Peter Fratzl

List of Publications by Year
in descending order

611 papers	46,588 citations	1463 107 h-index	2953 189 g-index
652 all docs	652 docs citations	652 times ranked	32685 citing authors

#	Article	IF	Citations
1	Natureâ€™s hierarchical materials. Progress in Materials Science, 2007, 52, 1263-1334.	32.8	2,254
2	Materials become insensitive to flaws at nanoscale: Lessons from nature. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 5597-5600.	7.1	1,641
3	Structure and mechanical quality of the collagenâ€“mineral nano-composite in bone. Journal of Materials Chemistry, 2004, 14, 2115-2123.	6.7	1,081
4	Skeleton of Euplectella sp.: Structural Hierarchy from the Nanoscale to the Macroscale. Science, 2005, 309, 275-278.	12.6	997
5	Iron-Clad Fibers: A Metal-Based Biological Strategy for Hard Flexible Coatings. Science, 2010, 328, 216-220.	12.6	838
6	Mineralized Collagen Fibrils: A Mechanical Model with a Staggered Arrangement of Mineral Particles. Biophysical Journal, 2000, 79, 1737-1746.	0.5	710
7	Biomaterial systems for mechanosensing and actuation. Nature, 2009, 462, 442-448.	27.8	591
8	Nucleation and growth of magnetite from solution. Nature Materials, 2013, 12, 310-314.	27.5	583
9	Cooperative deformation of mineral and collagen in bone at the nanoscale. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 17741-17746.	7.1	568
10	Bone mineralization density distribution in health and disease. Bone, 2008, 42, 456-466.	2.9	554
11	The Role of Wheat Awns in the Seed Dispersal Unit. Science, 2007, 316, 884-886.	12.6	541
12	Fibrillar Structure and Mechanical Properties of Collagen. Journal of Structural Biology, 1998, 122, 119-122.	2.8	539
13	Reversible Switching of Hydrogel-Actuated Nanostructures into Complex Micropatterns. Science, 2007, 315, 487-490.	12.6	530
14	Biomimetic materials research: what can we really learn from nature's structural materials?. Journal of the Royal Society Interface, 2007, 4, 637-642.	3.4	501
15	Viscoelastic properties of collagen: synchrotron radiation investigations and structural model. Philosophical Transactions of the Royal Society B: Biological Sciences, 2002, 357, 191-197.	4.0	434
16	Cell-wall recovery after irreversible deformation of wood. Nature Materials, 2003, 2, 810-813.	27.5	427
17	The effect of geometry on three-dimensional tissue growth. Journal of the Royal Society Interface, 2008, 5, 1173-1180.	3.4	413
18	From brittle to ductile fracture of bone. Nature Materials, 2006, 5, 52-55.	27.5	411

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19	Validation of quantitative backscattered electron imaging for the measurement of mineral density distribution in human bone biopsies. Bone, 1998, 23, 319-326.	2.9	401
20	Mapping amorphous calcium phosphate transformation into crystalline mineral from the cell to the bone in zebrafish fin rays. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 6316-6321.	7.1	389
21	Biological Composites. Annual Review of Materials Research, 2010, 40, 1-24.	9.3	381
22	Size-controlled hydroxyapatite nanoparticles as self-organized organic?inorganic composite materials. Biomaterials, 2005, 26, 5414-5426.	11.4	373
23	Alendronate increases degree and uniformity of mineralization in cancellous bone and decreases the porosity in cortical bone of osteoporotic women. Bone, 2001, 29, 185-191.	2.9	361
24	Nanoscale Deformation Mechanisms in Bone. Nano Letters, 2005, 5, 2108-2111.	9.1	336
25	Actuation systems in plants as prototypes for bioinspired devices. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2009, 367, 1541-1557.	3.4	289
26	Biological compositesâ€"complex structures for functional diversity. Science, 2018, 362, 543-547.	12.6	286
27	Architecture of the osteocyte network correlates with bone material quality. Journal of Bone and Mineral Research, 2013, 28, 1837-1845.	2.8	285
28	Radial packing, order, and disorder in collagen fibrils. Biophysical Journal, 1995, 68, 1661-1670.	0.5	281
29	Nucleation and growth of mineral crystals in bone studied by small-angle X-ray scattering. Calcified Tissue International, 1991, 48, 407-413.	3.1	275
30	Geometry as a Factor for Tissue Growth: Towards Shape Optimization of Tissue Engineering Scaffolds. Advanced Healthcare Materials, 2013, 2, 186-194.	7.6	264
31	A customizable software for fast reduction and analysis of large X-ray scattering data sets: applications of the newDPDAKpackage to small-angle X-ray scattering and grazing-incidence small-angle X-ray scattering. Journal of Applied Crystallography, 2014, 47, 1797-1803.	4.5	244
32	Spiral twisting of fiber orientation inside bone lamellae. Biointerphases, 2006, 1, 1-5.	1.6	241
33	Graded Microstructure and Mechanical Properties of Human Crown Dentin. Calcified Tissue International, 2001, 69, 147-157.	3.1	237
34	Constant mineralization density distribution in cancellous human bone. Bone, 2003, 32, 316-323.	2.9	237
35	Variation of Cellulose Microfibril Angles in Softwoods and Hardwoodsâ€"A Possible Strategy of Mechanical Optimization. Journal of Structural Biology, 1999, 128, 257-269.	2.8	234
36	Origami-like unfolding of hydro-actuated ice plant seed capsules. Nature Communications, 2011, 2, 337.	12.8	231

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37	The Mechanical Role of Metal Ions in Biogenic Proteinâ€Based Materials. Angewandte Chemie - International Edition, 2014, 53, 12026-12044.	13.8	229
38	Effects of Intermittent Parathyroid Hormone Administration on Bone Mineralization Density in Iliac Crest Biopsies from Patients with Osteoporosis: A Paired Study before and after Treatment. Journal of Clinical Endocrinology and Metabolism, 2003, 88, 1150-1156.	3.6	228
39	Hindered Crack Propagation in Materials with Periodically Varying Young's Modulusâ€"Lessons from Biological Materials. Advanced Materials, 2007, 19, 2657-2661.	21.0	228
40	Mineral crystals in calcified tissues: A comparative study by SAXS. Journal of Bone and Mineral Research, 1992, 7, 329-334.	2.8	224
41	Modeling of Phase Separation in Alloys with Coherent Elastic Misfit. Journal of Statistical Physics, 1999, 95, 1429-1503.	1.2	223
42	Cellulose and collagen: from fibres to tissues. Current Opinion in Colloid and Interface Science, 2003, 8, 32-39.	7.4	206
43	Experimental evidence for a mechanical function of the cellulose microfibril angle in wood cell walls. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 1999, 79, 2173-2184.	0.6	205
44	Mechanical properties of spruce wood cell walls by nanoindentation. Applied Physics A: Materials Science and Processing, 2004, 79, 2069-2073.	2.3	205
45	The bone mineralization density distribution as a fingerprint of the mineralization process. Bone, 2007, 40, 1308-1319.	2.9	204
46	Artful interfaces within biological materials. Materials Today, 2011, 14, 70-78.	14.2	204
47	Bone mineralization in an osteogenesis imperfecta mouse model studied by small-angle x-ray scattering.. Journal of Clinical Investigation, 1996, 97, 396-402.	8.2	203
48	Two different correlations between nanoindentation modulus and mineral content in the boneâ€"cartilage interface. Journal of Structural Biology, 2005, 149, 138-148.	2.8	196
49	Bone osteonal tissues by Raman spectral mapping: Orientationâ€"composition. Journal of Structural Biology, 2006, 156, 489-496.	2.8	194
50	Collagen fibrils in the human corneal stroma: structure and aging. Investigative Ophthalmology and Visual Science, 1998, 39, 644-8.	3.3	194
51	Collagen fibril orientation in the human corneal stroma and its implication in keratoconus. Investigative Ophthalmology and Visual Science, 1997, 38, 121-9.	3.3	193
52	The organization of the osteocyte network mirrors the extracellular matrix orientation in bone. Journal of Structural Biology, 2011, 173, 303-311.	2.8	192
53	Biological and Biomimetic Materials. Advanced Materials, 2009, 21, 387-388.	21.0	187
54	Scanning Small Angle X-ray Scattering Analysis of Human Bone Sections. Calcified Tissue International, 1999, 64, 422-429.	3.1	177

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55	Hierarchical assembly of the siliceous skeletal lattice of the hexactinellid sponge Euplectella aspergillum. Journal of Structural Biology, 2007, 158, 93-106.	2.8	177
56	On the role of interface polymers for the mechanics of natural polymeric composites. Physical Chemistry Chemical Physics, 2004, 6, 5575.	2.8	175
57	Micromechanical properties of biological silica in skeletons of deep-sea sponges. Journal of Materials Research, 2006, 21, 2068-2078.	2.6	171
58	How Linear Tension Converts to Curvature: Geometric Control of Bone Tissue Growth. PLoS ONE, 2012, 7, e36336.	2.5	169
59	Influence of coherency stress on microstructural evolution in model Ni-Al-Mo alloys. Acta Metallurgica Et Materialia, 1995, 43, 1007-1022.	1.8	168
60	Osmotic pressure induced tensile forces in tendon collagen. Nature Communications, 2015, 6, 5942.	12.8	167
61	The Elementary Cellulose Fibril in Picea abies: Comparison of Transmission Electron Microscopy, Small-Angle X-ray Scattering, and Wide-Angle X-ray Scattering Results. Macromolecules, 1995, 28, 8782-8787.	4.8	162
62	Bioinspired Design Criteria for Damageâ€Resistant Materials with Periodically Varying Microstructure. Advanced Functional Materials, 2011, 21, 3634-3641.	14.9	162
63	The grinding tip of the sea urchin tooth exhibits exquisite control over calcite crystal orientation and Mg distribution. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 6048-6053.	7.1	161
64	Collagen packing and mineralization. An x-ray scattering investigation of turkey leg tendon. Biophysical Journal, 1993, 64, 260-266.	0.5	153
65	Characteristics of mineral particles in the human bone/cartilage interface. Journal of Structural Biology, 2003, 141, 208-217.	2.8	153
66	A Spider's Fang: How to Design an Injection Needle Using Chitinâ€Based Composite Material. Advanced Functional Materials, 2012, 22, 2519-2528.	14.9	153
67	A hydrated crystalline calcium carbonate phase: Calcium carbonate hemihydrate. Science, 2019, 363, 396-400.	12.6	153
68	The Mechanism of Color Change in the Neon Tetra Fish: a Lightâ€Induced Tunable Photonic Crystal Array. Angewandte Chemie - International Edition, 2015, 54, 12426-12430.	13.8	152
69	A new experimental station for simultaneous X-ray microbeam scanning for small- and wide-angle scattering and fluorescence at BESSY II. Journal of Applied Crystallography, 2006, 40, s466-s470.	4.5	148
70	A materials science vision of extracellular matrix mineralization. Nature Reviews Materials, 2016, 1, .	48.7	148
71	Self-assembly of amorphous calcium carbonate microlens arrays. Nature Communications, 2012, 3, 725.	12.8	147
72	Complementary information on bone ultrastructure from scanning small angle X-ray scattering and Fourier-transform infrared microspectroscopy. Bone, 1999, 25, 287-293.	2.9	146

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73	Collagen from the osteogenesis imperfecta mouse model (oim) shows reduced resistance against tensile stress.. Journal of Clinical Investigation, 1997, 100, 40-45.	8.2	146
74	Microtexture and Chitin/Calcite Orientation Relationship in the Mineralized Exoskeleton of the American Lobster. Advanced Functional Materials, 2008, 18, 3307-3314.	14.9	145
75	Bone tissue engineering: from bench to bedside. Materials Today, 2012, 15, 430-435.	14.2	144
76	Bone Mineralization as Studied by Small-Angle X-Ray Scattering. Connective Tissue Research, 1996, 34, 247-254.	2.3	143
77	Mechanical modulation at the lamellar level in osteonal bone. Journal of Materials Research, 2006, 21, 1913-1921.	2.6	141
78	A new molecular model for collagen elasticity based on synchrotron X-ray scattering evidence. Biophysical Journal, 1997, 72, 1376-1381.	0.5	140
79	Mechanical Function of a Complex Threeâ€Dimensional Suture Joining the Bony Elements in the Shell of the Redâ€Eared Slider Turtle. Advanced Materials, 2009, 21, 407-412.	21.0	139
80	The mechanics of tessellations â€“ bioinspired strategies for fracture resistance. Chemical Society Reviews, 2016, 45, 252-267.	38.1	139
81	Raman imaging of two orthogonal planes within cortical bone. Bone, 2007, 41, 456-461.	2.9	137
82	Plants control the properties and actuation of their organs through the orientation of cellulose fibrils in their cell walls. Integrative and Comparative Biology, 2009, 49, 69-79.	2.0	137
83	Decreased Bone Turnover and Deterioration of Bone Structure in Two Cases of Pycnodysostosis. Journal of Clinical Endocrinology and Metabolism, 2004, 89, 1538-1547.	3.6	136
84	Structural Development of the Mineralized Tissue in the Human L4 Vertebral Body. Journal of Structural Biology, 2001, 136, 126-136.	2.8	135
85	Complementary Information on In Vitro Conversion of Amorphous (Precursor) Calcium Phosphate to Hydroxyapatite from Raman Microspectroscopy and Wide-Angle X-Ray Scattering. Calcified Tissue International, 2006, 79, 354-359.	3.1	134
86	Effects of Laminate Architecture on Fracture Resistance of Sponge Biosilica: Lessons from Nature. Advanced Functional Materials, 2008, 18, 1241-1248.	14.9	132
87	Particle Accretion Mechanism Underlies Biological Crystal Growth from an Amorphous Precursor Phase. Advanced Functional Materials, 2014, 24, 5420-5426.	14.9	132
88	Cortical bone composition and orientation as a function of animal and tissue age in mice by Raman spectroscopy. Bone, 2010, 47, 392-399.	2.9	131
89	Structural transformation of collagen fibrils in corneal stroma during drying. An x-ray scattering study. Biophysical Journal, 1993, 64, 1210-1214.	0.5	130
90	Formation and Structure of Gel Networks from Si(OEt)4/(MeO)3Si(CH2)3NRâ€˜2Mixtures (NRâ€˜2= NH2or) Tj ETQq0 0 0 rgBT /Overloc	6.7	130

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91	Collagen: Structure and Mechanics, an Introduction. , 2008, , 1-13.		130
92	Abnormal bone mineralization after fluoride treatment in osteoporosis: A small-angle x-ray-scattering study. Journal of Bone and Mineral Research, 1994, 9, 1541-1549.	2.8	128
93	Modelling of kinetics in multi-component multi-phase systems with spherical precipitatesI: Theory. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2004, 385, 166-174.	5.6	125
94	Collagen insulated from tensile damage by domains that unfold reversibly: In situ X-ray investigation of mechanical yield and damage repair in the mussel byssus. Journal of Structural Biology, 2009, 167, 47-54.	2.8	125
95	Imaging of the helical arrangement of cellulose fibrils in wood by synchrotron X-ray microdiffraction. Journal of Applied Crystallography, 1999, 32, 1127-1133.	4.5	123
96	Small-angle scattering in materials science - a short review of applications in alloys, ceramics and composite materials. Journal of Applied Crystallography, 2003, 36, 397-404.	4.5	123
97	Age- and genotype-dependence of bone material properties in the osteogenesis imperfecta murine model (oim). Bone, 2001, 29, 453-457.	2.9	122
98	Position-Resolved Small-Angle X-ray Scattering of Complex Biological Materials. Journal of Applied Crystallography, 1997, 30, 765-769.	4.5	120
99	Cellulose microfibril orientation of Picea abies and its variability at the micron-level determined by Raman imaging. Journal of Experimental Botany, 2010, 61, 587-595.	4.8	119
100	Diffusion and creep in multi-component alloys with non-ideal sources and sinks for vacancies. Acta Materialia, 2006, 54, 3043-3053.	7.9	117
101	Cellulose fibrils direct plant organ movements. Faraday Discussions, 2008, 139, 275.	3.2	117
102	Enamel-like apatite crown covering amorphous mineral in a crayfish mandible. Nature Communications, 2012, 3, 839.	12.8	116
103	Towards bone replacement materials from calcium phosphates via rapid prototyping and ceramic gelcasting. Materials Science and Engineering C, 2005, 25, 181-186.	7.3	114
104	Multiple roles for neurofibromin in skeletal development and growth. Human Molecular Genetics, 2007, 16, 874-886.	2.9	114
105	Spatial and temporal variations of mechanical properties and mineral content of the external callus during bone healing. Bone, 2009, 45, 185-192.	2.9	114
106	Effects of 3- and 5-Year Treatment With Risedronate on Bone Mineralization Density Distribution in Triple Biopsies of the Iliac Crest in Postmenopausal Women. Journal of Bone and Mineral Research, 2006, 21, 1106-1112.	2.8	112
107	Bone Material Properties in Trabecular Bone From Human Iliac Crest Biopsies After 3- and 5-Year Treatment With Risedronate. Journal of Bone and Mineral Research, 2006, 21, 1581-1590.	2.8	112
108	Lathyrism-induced alterations in collagen cross-links influence the mechanical properties of bone material without affecting the mineral. Bone, 2011, 49, 1232-1241.	2.9	112

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109	Tough Lessons From Bone: Extreme Mechanical Anisotropy at the Mesoscale. Advanced Functional Materials, 2008, 18, 1905-1911.	14.9	110
110	Strontium is incorporated into mineral crystals only in newly formed bone during strontium ranelate treatment. Journal of Bone and Mineral Research, 2010, 25, 968-975.	2.8	108
111	Scaling functions, self-similarity, and the morphology of phase-separating systems. Physical Review B, 1991, 44, 4794-4811.	3.2	107
112	The interpretation of structure functions in quenched binary alloys. Acta Metallurgica, 1983, 31, 1849-1860.	2.1	106
113	On the mineral in collagen of human crown dentine. Biomaterials, 2010, 31, 5479-5490.	11.4	106
114	Gains and losses of coral skeletal porosity changes with ocean acidification acclimation. Nature Communications, 2015, 6, 7785.	12.8	106
115	Size and Arrangement of Elementary Cellulose Fibrils in Wood Cells: A Small-Angle X-Ray Scattering Study of Picea abies. Journal of Structural Biology, 1994, 113, 13-22.	2.8	105
116	Microtensile Testing of Wood Fibers Combined with Video Extensometry for Efficient Strain Detection. Holzforschung, 2003, 57, 661-664.	1.9	105
117	Mineralization of cancellous bone after alendronate and sodium fluoride treatment: A quantitative backscattered electron imaging study on minipig ribs. Bone, 1997, 20, 393-397.	2.9	103
118	Stress generation in the tension wood of poplar is based on the lateral swelling power of the Gâ€layer. Plant Journal, 2008, 56, 531-538.	5.7	103
119	The small world of osteocytes: connectomics of the lacuno-canalicular network in bone. New Journal of Physics, 2017, 19, 073019.	2.9	103
120	Tensile forces drive a reversible fibroblast-to-myofibroblast transition during tissue growth in engineered clefts. Science Advances, 2018, 4, eaao4881.	10.3	102
121	The Crystallization of Amorphous Calcium Carbonate is Kinetically Governed by Ion Impurities and Water. Advanced Science, 2018, 5, 1701000.	11.2	101
122	Tensile and compressive stresses in tracheids are induced by swelling based on geometrical constraints of the wood cell. Planta, 2007, 226, 981-987.	3.2	100
123	Diffusion in multi-component systems with no or dense sources and sinks for vacancies. Acta Materialia, 2002, 50, 1369-1381.	7.9	99
124	Early stages of precipitate rafting in a single crystal NiAlMo model alloy investigated by small-angle X-ray scattering and TEM. Acta Materialia, 1997, 45, 1085-1097.	7.9	98
125	Formation and Structure of Porous Gel Networks from Si(OMe)4in the Presence of A(CH2)nSi(OR)3(A) Tj ETQq1 1 0.784314 rgBT /Over	6.7	97
126	Evidence for an elementary process in bone plasticity with an activation enthalpy of 1â€ŠeV. Journal of the Royal Society Interface, 2007, 4, 277-282.	3.4	97

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127	Mechanical adaptation of biological materials â€" The examples of bone and wood. Materials Science and Engineering C, 2011, 31, 1164-1173.	7.3	97
128	Porous scaffold architecture guides tissue formation. Journal of Bone and Mineral Research, 2012, 27, 1275-1288.	2.8	97
129	Direct Observation of Microfibril Arrangement in a Single Native Cellulose Fiber by Microbeam Small-Angle X-ray Scattering. Macromolecules, 1998, 31, 3953-3957.	4.8	96
130	Improving the osteointegration and boneâ€"implant interface by incorporation of bioactive particles in solâ€"gel coatings of stainless steel implants. Acta Biomaterialia, 2010, 6, 1601-1609.	8.3	96
131	Inorganicâˆ'Organic Hybrid Polymers by Polymerization of Methacrylate- or Acrylate-Substituted Oxotitanium Clusters with Methyl Methacrylate or Methacrylic Acid. Chemistry of Materials, 2002, 14, 2732-2740.	6.7	93
132	When the cracks begin to show. Nature Materials, 2008, 7, 610-612.	27.5	93
133	Tilted cellulose arrangement as a novel mechanism for hygroscopic coiling in the stork's bill awn. Journal of the Royal Society Interface, 2012, 9, 640-647.	3.4	92
134	Fibrillar level fracture in bone beyond the yield point. International Journal of Fracture, 2006, 139, 425-436.	2.2	90
135	Hydration Dependence of the Wood-Cell Wall Structure inPicea abies.A Small-Angle X-ray Scattering Study. Macromolecules, 1996, 29, 8435-8440.	4.8	89
136	Capillarity-driven deformation of ordered nanoporous silica. Applied Physics Letters, 2009, 95, 083121.	3.3	89
137	Modelling of kinetics in multi-component multi-phase systems with spherical precipitatesII: Numerical solution and application. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2004, 385, 157-165.	5.6	89
138	Pamidronate does not adversely affect bone intrinsic material properties in children with osteogenesis imperfecta. Bone, 2006, 39, 616-622.	2.9	88
139	Designing biomimetic scaffolds for bone regeneration: why aim for a copy of mature tissue properties if nature uses a different approach?. Soft Matter, 2010, 6, 4976.	2.7	88
140	Calcite Crystal Growth by a Solidâ€State Transformation of Stabilized Amorphous Calcium Carbonate Nanospheres in a Hydrogel. Angewandte Chemie - International Edition, 2013, 52, 4867-4870.	13.8	88
141	Biomimetic mineral-organic composite scaffolds with controlled internal architecture. Journal of Materials Science: Materials in Medicine, 2005, 16, 1111-1119.	3.6	86
142	Macromolecular recognition directs calcium ions to coccolith mineralization sites. Science, 2016, 353, 590-593.	12.6	86
143	Structures in the cell wall that enable hygroscopic movement of wheat awns. Journal of Structural Biology, 2008, 164, 101-107.	2.8	84
144	Observations of Multiscale, Stress-Induced Changes of Collagen Orientation in Tendon by Polarized Raman Spectroscopy. Biomacromolecules, 2011, 12, 3989-3996.	5.4	83

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145	Intrafibrillar plasticity through mineral/collagen sliding is the dominant mechanism for the extreme toughness of antler bone. Journal of the Mechanical Behavior of Biomedical Materials, 2013, 28, 366-382.	3.1	83
146	A Comparison of Two Techniques for Wood Fibre Isolation â€•Evaluation by Tensile Tests on Single Fibres with Different Microfibril Angle. Plant Biology, 2002, 4, 9-12.	3.8	82
147	Inhomogeneous fibril stretching in antler starts after macroscopic yielding: Indication for a nanoscale toughening mechanism. Bone, 2009, 44, 1105-1110.	2.9	82
148	Mineralization density distribution of postmenopausal osteoporotic bone is restored to normal after long-term alendronate treatment: qBEI and sSAXS data from the fracture intervention trial long-term extension (FLEX). Journal of Bone and Mineral Research, 2010, 25, 48-55.	2.8	82
149	Self-Assembled Collagenâˆ'Apatite Matrix with Bone-like Hierarchy. Chemistry of Materials, 2010, 22, 3307-3309.	6.7	81
150	Opposite Particle Size Effect on Amorphous Calcium Carbonate Crystallization in Water and during Heating in Air. Chemistry of Materials, 2015, 27, 4237-4246.	6.7	80
151	Surface tension determines tissue shape and growth kinetics. Science Advances, 2019, 5, eaav9394.	10.3	80
152	Effects of sodium fluoride and alendronate on the bone mineral in minipigs: A small-angle X-ray scattering and backscattered electron imaging study. Journal of Bone and Mineral Research, 1996, 11, 248-253.	2.8	79
153	Biomimetics and Biotemplating of Natural Materials. MRS Bulletin, 2010, 35, 219-225.	3.5	79
154	Moisture changes in the plant cell wall force cellulose crystallites to deform. Journal of Structural Biology, 2010, 171, 133-141.	2.8	79
155	Synchrotron Diffraction Study of Deformation Mechanisms in Mineralized Tendon. Physical Review Letters, 2004, 93, 158101.	7.8	78
156	Fragility of Bone Material Controlled by Internal Interfaces. Calcified Tissue International, 2015, 97, 201-212.	3.1	78
157	Modelling of kinetics in multi-component multi-phase systems with spherical precipitates. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2004, 385, 166-174.	5.6	77
158	Kinetics of interfaces during diffusional transformations1F. D. Fischer dedicates this paper to Prof. D. Gross, Darmstadt, on the occasion of his 60th anniversary.1. Acta Materialia, 2001, 49, 1249-1259.	7.9	76
159	Bone material properties in premenopausal women with idiopathic osteoporosis. Journal of Bone and Mineral Research, 2012, 27, 2551-2561.	2.8	76
160	Multiscale structural gradients enhance the biomechanical functionality of the spider fang. Nature Communications, 2014, 5, 3894.	12.8	76
161	Combination of Nanoindentation and Quantitative Backscattered Electron Imaging Revealed Altered Bone Material Properties Associated with Femoral Neck Fragility. Calcified Tissue International, 2009, 85, 335-343.	3.1	75
162	On the Stability of Amorphous Minerals in Lobster Cuticle. Advanced Materials, 2009, 21, 4011-4015.	21.0	74

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163	On the pathway of mineral deposition in larval zebrafish caudal fin bone. Bone, 2015, 75, 192-200.	2.9	74
164	Osteoblastic lysosome plays a central role in mineralization. Science Advances, 2019, 5, eaax0672.	10.3	74
165	Matrix mineralization in MC3T3-E1 cell cultures initiated by Î²-glycerophosphate pulse. Bone, 1998, 23, 511-520.	2.9	73
166	Differential effects of alendronate treatment on bone from growing osteogenesis imperfecta and wild-type mouse. Bone, 2005, 36, 150-158.	2.9	73
167	Rapid alterations of avian medullary bone material during the daily egg-laying cycle. Bone, 2014, 69, 109-117.	2.9	73
168	Characterization of bone mineral crystals in horse radius by small-angle X-ray scattering. Calcified Tissue International, 1996, 58, 341-346.	3.1	72
169	Structural purity of magnetite nanoparticles in magnetotactic bacteria. Journal of the Royal Society Interface, 2011, 8, 1011-1018.	3.4	72
170	Self-similar mesostructure evolution of the growing mollusc shell reminiscent of thermodynamically driven grain growth. Nature Materials, 2014, 13, 1102-1107.	27.5	72
171	Influences of age and mechanical stability on volume, microstructure, and mineralization of the fracture callus during bone healing: Is osteoclast activity the key to age-related impaired healing?. Bone, 2010, 47, 219-228.	2.9	71
172	Cellulose microfibril angles in a spruce branch and mechanical implications. Journal of Materials Science, 2001, 36, 5087-5092.	3.7	70
173	Mineralization generates megapascal contractile stresses in collagen fibrils. Science, 2022, 376, 188-192.	12.6	70
174	Spiral angle of elementary cellulose fibrils in cell walls ofPicea abies determined by small-angle x-ray scattering. Wood Science and Technology, 1998, 32, 335-345.	3.2	69
175	In vitro bioactivity of bioresorbable porous polymeric scaffolds incorporating hydroxyapatite microspheres. Acta Biomaterialia, 2010, 6, 2525-2531.	8.3	69
176	Hierarchical Calcite Crystals with Occlusions of a Simple Polyelectrolyte Mimic Complex Biomineral Structures. Advanced Functional Materials, 2012, 22, 4668-4676.	14.9	69
177	Self-Repair of a Biological Fiber Guided by an Ordered Elastic Framework. Biomacromolecules, 2013, 14, 1520-1528.	5.4	69
178	Improvements of strength and fracture resistance by spatial material property variations. Acta Materialia, 2014, 68, 279-294.	7.9	69
179	The mechanoresponse of bone is closely related to the osteocyte lacunocanalicular network architecture. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 32251-32259.	7.1	69
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