Markus J Buehler

List of Publications by Year
in descending order

580 papers	38,118 citations	1695 104 h-index	4366 173 g-index
604 all docs	604 docs citations	604 times ranked	35024 citing authors

#	Article	IF	Citations
1	MechGPT, a Language-Based Strategy for Mechanics and Materials Modeling That Connects Knowledge Across Scales, Disciplines, and Modalities. Applied Mechanics Reviews, 2024, 76, .	10.3	13
2	Generative Modeling, Design, and Analysis of Spider Silk Protein Sequences for Enhanced Mechanical Properties. Advanced Functional Materials, 2024, 34, .	16.5	7
3	BioinspiredLLM: Conversational Large Language Model for the Mechanics of Biological and Bioâ€inspired Materials. Advanced Science, 2024, 11, .	12.4	12
4	Crosslinker energy landscape effects on dynamic mechanical properties of ideal polymer hydrogels. Materials Advances, 2024, 5, 1991-1997.	5.2	0
5	Generative Retrieval-Augmented Ontologic Graph and Multiagent Strategies for Interpretive Large Language Model-Based Materials Design. ACS Engineering Au, 2024, 4, 241-277.	5.0	7
6	Robust myco-composites: a biocomposite platform for versatile hybrid-living materials. Materials Horizons, 2024, 11, 1689-1703.	12.8	3
7	Heterogeneous and Cooperative Rupture of Histidineâ€“Ni²⁺ Metal-Coordination Bonds on Rationally Designed Protein Templates. ACS Biomaterials Science and Engineering, 2024, 10, 2945-2955.	5.4	0
8	X-LoRA: Mixture of low-rank adapter experts, a flexible framework for large language models with applications in protein mechanics and molecular design. , 2024, 2, .		0
9	ProtAgents: protein discovery via large language model multi-agent collaborations combining physics and machine learning. Digital Discovery, 2024, 3, 1389-1409.	5.7	0
10	Generative multiscale analysis of de novo proteome-inspired molecular structures and nanomechanical optimization using a VoxelPerceiver transformer model. Journal of the Mechanics and Physics of Solids, 2023, 170, 105098.	4.9	9
11	Hierarchically structured bioinspired nanocomposites. Nature Materials, 2023, 22, 18-35.	26.6	179
12	Bioadhesive Design Toward Renewable Composites: Adhesive Distribution and Molecular Adhesion. Advanced Engineering Materials, 2023, 25, .	3.5	3
13	Molecular understanding of Ni ²⁺ -nitrogen family metal-coordinated hydrogel relaxation times using free energy landscapes. Proceedings of the National Academy of Sciences of the United States of America, 2023, 120, .	7.6	9
14	Predicting mechanical fields near cracks using a progressive transformer diffusion model and exploration of generalization capacity. Journal of Materials Research, 2023, 38, 1317-1331.	2.6	11
15	Computational Design and Manufacturing of Sustainable Materials through First-Principles and Materiomics. Chemical Reviews, 2023, 123, 2242-2275.	51.4	22
16	Deep language models for interpretative and predictive materials science. , 2023, 1, .		34
17	DyFraNet: Forecasting and backcasting dynamic fracture mechanics in space and time using a 2D-to-3D deep neural network. , 2023, 1, .		6
18	Unsupervised cross-domain translation via deep learning and adversarial attention neural networks and application to music-inspired protein designs. Patterns, 2023, 4, 100692.	5.2	7

#	Article	IF	Citations
19	3D Printability of Silk/Hydroxyapatite Composites for Microprosthetic Applications. ACS Biomaterials Science and Engineering, 2023, 9, 1285-1295.	5.4	15
20	Fill in the Blank: Transferrable Deep Learning Approaches to Recover Missing Physical Field Information. Advanced Materials, 2023, 35, .	24.3	9
21	Bond clusters control rupture force limit in shear loaded histidine-Ni²⁺ metal-coordinated proteins. Nanoscale, 2023, 15, 8578-8588.	5.8	5
22	Deep learning virtual indenter maps nanoscale hardness rapidly and non-destructively, revealing mechanism and enhancing bioinspired design. Matter, 2023, 6, 1975-1991.	10.2	10
23	Generative design of de novo proteins based on secondary-structure constraints using an attention-based diffusion model. CheM, 2023, 9, 1828-1849.	12.2	34
24	A computational building block approach towards multiscale architected materials analysis and design with application to hierarchical metal metamaterials. Modelling and Simulation in Materials Science and Engineering, 2023, 31, 054001.	1.9	14
25	Generative discovery of de novo chemical designs using diffusion modeling and transformer deep neural networks with application to deep eutectic solvents. Applied Physics Letters, 2023, 122, .	3.2	15
26	Coordination Stoichiometry Effects on the Binding Hierarchy of Histamine and Imidazoleâ€“M²⁺Complexes. Macromolecular Rapid Communications, 2023, 44, .	4.4	0
27	Localization of Zn²⁺ ions affects the structural folding and mechanics of Nereis virens Nvjp-1. Soft Matter, 2023, 19, 3917-3924.	2.8	0
28	Designing architected materials for mechanical compression via simulation, deep learning, and experimentation. Npj Computational Materials, 2023, 9, .	9.1	16
29	Modeling and design of heterogeneous hierarchical bioinspired spider web structures using deep learning and additive manufacturing. Proceedings of the National Academy of Sciences of the United States of America, 2023, 120, .	7.6	11
30	Untapped Potential of Deep Eutectic Solvents for the Synthesis of Bioinspired Inorganicâ€“Organic Materials. Chemistry of Materials, 2023, 35, 7878-7903.	7.1	12
31	Generative pretrained autoregressive transformer graph neural network applied to the analysis and discovery of novel proteins. Journal of Applied Physics, 2023, 134, .	2.3	10
32	MeLM, a generative pretrained language modeling framework that solves forward and inverse mechanics problems. Journal of the Mechanics and Physics of Solids, 2023, 181, 105454.	4.9	18
33	Learning from nature by leveraging integrative biomateriomics modeling toward adaptive and functional materials. MRS Bulletin, 2023, 48, 1140-1153.	4.2	1
34	Interactive exploration of a hierarchical spider web structure with sound. Journal on Multimodal User Interfaces, 2022, 16, 71-85.	2.8	6
35	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
36	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	19

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37	A matter of sound. Physics World, 2022, 35, 35-39.	0.0	1
38	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.	5.4	26
39	Rapid prediction of protein natural frequencies using graph neural networks. Digital Discovery, 2022, 1, 277-285.	5.7	15
40	Biomimicry for natural and synthetic composites and use of machine learning in hierarchical design. , 2022, , 141-182.		1
41	DeepFlames: Neural network-driven self-assembly of flame particles into hierarchical structures. MRS Communications, 2022, 12, 257-265.	1.8	8
42	Deep learning based design of porous graphene for enhanced mechanical resilience. Computational Materials Science, 2022, 206, 111270.	3.1	15
43	Fundamental Investigation of Biomass Interaction for Green Composites: Experiments and Molecular Dynamics Simulations. Advanced Functional Materials, 2022, 32, .	16.5	12
44	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.	4.9	6
45	Generative design, manufacturing, and molecular modeling of 3D architected materials based on natural language input. APL Materials, 2022, 10, .	4.8	26
46	SARS-CoV-2 Infectionâ"Of Music and Mechanics of Its Spikes! A Perspective. ACS Nano, 2022, 16, 6949-6955.	15.3	3
47	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.	3.9	23
48	Prediction of atomic stress fields using cycle-consistent adversarial neural networks based on unpaired and unmatched sparse datasets. Materials Advances, 2022, 3, 6280-6290.	5.2	7
49	PRESTO: Rapid protein mechanical strength prediction with an end-to-end deep learning model. Extreme Mechanics Letters, 2022, 55, 101803.	4.2	10
50	Role of the Mineral in the Self-Healing of Cracks in Human Enamel. ACS Nano, 2022, 16, 10273-10280.	15.3	10
51	Molecular simulations of the interfacial properties in silkâ€"hydroxyapatite composites. Nanoscale, 2022, 14, 10929-10939.	5.8	6
52	FieldPerceiver: Domain agnostic transformer model to predict multiscale physical fields and nonlinear material properties through neural ologs. Materials Today, 2022, 57, 9-25.	18.1	32
53	Nanomechanical analysis of SARS-CoV-2 variants and predictions of infectiousness and lethality. Soft Matter, 2022, 18, 5833-5842.	2.8	5
54	Highâ€Throughput Generation of 3D Graphene Metamaterials and Property Quantification Using Machine Learning. Small Methods, 2022, 6, .	9.6	12

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55	Hierarchical Multiresolution Design of Bioinspired Structural Composites Using Progressive Reinforcement Learning. Advanced Theory and Simulations, 2022, 5, .	2.9	25
56	Rapid mechanical property prediction and de novo design of three-dimensional spider webs through graph and GraphPerceiver neural networks. Journal of Applied Physics, 2022, 132, .	2.3	13
57	Discovering design principles of collagen molecular stability using a genetic algorithm, deep learning, and experimental validation. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, .	7.6	17
58	Fracture at the two-dimensional limit. MRS Bulletin, 2022, 47, 848-862.	4.2	8
59	CollagenTransformer: End-to-End Transformer Model to Predict Thermal Stability of Collagen Triple Helices Using an NLP Approach. ACS Biomaterials Science and Engineering, 2022, 8, 4301-4310.	5.4	16
60	Linking atomic structural defects to mesoscale properties in crystalline solids using graph neural networks. Npj Computational Materials, 2022, 8, .	9.1	23
61	Crowdsourcing bridge dynamic monitoring with smartphone vehicle trips. Communications Engineering, 2022, 1, .	4.0	22
62	An automated biomateriomics platform for sustainable programmable materials discovery. Matter, 2022, 5, 3597-3613.	10.2	9
63	Multiscale Modeling at the Interface of Molecular Mechanics and Natural Language through Attention Neural Networks. Accounts of Chemical Research, 2022, 55, 3387-3403.	16.6	16
64	Generating 3D architectured nature-inspired materials and granular media using diffusion models based on language cues. Oxford Open Materials Science, 2022, 2, .	2.0	7
65	End-to-End Protein Normal Mode Frequency Predictions Using Language and Graph Models and Application to Sonification. ACS Nano, 2022, 16, 20656-20670.	15.3	12
66	Nature-inspired architected materials using unsupervised deep learning. Communications Engineering, 2022, 1, .	4.0	38
67	Understanding Plant Biomass via Computational Modeling. Advanced Materials, 2021, 33, e2003206.	24.3	43
68	Effect of the silica nanoparticle size on the osteoinduction of biomineralized silk-silica nanocomposites. Acta Biomaterialia, 2021, 120, 203-212.	8.8	19
69	Comparative Analysis of Nanomechanical Features of Coronavirus Spike Proteins and Correlation with Lethality and Infection Rate. Matter, 2021, 4, 265-275.	10.2	23
70	Tuning Mechanical Properties in Polycrystalline Solids Using a Deep Generative Framework. Advanced Engineering Materials, 2021, 23, 2001339.	3.5	15
71	WebNet: A biomateriomic three-dimensional spider web neural net. Extreme Mechanics Letters, 2021, 42, 101034.	4.2	10
72	A perspective on musical representations of folded protein nanostructures. Nano Futures, 2021, 5, 012501.	2.2	8

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73	Molecular origin of viscoelasticity in mineralized collagen fibrils. Biomaterials Science, 2021, 9, 3390-3400.	5.5	15
74	Transition-metal coordinate bonds for bioinspired macromolecules with tunable mechanical properties. Nature Reviews Materials, 2021, 6, 421-436.	40.2	187
75	Deep learning model to predict complex stress and strain fields in hierarchical composites. Science Advances, 2021, 7, .	10.9	160
76	Deep learning model to predict fracture mechanisms of graphene. Npj 2D Materials and Applications, 2021, 5, .	8.3	49
77	Surface adhesion of viruses and bacteria: Defend only and/or vibrationally extinguish also?! A perspective. MRS Advances, 2021, 6, 355-361.	1.0	4
78	A coarse-grained mechanical model for folding and unfolding of tropoelastin with possible mutations. Acta Biomaterialia, 2021, 134, 477-489.	8.8	4
79	Designing and fabricating materials from fire using sonification and deep learning. IScience, 2021, 24, 102873.	4.1	11
80	In situ three-dimensional spider web construction and mechanics. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.6	9
81	Fuzzy binding model of molecular interactions between tropoelastin and integrin alphaVbeta3. Biophysical Journal, 2021, 120, 3138-3151.	0.5	6
82	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.	4.9	84
83	Frank-van der Merwe growth in bilayer graphene. Matter, 2021, 4, 3339-3353.	10.2	24
84	Deep learning approach to assess damage mechanics of bone tissue. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 123, 104761.	3.1	32
85	Multiscale Modeling and Applications of Bioinspired Materials with Gyroid Structures. Springer Series in Materials Science, 2021, , 629-644.	0.0	1
86	Artificial intelligence and machine learning in design of mechanical materials. Materials Horizons, 2021, 8, 1153-1172.	12.8	289
87	Words to Matter: De novo Architected Materials Design Using Transformer Neural Networks. Frontiers in Materials, 2021, 8, .	2.5	20
88	Role of Methylene Diphenyl Diisocyanate (MDI) Additives on SBS-Modified Asphalt with Improved Thermal Stability and Mechanical Performance. Energy & Fuels, 2021, 35, 17629-17641.	5.2	14
89	Screening and Understanding Li Adsorption on Two-Dimensional Metallic Materials by Learning Physics and Physics-Simplified Learning. Jacs Au, 2021, 1, 1904-1914.	8.3	16
90	Encoding and exploring latent design space of optimal material structures via a VAE-LSTM model. Forces in Mechanics, 2021, 5, 100054.	2.9	17

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91	A deep learning augmented genetic algorithm approach to polycrystalline 2D material fracture discovery and design. Applied Physics Reviews, 2021, 8, .	11.7	25
92	Electrospinning Piezoelectric Fibers for Biocompatible Devices. Advanced Healthcare Materials, 2020, 9, e1901287.	8.5	105
93	Melanin Biopolymers: Tailoring Chemical Complexity for Materials Design. Angewandte Chemie, 2020, 132, 11292-11301.	2.1	14
94	Melanin Biopolymers: Tailoring Chemical Complexity for Materials Design. Angewandte Chemie - International Edition, 2020, 59, 11196-11205.	14.8	133
95	De novo topology optimization of total ossicular replacement prostheses. Journal of the Mechanical Behavior of Biomedical Materials, 2020, 103, 103541.	3.1	20
96	Observations of 3 nm Silk Nanofibrils Exfoliated from Natural Silkworm Silk Fibers. , 2020, 2, 153-160.		47
97	A semi-supervised approach to architected materials design using graph neural networks. Extreme Mechanics Letters, 2020, 41, 101029.	4.2	42
98	Using Deep Learning to Predict Fracture Patterns in Crystalline Solids. Matter, 2020, 3, 197-211.	10.2	107
99	Nonlinear mechanics of lamin filaments and the meshwork topology build an emergent nuclear lamina. Nature Communications, 2020, 11, 6205.	13.2	44
100	Mesomechanics of a three-dimensional spider web. Journal of the Mechanics and Physics of Solids, 2020, 144, 104096.	4.9	12
101	Accumulation of collagen molecular unfolding is the mechanism of cyclic fatigue damage and failure in collagenous tissues. Science Advances, 2020, 6, eaba2795.	10.9	67
102	Chirality-Dependent Second Harmonic Generation of MoS₂ Nanoscroll with Enhanced Efficiency. ACS Nano, 2020, 14, 13333-13342.	15.3	44
103	Reaching the horizon: FirstMRS Bulletin Impactarticles published. MRS Bulletin, 2020, 45, 879-879.	4.2	0
104	Machine learning model for fast prediction of the natural frequencies of protein molecules. RSC Advances, 2020, 10, 16607-16615.	3.7	12
105	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.	16.5	52
106	Sonification based de novo protein design using artificial intelligence, structure prediction, and analysis using molecular modeling. APL Bioengineering, 2020, 4, 016108.	6.0	40
107	Mechanics of Mineralized Collagen Fibrils upon Transient Loads. ACS Nano, 2020, 14, 8307-8316.	15.3	24
108	Perspectives on three-dimensional printing of self-assembling materials and structures. Current Opinion in Biomedical Engineering, 2020, 15, 59-67.	3.7	22

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109	Artificial intelligence method to design and fold alpha-helical structural proteins from the primary amino acid sequence. Extreme Mechanics Letters, 2020, 36, 100652.	4.2	33
110	The Order-Disorder Continuum: Linking Predictions of Protein Structure and Disorder through Molecular Simulation. Scientific Reports, 2020, 10, 2068.	3.4	15
111	Adverse effects of Alport syndrome-related Gly missense mutations on collagen type IV: Insights from molecular simulations and experiments. Biomaterials, 2020, 240, 119857.	11.8	18
112	Wave Propagation and Energy Dissipation in Collagen Molecules. ACS Biomaterials Science and Engineering, 2020, 6, 1367-1374.	5.4	30
113	Exploration of Biomass-Derived Activated Carbons for Use in Vanadium Redox Flow Batteries. ACS Sustainable Chemistry and Engineering, 2020, 8, 9472-9482.	6.9	38
114	Multiscale structural insights of load bearing bamboo: A computational modeling approach. Journal of the Mechanical Behavior of Biomedical Materials, 2020, 107, 103743.	3.1	26
115	Probing the Role of Bone Lamellar Patterns through Collagen Microarchitecture Mapping, Numerical Modeling, and 3Dâ€Printing. Advanced Engineering Materials, 2020, 22, .	3.5	11
116	New horizons for MRS Bulletin. MRS Bulletin, 2020, 45, 6-6.	4.2	1
117	Liquified protein vibrations, classification and cross-paradigm de novo image generation using deep neural networks. Nano Futures, 2020, 4, 035004.	2.2	12
118	Multiscale Modeling of Lignocellulosic Biomass. , 2020, , 1627-1648.		1
119	Silk-Based Hierarchical Materials for High Mechanical Performance at the Interface of Modeling, Synthesis, and Characterization. , 2020, , 1547-1574.		0
120	Multiscale Modeling of Structural Materials: Chemistry and Mechanical Performance. , 2020, , 1541-1546.		0
121	Sonification of a 3-D Spider Web and Reconstitution for Musical Composition Using Granular Synthesis. Computer Music Journal, 2020, 44, 43-59.	0.3	6
122	Natureâ€™s Way: Hierarchical Strengthening through Weakness. Matter, 2019, 1, 302-303.	10.2	15
123	Additive Manufacturing Approaches for Hydroxyapatiteâ€Reinforced Composites. Advanced Functional Materials, 2019, 29, 1903055.	16.5	121
124	Conductive Silkâ€Based Composites Using Biobased Carbon Materials. Advanced Materials, 2019, 31, e1904720.	24.3	57
125	Design and Fabrication of Silk Templated Electronic Yarns and Applications in Multifunctional Textiles. Matter, 2019, 1, 1411-1425.	10.2	105
126	Artificial intelligence design algorithm for nanocomposites optimized for shear crack resistance. Nano Futures, 2019, 3, 035001.	2.2	64

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127	Reversible MoS₂ Origami with Spatially Resolved and Reconfigurable Photosensitivity. Nano Letters, 2019, 19, 7941-7949.	9.5	45
128	Atomically Sharp Dual Grain Boundaries in 2D WS₂ Bilayers. Small, 2019, 15, e1902590.	11.2	17
129	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
130	The hidden structure of human enamel. Nature Communications, 2019, 10, 4383.	13.2	157
131	Remarkably Distinct Mechanical Flexibility in Three Structurally Similar Semiconducting Organic Crystals Studied by Nanoindentation and Molecular Dynamics. Chemistry of Materials, 2019, 31, 1391-1402.	7.1	89
132	Allysine modifications perturb tropoelastin structure and mobility on a local and global scale. Matrix Biology Plus, 2019, 2, 100002.	3.7	13
133	Molecular dynamics study of the mechanical properties of polydisperse pressure-sensitive adhesives. International Journal of Adhesion and Adhesives, 2019, 92, 58-64.	3.0	5
134	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.	15.3	92
135	Anisotropic Fracture Dynamics Due to Local Lattice Distortions. ACS Nano, 2019, 13, 5693-5702.	15.3	22
136	Analysis of the vibrational and sound spectrum of over 100,000 protein structures and application in sonification. Extreme Mechanics Letters, 2019, 29, 100460.	4.2	19
137	Grain Boundaries as Electrical Conduction Channels in Polycrystalline Monolayer WS₂. ACS Applied Materials & Interfaces, 2019, 11, 10189-10197.	8.3	18
138	Spider dragline silk as torsional actuator driven by humidity. Science Advances, 2019, 5, eaau9183.	10.9	117
139	Dynamic pigmentary and structural coloration within cephalopod chromatophore organs. Nature Communications, 2019, 10, 1004.	13.2	120
140	Paraffin-enabled graphene transfer. Nature Communications, 2019, 10, 867.	13.2	209
141	Multiscale Design of Graphyneâ€Based Materials for Highâ€Performance Separation Membranes. Advanced Materials, 2019, 31, e1805665.	24.3	32
142	Sounds interesting: can sonification help us design new proteins?. Expert Review of Proteomics, 2019, 16, 875-879.	3.0	19
143	Biological Material Interfaces as Inspiration for Mechanical and Optical Material Designs. Chemical Reviews, 2019, 119, 12279-12336.	51.4	134
144	Self-Folding Hybrid Graphene Skin for 3D Biosensing. Nano Letters, 2019, 19, 1409-1417.	9.5	51

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145	Mechanical behavior of nanocomposites. MRS Bulletin, 2019, 44, 19-24.	4.2	42
146	Atomic-scale hardening mechanisms apply on larger scales in â€˜architectedâ€™ materials. Nature, 2019, 565, 303-304.	36.2	9
147	Tropoelastin is a Flexible Molecule that Retains its Canonical Shape. Macromolecular Bioscience, 2019, 19, e1800250.	4.5	21
148	Multiscale Modeling of Silk and Silkâ€Based Biomaterialsâ€”A Review. Macromolecular Bioscience, 2019, 19, e1800253.	4.5	45
149	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.	4.2	41
150	Materials-by-design: computation, synthesis, and characterization from atoms to structures. Physica Scripta, 2018, 93, 053003.	2.5	35
151	Nanofibrils in nature and materials engineering. Nature Reviews Materials, 2018, 3, .	40.2	501
152	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.	3.0	31
153	Integration of Stiff Graphene and Tough Silk for the Design and Fabrication of Versatile Electronic Materials. Advanced Functional Materials, 2018, 28, 1705291.	16.5	149
154	Highâ€Strength, Durable Allâ€Silk Fibroin Hydrogels with Versatile Processability toward Multifunctional Applications. Advanced Functional Materials, 2018, 28, 1704757.	16.5	144
155	Interlocking Friction Governs the Mechanical Fracture of Bilayer MoS₂. ACS Nano, 2018, 12, 3600-3608.	15.3	44
156	Mechanical exfoliation of two-dimensional materials. Journal of the Mechanics and Physics of Solids, 2018, 115, 248-262.	4.9	161
157	Predicting rates of in vivo degradation of recombinant spider silk proteins. Journal of Tissue Engineering and Regenerative Medicine, 2018, 12, e97-e105.	2.7	22
158	De novo composite design based on machine learning algorithm. Extreme Mechanics Letters, 2018, 18, 19-28.	4.2	329
159	Sub-nanometre channels embedded in two-dimensional materials. Nature Materials, 2018, 17, 129-133.	26.6	97
160	Silk-Based Hierarchical Materials for High Mechanical Performance at the Interface of Modeling, Synthesis, and Characterization. , 2018, , 1-28.		1
161	Polydopamine and eumelanin models in various oxidation states. Physical Chemistry Chemical Physics, 2018, 20, 28135-28143.	2.9	27
162	Fabrication and Characterization of Recombinant Silkâ€Elastinâ€Likeâ€Protein (SELP) Fiber. Macromolecular Bioscience, 2018, 18, e1800265.	4.5	30

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163	Multiscale Modeling of Lignocellulosic Biomass. , 2018, , 1-22.		1
164	Multiscale Modeling of Structural Materials: Chemistry and Mechanical Performance. , 2018, , 1-6.		0
165	Imaging and analysis of a three-dimensional spider web architecture. Journal of the Royal Society Interface, 2018, 15, 20180193.	3.4	37
166	Molecular characterization and atomistic model of biocrude oils from hydrothermal liquefaction of microalgae. Algal Research, 2018, 35, 262-273.	4.7	22
167	Combining In Silico Design and Biomimetic Assembly: A New Approach for Developing Highâ€Performance Dynamic Responsive Bioâ€Nanomaterials. Advanced Materials, 2018, 30, e1802306.	24.3	36
168	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.	7.6	41
169	Multiscale Mechanics of Triply Periodic Minimal Surfaces of Three-Dimensional Graphene Foams. Nano Letters, 2018, 18, 4845-4853.	9.5	61
170	Biopolymer nanofibrils: Structure, modeling, preparation, and applications. Progress in Polymer Science, 2018, 85, 1-56.	26.2	332
171	Tensan Silk-Inspired Hierarchical Fibers for Smart Textile Applications. ACS Nano, 2018, 12, 6968-6977.	15.3	90
172	Bioinspired hierarchical composite design using machine learning: simulation, additive manufacturing, and experiment. Materials Horizons, 2018, 5, 939-945.	12.8	379
173	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
174	Hierarchical nanostructures for functional materials. Nanotechnology, 2018, 29, 280201.	2.7	8
175	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.	5.9	21
176	The Rise of Hierarchical Nanostructured Materials from Renewable Sources: Learning from Nature. ACS Nano, 2018, 12, 7425-7433.	15.3	131
177	Improving the performance of pressure sensitive adhesives by tuning the crosslinking density and locations. Polymer, 2018, 154, 164-171.	3.9	22
178	Intracellular Pathways Involved in Bone Regeneration Triggered by Recombinant Silkâ€“Silica Chimeras. Advanced Functional Materials, 2018, 28, 1702570.	16.5	33
179	The mechanics and design of a lightweight three-dimensional graphene assembly. Science Advances, 2017, 3, e1601536.	10.9	347
180	Computational smart polymer design based on elastin protein mutability. Biomaterials, 2017, 127, 49-60.	11.8	52

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181	Advanced Structural Materials by Bioinspiration. Advanced Engineering Materials, 2017, 19, 1600787.	3.5	110
182	Protein-free formation of bone-like apatite: New insights into the key role of carbonation. Biomaterials, 2017, 127, 75-88.	11.8	81
183	Ion Effect and Metal-Coordinated Cross-Linking for Multiscale Design of Nereis Jaw Inspired Mechanomutable Materials. ACS Nano, 2017, 11, 1858-1868.	15.3	26
184	Synergistic Integration of Experimental and Simulation Approaches for the de Novo Design of Silk-Based Materials. Accounts of Chemical Research, 2017, 50, 866-876.	16.6	50
185	Nacre-inspired design of graphene oxideâ€“polydopamine nanocomposites for enhanced mechanical properties and multi-functionalities. Nano Futures, 2017, 1, 011003.	2.2	41
186	Multiscale Modeling of Muscular-Skeletal Systems. Annual Review of Biomedical Engineering, 2017, 19, 435-457.	12.4	33
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