osteogenesis imperfecta mutations lead to local tropocollagen unfolding and disruption of H-bond network. RSC Advances, 2012, 2, 3890.	3.6	15
347	Natural stiffening increases flaw tolerance of biological fibers. Physical Review E, 2012, 86, 041902.	2.1	15
348	Calcium Causes a Conformational Change in Lamin A Tail Domain that Promotes Farnesyl-Mediated Membrane Association. Biophysical Journal, 2013, 104, 2246-2253.	0.5	15
349	Natureâ€™s Way: Hierarchical Strengthening through Weakness. Matter, 2019, 1, 302-303.	10.0	15
350	ColGen: An end-to-end deep learning model to predict thermal stability of de novo collagen sequences. Journal of the Mechanical Behavior of Biomedical Materials, 2022, 125, 104921.	3.1	15
351	Triangular core as a universal strategy for stiff nanostructures in biology and biologically inspired materials. Materials Science and Engineering C, 2011, 31, 775-780.	7.3	14
352	Multiscale aspects of mechanical properties of biological materials. Journal of the Mechanical Behavior of Biomedical Materials, 2011, 4, 125-127.	3.1	14
353	Cooperative deformation of carboxyl groups in functionalized carbon nanotubes. International Journal of Solids and Structures, 2012, 49, 2418-2423.	2.7	14
354	Taking a leaf from nature's book. Nature Nanotechnology, 2012, 7, 417-419.	31.5	14
355	Failure of Graphdiyne: Structurally Directed Delocalized Crack Propagation. Journal of Applied Mechanics, Transactions ASME, 2013, 80, .	2.2	14
356	Mechanical Properties and Failure of Biopolymers: Atomistic Reactions to Macroscale Response. Topics in Current Chemistry, 2015, 369, 317-343.	4.0	14
357	Integrated Modeling and Experimental Approaches to Control Silica Modification of Design Silk-Based Biomaterials. ACS Biomaterials Science and Engineering, 2017, 3, 2877-2888.	5.2	14
358	Melanin Biopolymers: Tailoring Chemical Complexity for Materials Design. Angewandte Chemie, 2020, 132, 11292-11301.	2.0	14
359	Encoding and exploring latent design space of optimal material structures via a VAE-LSTM model. Forces in Mechanics, 2021, 5, 100054.	2.8	14
360	Crystal size controlled deformation mechanism: Breakdown of dislocation mediated plasticity in single nanocrystals under geometric confinement. Physical Review B, 2008, 77, .	3.2	13

#	Article	IF	Citations
361	How protein materials balance strength, robustness, and adaptability. HFSP Journal, 2010, 4, 26-40.	2.5	13
362	Tensile strength of carbyne chains in varied chemical environments and structural lengths. Nanotechnology, 2014, 25, 371001.	2.6	13
363	Random Bulk Properties of Heterogeneous Rectangular Blocks With Lognormal Young's Modulus: Effective Moduli. Journal of Applied Mechanics, Transactions ASME, 2015, 82, .	2.2	13
364	Coarse-grained model of tropoelastin self-assembly into nascent fibrils. Materials Today Bio, 2019, 3, 100016.	5.5	13
365	Atomically Sharp Dual Grain Boundaries in 2D WS₂ Bilayers. Small, 2019, 15, e1902590.	10.0	13
366	The Order-Disorder Continuum: Linking Predictions of Protein Structure and Disorder through Molecular Simulation. Scientific Reports, 2020, 10, 2068.	3.3	13
367	Tuning Mechanical Properties in Polycrystalline Solids Using a Deep Generative Framework. Advanced Engineering Materials, 2021, 23, 2001339.	3.5	13
368	Molecular origin of viscoelasticity in mineralized collagen fibrils. Biomaterials Science, 2021, 9, 3390-3400.	5.4	13
369	Mechanics of Protein Crystals: Atomistic Modeling of Elasticity and Fracture. Journal of Computational and Theoretical Nanoscience, 2006, 3, 670-683.	0.4	12
370	Plasticity of Intermediate Filament Subunits. PLoS ONE, 2010, 5, e12115.	2.5	12
371	Deformation behavior and mechanical properties of amyloid protein nanowires. Journal of the Mechanical Behavior of Biomedical Materials, 2013, 19, 43-49.	3.1	12
372	Interfacial binding and aggregation of lamin A tail domains associated with Hutchinsonâ€“Gilford progeria syndrome. Biophysical Chemistry, 2014, 195, 43-48.	2.8	12
373	Mechanics of trichocyte alpha-keratin fibers: Experiment, theory, and simulation. Journal of Materials Research, 2015, 30, 26-35.	2.6	12
374	Matriarch: A Python Library for Materials Architecture. ACS Biomaterials Science and Engineering, 2015, 1, 1009-1015.	5.2	12
375	Allysine modifications perturb tropoelastin structure and mobility on a local and global scale. Matrix Biology Plus, 2019, 2, 100002.	3.5	12
376	Liquified protein vibrations, classification and cross-paradigm de novo image generation using deep neural networks. Nano Futures, 2020, 4, 035004.	2.2	12
377	Atomistically Informed Mesoscale Model of Alpha-Helical Protein Domains. International Journal for Multiscale Computational Engineering, 2009, 7, 237-250.	1.2	12
378	Screening and Understanding Li Adsorption on Two-Dimensional Metallic Materials by Learning Physics and Physics-Simplified Learning. Jacs Au, 2021, 1, 1904-1914.	7.9	12

#	Article	IF	Citations
379	Deep learning based design of porous graphene for enhanced mechanical resilience. Computational Materials Science, 2022, 206, 111270.	3.0	12
380	Energy landscape, structure and rate effects on strength properties of alpha-helical proteins. Journal of Physics Condensed Matter, 2010, 22, 035102.	1.8	11
381	Advanced Hybrid Materials: Design and Applications. European Journal of Inorganic Chemistry, 2012, 2012, 5092-5093.	2.0	11
382	Mechanical Playersâ€"The Role of Intermediate Filaments inÂCell Mechanics and Organization. Biophysical Journal, 2013, 105, 1733-1734.	0.5	11
383	Critical cross-linking to mechanically couple polyelectrolytes and flexible molecules. Soft Matter, 2013, 9, 1076-1090.	2.7	11
384	Quantitative Estimates of Bio-Remodeling on Coastal Rock Surfaces. Journal of Marine Science and Engineering, 2016, 4, 37.	2.6	11
385	The nature of the silicaphilic fluorescence of PDMPO. Physical Chemistry Chemical Physics, 2016, 18, 5938-5948.	2.8	11
386	Tunable mechanical properties through texture control of polycrystalline additively manufactured materials using adjoint-based gradient optimization. Acta Mechanica, 2018, 229, 4033-4044.	2.1	11
387	Machine learning model for fast prediction of the natural frequencies of protein molecules. RSC Advances, 2020, 10, 16607-16615.	3.6	11
388	Designing and fabricating materials from fire using sonification and deep learning. IScience, 2021, 24, 102873.	4.1	11
389	Fundamental Investigation of Biomass Interaction for Green Composites: Experiments and Molecular Dynamics Simulations. Advanced Functional Materials, 2022, 32, .	14.9	11
390	Two-dimensional discrete dislocation models of deformation in polycrystalline thin metal films on substrates. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2005, 400-401, 260-263.	5.6	10
391	Molecular Mechanics of Stutter Defects in Vimentin Intermediate Filaments. Experimental Mechanics, 2009, 49, 79-89.	2.0	10
392	Categorical prototyping: incorporating molecular mechanisms into 3D printing. Nanotechnology, 2016, 27, 024002.	2.6	10
393	Effect of Terminal Modification on the Molecular Assembly and Mechanical Properties of Proteinâ€Based Block Copolymers. Macromolecular Bioscience, 2017, 17, 1700095.	4.1	10
394	Mesomechanics of a three-dimensional spider web. Journal of the Mechanics and Physics of Solids, 2020, 144, 104096.	4.8	10
395	Probing the Role of Bone Lamellar Patterns through Collagen Microarchitecture Mapping, Numerical Modeling, and 3Dâ€Printing. Advanced Engineering Materials, 2020, 22, .	3.5	10
396	WebNet: A biomateriomic three-dimensional spider web neural net. Extreme Mechanics Letters, 2021, 42, 101034.	4.1	10

#	Article	IF	Citations
397	Large-Scale Hierarchical Molecular Modeling of Nanostructured Biological Materials. Journal of Computational and Theoretical Nanoscience, 2006, 3, 603-623.	0.4	10
398	Mechanics of Protein Crystals: Atomistic Modeling of Elasticity and Fracture. Journal of Computational and Theoretical Nanoscience, 2006, 3, 670-683.	0.4	10
399	Bioinspired translation of classical music into de novo protein structures using deep learning and molecular modeling. Bioinspiration and Biomimetics, 2022, 17, 015001.	2.9	10
400	Rapid prediction of protein natural frequencies using graph neural networks. , 2022, 1, 277-285.		10
401	Stress and energy flow field near a rapidly propagating mode I crack. Lecture Notes in Computational Science and Engineering, 2004, , 143-156.	0.3	9
402	Failure of Alzheimerâ€™s Aβ(1â€“40) amyloid nanofibrils under compressive loading. Jom, 2010, 62, 64-68.	1.9	9
403	Linking Genetics and Mechanics in Structural Protein Materials: A Case Study of an Alport Syndrome Mutation in Tropocollagen. Mathematics and Mechanics of Solids, 2010, 15, 755-770.	2.4	9
404	Shaky foundations of hierarchical biological materials. Nano Today, 2011, 6, 332-338.	11.9	9
405	Bond energy effects on strength, cooperativity and robustness of molecular structures. Interface Focus, 2011, 1, 734-743.	3.0	9
406	Cooperativity governs the size and structure of biological interfaces. Journal of Biomechanics, 2012, 45, 2778-2783.	2.1	9
407	Probability distribution of fracture elongation, strength and toughness of notched rectangular blocks with lognormal Young's modulus. Journal of the Mechanics and Physics of Solids, 2015, 84, 116-129.	4.8	9
408	Role of Methylene Diphenyl Diisocyanate (MDI) Additives on SBS-Modified Asphalt with Improved Thermal Stability and Mechanical Performance. Energy & Fuels, 2021, 35, 17629-17641.	5.1	9
409	PRESTO: Rapid protein mechanical strength prediction with an end-to-end deep learning model. Extreme Mechanics Letters, 2022, 55, 101803.	4.1	9
410	Role of the Mineral in the Self-Healing of Cracks in Human Enamel. ACS Nano, 2022, 16, 10273-10280.	14.6	9
411	Constrained Grain Boundary Diffusion In Thin Copper Films. Materials Research Society Symposia Proceedings, 2004, 821, 36.	0.1	8
412	Muscle dystrophy single point mutation in the 2B segment of lamin A does not affect the mechanical properties at the dimer level. Journal of Biomechanics, 2008, 41, 1295-1301.	2.1	8
413	Compressive deformation of ultralong amyloid fibrils. Acta Mechanica Sinica/Lixue Xuebao, 2010, 26, 977-986.	3.4	8
414	Peeling Silicene From Model Silver Substrates in Molecular Dynamics Simulations. Journal of Applied Mechanics, Transactions ASME, 2015, 82, .	2.2	8

#	Article	IF	Citations
415	Atomic-scale hardening mechanisms apply on larger scales in â€˜architectedâ€™ materials. Nature, 2019, 565, 303-304.	27.8	8
416	Bilateral carpal tunnel syndrome in a normal child. Journal of Hand Surgery, 1994, 19, 913-914.	1.6	7
417	Copper Nanowires Broken into Nanospheres by Rayleigh Instability. MRS Bulletin, 2005, 30, 5-6.	3.5	7
418	Carbon dioxide enhances fragility of ice crystals. Journal Physics D: Applied Physics, 2012, 45, 445302.	2.8	7
419	Computational and theoretical modeling of intermediate filament networks: Structure, mechanics and disease. Acta Mechanica Sinica/Lixue Xuebao, 2012, 28, 941-950.	3.4	7
420	The tail domain of lamin B1 is more strongly modulated by divalent cations than lamin A. Nucleus, 2015, 6, 203-211.	2.2	7
421	Multiscale mechanics of the lateral pressure effect on enhancing the load transfer between polymer coated CNTs. Nanoscale, 2017, 9, 5565-5576.	5.6	7
422	Integrated Multiscale Biomaterials Experiment and Modeling. ACS Biomaterials Science and Engineering, 2017, 3, 2628-2632.	5.2	7
423	Hierarchical nanostructures for functional materials. Nanotechnology, 2018, 29, 280201.	2.6	7
424	A perspective on musical representations of folded protein nanostructures. Nano Futures, 2021, 5, 012501.	2.2	7
425	In situ three-dimensional spider web construction and mechanics. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	7
426	DeepFlames: Neural network-driven self-assembly of flame particles into hierarchical structures. MRS Communications, 2022, 12, 257-265.	1.8	7
427	Prediction of atomic stress fields using cycle-consistent adversarial neural networks based on unpaired and unmatched sparse datasets. Materials Advances, 2022, 3, 6280-6290.	5.4	7
428	A Motherâ€daughterâ€granddaughter mechanism of shear dominated intersonic crack motion along interfaces of dissimilar materials. Journal of the Chinese Institute of Engineers, Transactions of the Chinese Institute of Engineers,Series A/Chung-kuo Kung Ch'eng Hsuch K'an, 2004, 27, 763-769.	1.1	6
429	The Computational Materials Design Facility (CMDF): A powerful framework for multi-paradigm multi-scale simulations. Materials Research Society Symposia Proceedings, 2005, 894, 1.	0.1	6
430	Amino acid sequence dependence of nanoscale deformation mechanisms in alpha-helical protein filaments. Journal of Strain Analysis for Engineering Design, 2009, 44, 517-531.	1.8	6
431	Mechanical properties of crosslinks controls failure mechanism of hierarchical intermediate filament networks. Theoretical and Applied Mechanics Letters, 2012, 2, 014005.	2.8	6
432	Directed self-assembly of end-functionalized nanofibers: from percolated networks to liquid crystal-like phases. Nanotechnology, 2015, 26, 205602.	2.6	6

#	Article	IF	Citations
433	Integrated multiscale biomaterials experiment and modelling: a perspective. Interface Focus, 2016, 6, 20150098.	3.0	6
434	Interactive exploration of a hierarchical spider web structure with sound. Journal on Multimodal User Interfaces, 2022, 16, 71-85.	2.9	6
435	Flaw Tolerant Nanostructures of Biological Materials. , 2005, , 131-138.		6
436	DeepBuckle: Extracting physical behavior directly from empirical observation for a material agnostic approach to analyze and predict buckling. Journal of the Mechanics and Physics of Solids, 2022, 164, 104909.	4.8	6
437	Numerical homogenization of active material finite-element cells. Communications in Numerical Methods in Engineering, 2003, 19, 977-989.	1.3	5
438	Biegen und Brechen im Supercomputer: Duktile Verformungen und sprÃ¶de BrÃ¼che von Kristallen. Physik in Unserer Zeit, 2004, 35, 30-37.	0.0	5
439	Hierarchical coexistence of universality and diversity controls robustness and multi-functionality in intermediate filament protein networks. Nature Precedings, 0, , .	0.1	5
440	Multi-scale modeling of biomaterials and tissues. CISM International Centre for Mechanical Sciences, Courses and Lectures, 2013, , 13-55.	0.6	5
441	Molecular Modeling and Mechanics of Acrylic Adhesives on a Graphene Substrate with Roughness. BioNanoScience, 2016, 6, 177-184.	3.5	5
442	Molecular dynamics study of the mechanical properties of polydisperse pressure-sensitive adhesives. International Journal of Adhesion and Adhesives, 2019, 92, 58-64.	2.9	5
443	Computational Materials Science of Bionanomaterials: Structure, Mechanical Properties and Applications of Elastin and Collagen Proteins. , 2014, , 941-962.		5
444	Modeling Dynamic Fracture Using Large-Scale Atomistic Simulations. , 2006, , 1-68.		5
445	Sonification of a 3-D Spider Web and Reconstitution for Musical Composition Using Granular Synthesis. Computer Music Journal, 2020, 44, 43-59.	0.1	5
446	<title>Topology optimization of smart structures using a homogenization approach</title>. , 2002, , .		4
447	Rupture Mechanics of Vimentin Intermediate Filament Tetramers. Journal of Engineering Mechanics - ASCE, 2009, 135, 422-433.	2.9	4
448	Dynamic Failure of a Lamina Meshwork in Cell Nuclei under Extreme Mechanical Deformation. BioNanoScience, 2011, 1, 14-23.	3.5	4
449	Bioinspired Graphene Nanogut. Journal of Applied Mechanics, Transactions ASME, 2013, 80, .	2.2	4
450	Surface adhesion of viruses and bacteria: Defend only and/or vibrationally extinguish also?! A perspective. MRS Advances, 2021, 6, 355-361.	0.9	4

#	Article	IF	Citations
451	A coarse-grained mechanical model for folding and unfolding of tropoelastin with possible mutations. Acta Biomaterialia, 2021, 134, 477-489.	8.3	4
452	Fuzzy binding model of molecular interactions between tropoelastin and integrin alphaVbeta3. Biophysical Journal, 2021, 120, 3138-3151.	0.5	4
453	Coarse-Graining Parameterization and Multiscale Simulation of Hierarchical Systems. Part I. , 2010, , 13-34.		4
454	Threshold crack speed in dynamic fracture of silicon. Materials Research Society Symposia Proceedings, 2006, 978, .	0.1	3
455	Shock Loading of Bone-Inspired Metallic Nanocomposites. Solid State Phenomena, 0, 139, 11-22.	0.3	3
456	Size and Geometry Effects on Flow Stress in Bioinspired <i>de novo</i> Metalâ€matrix Nanocomposites. Advanced Engineering Materials, 2009, 11, 774-781.	3.5	3
457	Direct atomistic simulation of brittle-to-ductile transition in silicon single crystals. Materials Research Society Symposia Proceedings, 2010, 1272, 1.	0.1	3
458	Multiscale modeling of organic-inorganic interface: From molecular dynamics simulation to finite element modeling. Materials Research Society Symposia Proceedings, 2012, 1466, 38.	0.1	3
459	Viscoelastic relaxation time and structural evolution during length contraction of spider silk protein nanostructures. MRS Communications, 2013, 3, 185-190.	1.8	3
460	Structural Insights into the Glycine Pair Motifs in Type III Collagen. ACS Biomaterials Science and Engineering, 2017, 3, 269-278.	5.2	3
461	Mutable polyelectrolyte tube arrays: mesoscale modeling and lateral force microscopy. Soft Matter, 2017, 13, 5543-5557.	2.7	3
462	Atomistic and Continuum Studies of Diffusional Creep and Associated Dislocation Mechanisms in thin Films on Substrates. Materials Research Society Symposia Proceedings, 2003, 779, 471.	0.1	2
463	Dynamical Fracture Instabilities Due to Local Hyperelasticity at Crack Tips. Materials Research Society Symposia Proceedings, 2006, 929, 1.	0.1	2
464	Molecular and nanostructural mechanisms of deformation, strength and toughness of spider silk fibrils. Nature Precedings, 2010, , .	0.1	2
465	Structural, Mechanical and Functional Properties of Intermediate Filaments from the Atomistic to the Cellular Scales. , 2011, , 117-166.		2
466	Universality-Diversity Paradigm: Music, Materiomics, and Category Theory. Springer Series in Materials Science, 2012, , 109-169.	0.6	2
467	Molecular Mechanics of Disulfide Bonded Alpha-Helical Protein Filaments. BioNanoScience, 2013, 3, 85-94.	3.5	2
468	Strength and fracture toughness of heterogeneous blocks with joint lognormal modulus and failure strain. Journal of the Mechanics and Physics of Solids, 2016, 92, 72-86.	4.8	2

#	Article	IF	Citations
469	The Effective Modulus of Random Checkerboard Plates. Journal of Applied Mechanics, Transactions ASME, 2016, 83, .	2.2	2
470	Silk and Web Synergy: The Merging of Material and Structural Performance. Biologically-inspired Systems, 2014, , 219-268.	0.2	2
471	Chemical Complexity in Mechanical Deformation of Metals. International Journal for Multiscale Computational Engineering, 2007, 5, 181-202.	1.2	2
472	SARS-CoV-2 Infectionâ˜'Of Music and Mechanics of Its <i>Spikes</i>! A Perspective. ACS Nano, 2022, 16, 6949-6955.	14.6	2
473	A Mother-Daughter Mechanism of Mode I cracks: Supersonic Crack Motion Along Interfaces of Dissimilar Materials. Materials Research Society Symposia Proceedings, 2005, 904, 1.	0.1	1
474	Atomistic modeling of elasticity, plasticity and fracture of protein crystals. Materials Research Society Symposia Proceedings, 2005, 898, 1.	0.1	1
475	Multi-paradigm multi-scale modeling of dynamical crack propagation in silicon using the ReaxFF reactive force field. Materials Research Society Symposia Proceedings, 2005, 904, 1.	0.1	1
476	Self-Assembled CNT-Based Electronic Devices. MRS Bulletin, 2006, 31, 503-503.	3.5	1
477	Atomistic Modeling of Elasticity and Fracture of a (10,10) Single Wall Carbon Nanotube. Materials Research Society Symposia Proceedings, 2006, 924, 1.	0.1	1
478	Quantization of crack speeds in dynamic fracture of silicon: Multiparadigm ReaxFF modeling. Materials Research Society Symposia Proceedings, 2006, 910, 7.	0.1	1
479	Hierarchical nanomechanics of vimentin alpha helical coiled-coil proteins. Materials Research Society Symposia Proceedings, 2006, 978, .	0.1	1
480	Multi-Paradigm Modeling of Fracture of a Silicon Single Crystal under Mode II Shear Loading. Journal of Algorithms and Computational Technology, 2008, 2, 203-222.	0.7	1
481	How Protein Materials Balance Strength, Robustness And Adaptability. Biophysical Journal, 2009, 96, 38a.	0.5	1
482	Publisher's Note: Hierarchical simulations for the design of supertough nanofibers inspired by spider silk [Phys. Rev. E82, 056103 (2010)]. Physical Review E, 2010, 82, .	2.1	1
483	Breaking out of the cage. Nature Chemistry, 2011, 3, 837-839.	13.6	1
484	Nanoconfinement of spider silk fibrils begets superior strength, extensibility and toughness. Nature Precedings, 0, , .	0.1	1
485	The Materiome. Springer Series in Materials Science, 2012, , 27-60.	0.6	1
486	Silk-Based Hierarchical Materials for High Mechanical Performance at the Interface of Modeling, Synthesis, and Characterization. , 2018, , 1-28.		1

#	Article	IF	Citations
487	Multiscale Modeling of Lignocellulosic Biomass. , 2018, , 1-22.		1
488	New horizons for MRS Bulletin. MRS Bulletin, 2020, 45, 6-6.	3.5	1
489	Multiscale Modeling and Applications of Bioinspired Materials with Gyroid Structures. Springer Series in Materials Science, 2021, , 629-644.	0.6	1
490	Defining Nascent Bone by the Molecular Nanomechanics of Mineralized Collagen Fibrils. , 2009, , .		1
491	Synthesis and Design. Springer Series in Materials Science, 2012, , 399-424.	0.6	1
492	Multiscale Modeling of Lignocellulosic Biomass. , 2020, , 1627-1648.		1
493	Atomistic Studies of Flaw Tolerant Nanoscale Structural Links in Biological Materials. , 2006, , 139-150.		1
494	A matter of sound. Physics World, 2022, 35, 35-39.	0.0	1
495	Biomimicry for natural and synthetic composites and use of machine learning in hierarchical design. , 2022, , 141-182.		1
496	Introducing materiomics. , 0, , 1-12.		0
497	Hyperelastic effects in brittle materials failure. Materials Research Society Symposia Proceedings, 2004, 821, 204.	0.1	0
498	Analysis of a one-billion atom simulation of work-hardening in ductile materials. Materials Research Society Symposia Proceedings, 2004, 821, 270.	0.1	0
499	WS2 Nanotubes Synthesized for Lithium Storage. MRS Bulletin, 2004, 29, 787-788.	3.5	0
500	Optical Waveguiding Observed in CdS Nanowires. MRS Bulletin, 2004, 29, 909-910.	3.5	0
501	Charge Transfer across Nanocrystalline Metal Oxide/DNA Interfaces Enables DNA Recognition. MRS Bulletin, 2004, 29, 609-610.	3.5	0
502	Molecules Self-Assembled on Nanowire FETs Serve as Multilevel Memory Element. MRS Bulletin, 2004, 29, 230-230.	3.5	0
503	Researchers Elucidate the Structure of the Proteinâ€"Mineral Interface in Bone. MRS Bulletin, 2005, 30, 572-573.	3.5	0
504	Nanopipettes and Nanoparticles Enable Detection of Single DNA Molecules. MRS Bulletin, 2005, 30, 332-333.	3.5	0

#	Article	IF	Citations
505	Reactive Force Field Studies of Large-Deformation of Hybrid Carbon Nanotube-Metal Nanowires. Materials Research Society Symposia Proceedings, 2006, 963, 1.	0.1	0
506	Atomistic Studies of Crack Branching at Bimaterial Interfaces: Preliminary Results. Materials Research Society Symposia Proceedings, 2006, 929, 1.	0.1	0
507	Entropic Elasticity Controls Nanomechanics of Single Tropocollagen Molecules. Materials Research Society Symposia Proceedings, 2006, 975, 1.	0.1	0
508	Asymptotic Strength Limit of Hydrogen Bond Assemblies in Proteins at Vanishing Pulling Rates. Materials Research Society Symposia Proceedings, 2007, 1062, 1.	0.1	0
509	Atomistic Approach Predicts Resonance Frequency of Viral Capsids for Mechanodestruction Treatment. MRS Bulletin, 2008, 33, 166-166.	3.5	0
510	Osteogenesis Imperfecta: Molecular and Mesoscale Disease Mechanisms. , 2009, , .		0
511	Keten and Buehler Reply:. Physical Review Letters, 2009, 102, .	7.8	0
512	Microscale Structural Model of Alzheimer's Aî²(1-40) Amyloid Fibril: Comparative Study of 2- and 3-fold Morphologies. Materials Research Society Symposia Proceedings, 2009, 1240, 1.	0.1	0
513	Alport Syndrome mutation changes molecular structure and nanomechanics of type IV tropocollagen. Materials Research Society Symposia Proceedings, 2009, 1187, 26.	0.1	0
514	Structure Prediction and Nanomechanical Properties of Human Vimentin Intermediate Filament Dimers. , 2009, , .		0
515	<I>A Special Issue on</I> Computational and Theoretical Materiomics: Properties of Biological and <I>de novo</I> Bioinspired Materials. Journal of Computational and Theoretical Nanoscience, 2010, 7, 1201-1202.	0.4	0
516	Hierarchical nanomechanics of collagen microfibrils. Nature Precedings, 2010, , .	0.1	0
517	Hierarchical nanomechanics of collagen microfibrils. Nature Precedings, 2010, , .	0.1	0
518	Failure of Abeta(1-40) amyloid fibrils under tensile loading. Nature Precedings, 2010, , .	0.1	0
519	Hierarchical Structure Controls Nanomechanical Properties of Vimentin Intermediate Filaments. , 2010, , .		0
520	Computational multiscale studies of collagen tissues in the context of brittle bone disease<i>osteogenesis imperfecta</i>. Materials Research Society Symposia Proceedings, 2010, 1274, 1.	0.1	0
521	Insights Into the Structure and Mechanics of a Mostly Disordered Protein: Lamin A and Progerin Tail Domians. Biophysical Journal, 2011, 100, 184a.	0.5	0
522	Flaw-tolerance in silk fibrils explains strength, extensibility and toughness of spider silk. Nature Precedings, 2011, , .	0.1	0

#	Article	IF	Citations
523	The Future of Biomateriomics. Springer Series in Materials Science, 2012, , 425-430.	0.6	0
524	Unlocking Nature: Case Studies. Springer Series in Materials Science, 2012, , 299-356.	0.6	0
525	The Challenges of Biological Materials. Springer Series in Materials Science, 2012, , 61-107.	0.6	0
526	Viscoelastic Properties of Collagen at the Molecular Scale. Biophysical Journal, 2012, 102, 261a.	0.5	0
527	Micrororobotics. , 2012, , 1436-1436.		0
528	Spidermans Geheimnis. Physik in Unserer Zeit, 2013, 44, 72-79.	0.0	0
529	Carbon Nanotubes: Atomistic Investigation of Load Transfer Between DWNT Bundles â€œCrosslinkedâ€•by PMMA Oligomers (Adv. Funct. Mater. 15/2013). Advanced Functional Materials, 2013, 23, 1976-1976.	14.9	0
530	Spinning silk from music: The art of creating new materials. New Scientist, 2014, 221, 30-31.	0.0	0
531	Flaw tolerance promoted by dissipative deformation mechanisms between material building blocks. Philosophical Magazine Letters, 2014, 94, 592-600.	1.2	0
532	Middle School Classroom Materials--Structure and Failure of Wood: A Computational and Micrographic Examination. Microscopy and Microanalysis, 2014, 20, 2154-2155.	0.4	0
533	In Situ Mechanical Interrogation of Single Nuclear Lamins Suggests the Lamina is a Robust Framework. Biophysical Journal, 2017, 112, 469a.	0.5	0
534	Multiscale Modeling of Structural Materials: Chemistry and Mechanical Performance. , 2018, , 1-6.		0
535	Congratulations: 100th issue of the journal of the mechanical behavior of biomedical materials. Journal of the Mechanical Behavior of Biomedical Materials, 2019, 100, 103450.	3.1	0
536	Reaching the horizon: First<i>MRS Bulletin Impact</i>articles published. MRS Bulletin, 2020, 45, 879-879.	3.5	0
537	Superelasticity of Vimentin Coiled-Coil Intermediate Filaments: Atomistic and Continuum Studies. , 2007, , .		0
538	Elasticity and Strength of Beta-Sheet Protein Materials: Geometric Confinement and Size Effects. , 2009, , .		0
539	Deformation and Failure of Collagenous Tissues: A Multi-Scale Study. , 2009, , .		0
540	Computational Scale Linking in Biological Protein Materials. , 2010, , 491-531.		0

#	Article	IF	Citations
541	Multiscale Modeling of Biological Protein Materials â€“ Deformation and Failure. Challenges and Advances in Computational Chemistry and Physics, 2010, , 473-533.	0.6	0
542	Molecular and Mesoscale Mechanisms of Osteogenesis Imperfecta Disease. , 2010, , .		0
543	Coarse-Graining Parameterization and Multiscale Simulation of Hierarchical Systems. Part II. , 2010, , 35-68.		0
544	Mechanical Characterization in Molecular Simulation. Springer Series in Materials Science, 2012, , 265-296.	0.6	0
545	Pathological Materiomics. Springer Series in Materials Science, 2012, , 357-398.	0.6	0
546	Computational Approaches and Simulation. Springer Series in Materials Science, 2012, , 213-263.	0.6	0
547	Mechanical Properties of Hierarchical Protein Materials. , 2016, , 1915-1926.		0
548	Single-crystal-to-single-crystal phase transition by thermosalient effect in isomorphous Schiff base. Acta Crystallographica Section A: Foundations and Advances, 2017, 73, C710-C710.	0.1	0
549	Silk-Based Hierarchical Materials for High Mechanical Performance at the Interface of Modeling, Synthesis, and Characterization. , 2020, , 1547-1574.		0
550	Multiscale Modeling of Structural Materials: Chemistry and Mechanical Performance. , 2020, , 1541-1546.		0