

Peter Fratzl

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596
papers

38,417
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99
h-index

174
g-index

652
ext. papers

42,692
ext. citations

7.4
avg, IF

7.52
L-index

#	Paper	IF	Citations
596	Nature's hierarchical materials. <i>Progress in Materials Science</i> , 2007 , 52, 1263-1334	42.2	1837
595	Materials become insensitive to flaws at nanoscale: lessons from nature. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2003 , 100, 5597-600	11.5	1428
594	Structure and mechanical quality of the collagen-mineral nano-composite in bone. <i>Journal of Materials Chemistry</i> , 2004 , 14, 2115-2123		949
593	Skeleton of Euplectella sp.: structural hierarchy from the nanoscale to the macroscale. <i>Science</i> , 2005 , 309, 275-8	33.3	871
592	Iron-clad fibers: a metal-based biological strategy for hard flexible coatings. <i>Science</i> , 2010 , 328, 216-20	33.3	688
591	Mineralized collagen fibrils: a mechanical model with a staggered arrangement of mineral particles. <i>Biophysical Journal</i> , 2000 , 79, 1737-46	2.9	628
590	Cooperative deformation of mineral and collagen in bone at the nanoscale. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2006 , 103, 17741-6	11.5	511
589	Biomaterial systems for mechanosensing and actuation. <i>Nature</i> , 2009 , 462, 442-8	50.4	492
588	Reversible switching of hydrogel-actuated nanostructures into complex micropatterns. <i>Science</i> , 2007 , 315, 487-90	33.3	488
587	Bone mineralization density distribution in health and disease. <i>Bone</i> , 2008 , 42, 456-66	4.7	481
586	Fibrillar structure and mechanical properties of collagen. <i>Journal of Structural Biology</i> , 1998 , 122, 119-22	3.4	473
585	Nucleation and growth of magnetite from solution. <i>Nature Materials</i> , 2013 , 12, 310-4	27	463
584	Biomimetic materials research: what can we really learn from nature's structural materials?. <i>Journal of the Royal Society Interface</i> , 2007 , 4, 637-42	4.1	421
583	The role of wheat awns in the seed dispersal unit. <i>Science</i> , 2007 , 316, 884-6	33.3	412
582	Viscoelastic properties of collagen: synchrotron radiation investigations and structural model. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , 2002 , 357, 191-7	5.8	381
581	Cell-wall recovery after irreversible deformation of wood. <i>Nature Materials</i> , 2003 , 2, 810-4	27	375
580	From brittle to ductile fracture of bone. <i>Nature Materials</i> , 2006 , 5, 52-5	27	356

579	Validation of quantitative backscattered electron imaging for the measurement of mineral density distribution in human bone biopsies. <i>Bone</i> , 1998 , 23, 319-26	4.7	349
578	Size-controlled hydroxyapatite nanoparticles as self-organized organic-inorganic composite materials. <i>Biomaterials</i> , 2005 , 26, 5414-26	15.6	342
577	Mapping amorphous calcium phosphate transformation into crystalline mineral from the cell to the bone in zebrafish fin rays. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2010 , 107, 6316-21	11.5	339
576	Alendronate increases degree and uniformity of mineralization in cancellous bone and decreases the porosity in cortical bone of osteoporotic women. <i>Bone</i> , 2001 , 29, 185-91	4.7	336
575	Biological Composites. <i>Annual Review of Materials Research</i> , 2010 , 40, 1-24	12.8	329
574	The effect of geometry on three-dimensional tissue growth. <i>Journal of the Royal Society Interface</i> , 2008 , 5, 1173-80	4.1	319
573	Nanoscale deformation mechanisms in bone. <i>Nano Letters</i> , 2005 , 5, 2108-11	11.5	301
572	Radial packing, order, and disorder in collagen fibrils. <i>Biophysical Journal</i> , 1995 , 68, 1661-70	2.9	253
571	Nucleation and growth of mineral crystals in bone studied by small-angle X-ray scattering. <i>Calcified Tissue International</i> , 1991 , 48, 407-13	3.9	247
570	Actuation systems in plants as prototypes for bioinspired devices. <i>Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences</i> , 2009 , 367, 1541-57	3	236
569	Graded microstructure and mechanical properties of human crown dentin. <i>Calcified Tissue International</i> , 2001 , 69, 147-57	3.9	223
568	Architecture of the osteocyte network correlates with bone material quality. <i>Journal of Bone and Mineral Research</i> , 2013 , 28, 1837-45	6.3	216
567	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. <i>Journal of Clinical Endocrinology and Metabolism</i> , 2003 , 88, 1150-6	5.6	212
566	Spiral twisting of fiber orientation inside bone lamellae. <i>Biointerphases</i> , 2006 , 1, 1	1.8	211
565	Constant mineralization density distribution in cancellous human bone. <i>Bone</i> , 2003 , 32, 316-23	4.7	211
564	Hindered Crack Propagation in Materials with Periodically Varying Young's Modulus—Lessons from Biological Materials. <i>Advanced Materials</i> , 2007 , 19, 2657-2661	24	195
563	Mineral crystals in calcified tissues: a comparative study by SAXS. <i>Journal of Bone and Mineral Research</i> , 1992 , 7, 329-34	6.3	189
562	Variation of cellulose microfibril angles in softwoods and hardwoods—a possible strategy of mechanical optimization. <i>Journal of Structural Biology</i> , 1999 , 128, 257-69	3.4	189

561	Modeling of Phase Separation in Alloys with Coherent Elastic Misfit. <i>Journal of Statistical Physics</i> , 1999 , 95, 1429-1503	1.5	188
560	Origami-like unfolding of hydro-actuated ice plant seed capsules. <i>Nature Communications</i> , 2011 , 2, 337	17.4	187
559	Cellulose and collagen: from fibres to tissues. <i>Current Opinion in Colloid and Interface Science</i> , 2003 , 8, 32-39	7.6	180
558	Biological composites-complex structures for functional diversity. <i>Science</i> , 2018 , 362, 543-547	33.3	179
557	Collagen fibrils in the human corneal stroma: structure and aging. <i>Investigative Ophthalmology and Visual Science</i> , 1998 , 39, 644-8		179
556	Geometry as a factor for tissue growth: towards shape optimization of tissue engineering scaffolds. <i>Advanced Healthcare Materials</i> , 2013 , 2, 186-94	10.1	177
555	Mechanical properties of spruce wood cell walls by nanoindentation. <i>Applied Physics A: Materials Science and Processing</i> , 2004 , 79, 2069-2073	2.6	174
554	Collagen fibril orientation in the human corneal stroma and its implication in keratoconus. <i>Investigative Ophthalmology and Visual Science</i> , 1997 , 38, 121-9		171
553	A customizable software for fast reduction and analysis of large X-ray scattering data sets: applications of the new package to small-angle X-ray scattering and grazing-incidence small-angle X-ray scattering. <i>Journal of Applied Crystallography</i> , 2014 , 47, 1797-1803	3.8	167
552	The bone mineralization density distribution as a fingerprint of the mineralization process. <i>Bone</i> , 2007 , 40, 1308-19	4.7	167
551	Bone osteonal tissues by Raman spectral mapping: orientation-composition. <i>Journal of Structural Biology</i> , 2006 , 156, 489-96	3.4	167
550	Artful interfaces within biological materials. <i>Materials Today</i> , 2011 , 14, 70-78	21.8	165
549	Two different correlations between nanoindentation modulus and mineral content in the bone-cartilage interface. <i>Journal of Structural Biology</i> , 2005 , 149, 138-48	3.4	165
548	Bone mineralization in an osteogenesis imperfecta mouse model studied by small-angle x-ray scattering. <i>Journal of Clinical Investigation</i> , 1996 , 97, 396-402	15.9	165
547	The organization of the osteocyte network mirrors the extracellular matrix orientation in bone. <i>Journal of Structural Biology</i> , 2011 , 173, 303-11	3.4	161
546	The mechanical role of metal ions in biogenic protein-based materials. <i>Angewandte Chemie - International Edition</i> , 2014 , 53, 12026-44	16.4	159
545	Experimental evidence for a mechanical function of the cellulose microfibril angle in wood cell walls. <i>Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties</i> , 1999 , 79, 2173-2184		157
544	On the role of interface polymers for the mechanics of natural polymeric composites. <i>Physical Chemistry Chemical Physics</i> , 2004 , 6, 5575	3.6	156

543	The grinding tip of the sea urchin tooth exhibits exquisite control over calcite crystal orientation and Mg distribution. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2009 , 106, 6048-53	11.5	150
542	Scanning small angle X-ray scattering analysis of human bone sections. <i>Calcified Tissue International</i> , 1999 , 64, 422-9	3.9	150
541	Influence of coherency stress on microstructural evolution in model Ni-Al-Mo alloys. <i>Acta Metallurgica Et Materialia</i> , 1995 , 43, 1007-1022		148
540	Hierarchical assembly of the siliceous skeletal lattice of the hexactinellid sponge Euplectella aspergillum. <i>Journal of Structural Biology</i> , 2007 , 158, 93-106	3.4	145
539	Micromechanical properties of biological silica in skeletons of deep-sea sponges. <i>Journal of Materials Research</i> , 2006 , 21, 2068-2078	2.5	139
538	A new experimental station for simultaneous X-ray microbeam scanning for small- and wide-angle scattering and fluorescence at BESSY II. <i>Journal of Applied Crystallography</i> , 2006 , 40, s466-s470	3.8	137
537	Collagen packing and mineralization. An x-ray scattering investigation of turkey leg tendon. <i>Biophysical Journal</i> , 1993 , 64, 260-6	2.9	137
536	The Elementary Cellulose Fibril in Picea abies: Comparison of Transmission Electron Microscopy, Small-Angle X-ray Scattering, and Wide-Angle X-ray Scattering Results. <i>Macromolecules</i> , 1995 , 28, 8782-8787	5.5	135
535	Microtexture and Chitin/Calcite Orientation Relationship in the Mineralized Exoskeleton of the American Lobster. <i>Advanced Functional Materials</i> , 2008 , 18, 3307-3314	15.6	134
534	Complementary information on bone ultrastructure from scanning small angle X-ray scattering and Fourier-transform infrared microspectroscopy. <i>Bone</i> , 1999 , 25, 287-93	4.7	134
533	Characteristics of mineral particles in the human bone/cartilage interface. <i>Journal of Structural Biology</i> , 2003 , 141, 208-17	3.4	132
532	Collagen from the osteogenesis imperfecta mouse model (oim) shows reduced resistance against tensile stress. <i>Journal of Clinical Investigation</i> , 1997 , 100, 40-5	15.9	131
531	Self-assembly of amorphous calcium carbonate microlens arrays. <i>Nature Communications</i> , 2012 , 3, 725	17.4	129
530	Bioinspired Design Criteria for Damage-Resistant Materials with Periodically Varying Microstructure. <i>Advanced Functional Materials</i> , 2011 , 21, 3634-3641	15.6	128
529	Mechanical modulation at the lamellar level in osteonal bone. <i>Journal of Materials Research</i> , 2006 , 21, 1913-1921	2.5	128
528	How linear tension converts to curvature: geometric control of bone tissue growth. <i>PLoS ONE</i> , 2012 , 7, e36336	3.7	126
527	Modelling of kinetics in multi-component multi-phase systems with spherical precipitates: Theory. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2004 , 385, 166-174	5.3	125
526	A new molecular model for collagen elasticity based on synchrotron X-ray scattering evidence. <i>Biophysical Journal</i> , 1997 , 72, 1376-81	2.9	120

525	Raman imaging of two orthogonal planes within cortical bone. <i>Bone</i> , 2007 , 41, 456-61	4.7	120
524	Decreased bone turnover and deterioration of bone structure in two cases of pycnodysostosis. <i>Journal of Clinical Endocrinology and Metabolism</i> , 2004 , 89, 1538-47	5.6	119
523	Structural development of the mineralized tissue in the human L4 vertebral body. <i>Journal of Structural Biology</i> , 2001 , 136, 126-36	3.4	119
522	Bone mineralization as studied by small-angle x-ray scattering. <i>Connective Tissue Research</i> , 1996 , 34, 247-54	3.4	119
521	Bone tissue engineering: from bench to bedside. <i>Materials Today</i> , 2012 , 15, 430-435	21.8	118
520	Osmotic pressure induced tensile forces in tendon collagen. <i>Nature Communications</i> , 2015 , 6, 5942	17.4	117
519	A Spider's Fang: How to Design an Injection Needle Using Chitin-Based Composite Material. <i>Advanced Functional Materials</i> , 2012 , 22, 2519-2528	15.6	116
518	Structural transformation of collagen fibrils in corneal stroma during drying. An x-ray scattering study. <i>Biophysical Journal</i> , 1993 , 64, 1210-4	2.9	116
517	Age- and genotype-dependence of bone material properties in the osteogenesis imperfecta murine model (oim). <i>Bone</i> , 2001 , 29, 453-7	4.7	112
516	Formation and Structure of Gel Networks from Si(OEt) ₄ /(MeO) ₃ Si(CH ₂) ₃ NR ₂ Mixtures (NR ₂ =NH ₂ or NHCH ₂ CH ₂ NH ₂). <i>Chemistry of Materials</i> , 1999 , 11, 451-457	9.6	112
515	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. <i>Journal of Structural Biology</i> , 2009 , 167, 47-54	3.4	109
514	A materials science vision of extracellular matrix mineralization. <i>Nature Reviews Materials</i> , 2016 , 1,	73.3	108
513	Cortical bone composition and orientation as a function of animal and tissue age in mice by Raman spectroscopy. <i>Bone</i> , 2010 , 47, 392-9	4.7	108
512	Mechanical Function of a Complex Three-Dimensional Suture Joining the Bony Elements in the Shell of the Red-Eared Slider Turtle. <i>Advanced Materials</i> , 2009 , 21, 407-412	24	108
511	Abnormal bone mineralization after fluoride treatment in osteoporosis: a small-angle x-ray-scattering study. <i>Journal of Bone and Mineral Research</i> , 1994 , 9, 1541-9	6.3	108
510	Plants control the properties and actuation of their organs through the orientation of cellulose fibrils in their cell walls. <i>Integrative and Comparative Biology</i> , 2009 , 49, 69-79	2.8	107
509	Complementary information on in vitro conversion of amorphous (precursor) calcium phosphate to hydroxyapatite from Raman microspectroscopy and wide-angle X-ray scattering. <i>Calcified Tissue International</i> , 2006 , 79, 354-9	3.9	107
508	Small-angle scattering in materials science - a short review of applications in alloys, ceramics and composite materials. <i>Journal of Applied Crystallography</i> , 2003 , 36, 397-404	3.8	106

507	Particle Accretion Mechanism Underlies Biological Crystal Growth from an Amorphous Precursor Phase. <i>Advanced Functional Materials</i> , 2014 , 24, 5420-5426	15.6	103
506	Effects of 3- and 5-year treatment with risedronate on bone mineralization density distribution in triple biopsies of the iliac crest in postmenopausal women. <i>Journal of Bone and Mineral Research</i> , 2006 , 21, 1106-12	6.3	103
505	The interpretation of structure functions in quenched binary alloys. <i>Acta Metallurgica</i> , 1983 , 31, 1849-1860		103
504	The mechanics of tessellations - bioinspired strategies for fracture resistance. <i>Chemical Society Reviews</i> , 2016 , 45, 252-67	58.5	102
503	Cellulose fibrils direct plant organ movements. <i>Faraday Discussions</i> , 2008 , 139, 275-82; discussion 309-25, 419-20	3.6	102
502	Tough Lessons From Bone: Extreme Mechanical Anisotropy at the Mesoscale. <i>Advanced Functional Materials</i> , 2008 , 18, 1905-1911	15.6	100
501	Bone material properties in trabecular bone from human iliac crest biopsies after 3- and 5-year treatment with risedronate. <i>Journal of Bone and Mineral Research</i> , 2006 , 21, 1581-90	6.3	100
500	Effects of Laminate Architecture on Fracture Resistance of Sponge Biosilica: Lessons from Nature. <i>Advanced Functional Materials</i> , 2008 , 18, 1241-1248	15.6	99
499	Imaging of the helical arrangement of cellulose fibrils in wood by synchrotron X-ray microdiffraction. <i>Journal of Applied Crystallography</i> , 1999 , 32, 1127-1133	3.8	99
498	The mechanism of color change in the neon tetra fish: a light-induced tunable photonic crystal array. <i>Angewandte Chemie - International Edition</i> , 2015 , 54, 12426-30	16.4	98
497	Multiple roles for neurofibromin in skeletal development and growth. <i>Human Molecular Genetics</i> , 2007 , 16, 874-86	5.6	98
496	Mineralization of cancellous bone after alendronate and sodium fluoride treatment: a quantitative backscattered electron imaging study on minipig ribs. <i>Bone</i> , 1997 , 20, 393-7	4.7	97
495	Position-Resolved Small-Angle X-ray Scattering of Complex Biological Materials. <i>Journal of Applied Crystallography</i> , 1997 , 30, 765-769	3.8	97
494	Scaling functions, self-similarity, and the morphology of phase-separating systems. <i>Physical Review B</i> , 1991 , 44, 4794-4811	3.3	97
493	Spatial and temporal variations of mechanical properties and mineral content of the external callus during bone healing. <i>Bone</i> , 2009 , 45, 185-92	4.7	96
492	Towards bone replacement materials from calcium phosphates via rapid prototyping and ceramic gelcasting. <i>Materials Science and Engineering C</i> , 2005 , 25, 181-186	8.3	96
491	Enamel-like apatite crown covering amorphous mineral in a crayfish mandible. <i>Nature Communications</i> , 2012 , 3, 839	17.4	95
490	Lathyrism-induced alterations in collagen cross-links influence the mechanical properties of bone material without affecting the mineral. <i>Bone</i> , 2011 , 49, 1232-41	4.7	95

489	Cellulose microfibril orientation of <i>Picea abies</i> and its variability at the micron-level determined by Raman imaging. <i>Journal of Experimental Botany</i> , 2010 , 61, 587-95	7	95
488	Strontium is incorporated into mineral crystals only in newly formed bone during strontium ranelate treatment. <i>Journal of Bone and Mineral Research</i> , 2010 , 25, 968-75	6.3	94
487	Diffusion and creep in multi-component alloys with non-ideal sources and sinks for vacancies. <i>Acta Materialia</i> , 2006 , 54, 3043-3053	8.4	93
486	Collagen: Structure and Mechanics, an Introduction 2008 , 1-13		92
485	Tensile and compressive stresses in tracheids are induced by swelling based on geometrical constraints of the wood cell. <i>Planta</i> , 2007 , 226, 981-7	4.7	92
484	Size and Arrangement of Elementary Cellulose Fibrils in Wood Cells: A Small-Angle X-Ray Scattering Study of <i>Picea abies</i> . <i>Journal of Structural Biology</i> , 1994 , 113, 13-22	3.4	92
483	On the mineral in collagen of human crown dentine. <i>Biomaterials</i> , 2010 , 31, 5479-90	15.6	91
482	Microtensile Testing of Wood Fibers Combined with Video Extensometry for Efficient Strain Detection. <i>Holzforschung</i> , 2003 , 57, 661-664	2	91
481	A hydrated crystalline calcium carbonate phase: Calcium carbonate hemihydrate. <i>Science</i> , 2019 , 363, 396-400	33.3	89
480	Direct Observation of Microfibril Arrangement in a Single Native Cellulose Fiber by Microbeam Small-Angle X-ray Scattering. <i>Macromolecules</i> , 1998 , 31, 3953-3957	5.5	89
479	Evidence for an elementary process in bone plasticity with an activation enthalpy of 1 eV. <i>Journal of the Royal Society Interface</i> , 2007 , 4, 277-82	4.1	88
478	Inorganic/Organic Hybrid Polymers by Polymerization of Methacrylate- or Acrylate-Substituted Oxotitanium Clusters with Methyl Methacrylate or Methacrylic Acid. <i>Chemistry of Materials</i> , 2002 , 14, 2732-2740	9.6	88
477	Modelling of kinetics in multi-component multi-phase systems with spherical precipitatesII: Numerical solution and application. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2004 , 385, 157-165	5.3	88
476	Formation and Structure of Porous Gel Networks from Si(OMe) ₄ in the Presence of A(CH ₂) _n Si(OR) ₃ (A = Functional Group). <i>Chemistry of Materials</i> , 1998 , 10, 3024-3032	9.6	87
475	Stress generation in the tension wood of poplar is based on the lateral swelling power of the G-layer. <i>Plant Journal</i> , 2008 , 56, 531-8	6.9	86
474	Early stages of precipitate rafting in a single crystal NiAlMo model alloy investigated by small-angle X-ray scattering and TEM. <i>Acta Materialia</i> , 1997 , 45, 1085-1097	8.4	84
473	Mechanical adaptation of biological materials – The examples of bone and wood. <i>Materials Science and Engineering C</i> , 2011 , 31, 1164-1173	8.3	83
472	Improving the osteointegration and bone-implant interface by incorporation of bioactive particles in sol-gel coatings of stainless steel implants. <i>Acta Biomaterialia</i> , 2010 , 6, 1601-9	10.8	82

471	Diffusion in multi-component systems with no or dense sources and sinks for vacancies. <i>Acta Materialia</i> , 2002 , 50, 1369-1381	8.4	82
470	Porous scaffold architecture guides tissue formation. <i>Journal of Bone and Mineral Research</i> , 2012 , 27, 1275-88	6.3	80
469	Capillarity-driven deformation of ordered nanoporous silica. <i>Applied Physics Letters</i> , 2009 , 95, 083121	3.4	79
468	Fibrillar level fracture in bone beyond the yield point. <i>International Journal of Fracture</i> , 2006 , 139, 425-436	3.6	78
467	Biomimetic mineral-organic composite scaffolds with controlled internal architecture. <i>Journal of Materials Science: Materials in Medicine</i> , 2005 , 16, 1111-9	4.5	78
466	Hydration Dependence of the Wood-Cell Wall Structure in <i>Picea abies</i> . A Small-Angle X-ray Scattering Study. <i>Macromolecules</i> , 1996 , 29, 8435-8440	5.5	78
465	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). <i>Journal of Bone and Mineral Research</i> , 2010 , 25, 48-55	6.3	75
464	Pamidronate does not adversely affect bone intrinsic material properties in children with osteogenesis imperfecta. <i>Bone</i> , 2006 , 39, 616-22	4.7	75
463	Self-Assembled Collagen/Apatite Matrix with Bone-like Hierarchy. <i>Chemistry of Materials</i> , 2010 , 22, 3307-3309	3.0	73
462	Tilted cellulose arrangement as a novel mechanism for hygroscopic coiling in the stork's bill awn. <i>Journal of the Royal Society Interface</i> , 2012 , 9, 640-7	4.1	73
461	Biomimetics and Biotemplating of Natural Materials. <i>MRS Bulletin</i> , 2010 , 35, 219-225	3.2	72
460	Designing biomimetic scaffolds for bone regeneration: why aim for a copy of mature tissue properties if nature uses a different approach?. <i>Soft Matter</i> , 2010 , 6, 4976	3.6	72
459	Inhomogeneous fibril stretching in antler starts after macroscopic yielding: indication for a nanoscale toughening mechanism. <i>Bone</i> , 2009 , 44, 1105-10	4.7	71
458	Synchrotron diffraction study of deformation mechanisms in mineralized tendon. <i>Physical Review Letters</i> , 2004 , 93, 158101	7.4	71
457	The Crystallization of Amorphous Calcium Carbonate is Kinetically Governed by Ion Impurities and Water. <i>Advanced Science</i> , 2018 , 5, 1701000	13.6	69
456	Calcite crystal growth by a solid-state transformation of stabilized amorphous calcium carbonate nanospheres in a hydrogel. <i>Angewandte Chemie - International Edition</i> , 2013 , 52, 4867-70	16.4	69
455	Matrix mineralization in MC3T3-E1 cell cultures initiated by beta-glycerophosphate pulse. <i>Bone</i> , 1998 , 23, 511-20	4.7	69
454	A Comparison of Two Techniques for Wood Fibre Isolation - Evaluation by Tensile Tests on Single Fibres with Different Microfibril Angle. <i>Plant Biology</i> , 2002 , 4, 9-12	3.7	69

453	Kinetics of interfaces during diffusional transformations1F. D. Fischer dedicates this paper to Prof. D. Gross, Darmstadt, on the occasion of his 60th anniversary.1. <i>Acta Materialia</i> , 2001 , 49, 1249-1259	8.4	69
452	Bone material properties in premenopausal women with idiopathic osteoporosis. <i>Journal of Bone and Mineral Research</i> , 2012 , 27, 2551-61	6.3	68
451	Differential effects of alendronate treatment on bone from growing osteogenesis imperfecta and wild-type mouse. <i>Bone</i> , 2005 , 36, 150-8	4.7	68
450	Observations of multiscale, stress-induced changes of collagen orientation in tendon by polarized Raman spectroscopy. <i>Biomacromolecules</i> , 2011 , 12, 3989-96	6.9	67
449	Effects of sodium fluoride and alendronate on the bone mineral in minipigs: a small-angle X-ray scattering and backscattered electron imaging study. <i>Journal of Bone and Mineral Research</i> , 1996 , 11, 248-53	6.3	67
448	Combination of nanoindentation and quantitative backscattered electron imaging revealed altered bone material properties associated with femoral neck fragility. <i>Calcified Tissue International</i> , 2009 , 85, 335-43	3.9	67
447	Macromolecular recognition directs calcium ions to coccolith mineralization sites. <i>Science</i> , 2016 , 353, 590-3	33.3	67
446	Characterization of bone mineral crystals in horse radius by small-angle X-ray scattering. <i>Calcified Tissue International</i> , 1996 , 58, 341-6	3.9	66
445	On the Stability of Amorphous Minerals in Lobster Cuticle. <i>Advanced Materials</i> , 2009 , 21, 4011-4015	24	64
444	Gains and losses of coral skeletal porosity changes with ocean acidification acclimation. <i>Nature Communications</i> , 2015 , 6, 7785	17.4	63
443	Structures in the cell wall that enable hygroscopic movement of wheat awns. <i>Journal of Structural Biology</i> , 2008 , 164, 101-7	3.4	63
442	On the pathway of mineral deposition in larval zebrafish caudal fin bone. <i>Bone</i> , 2015 , 75, 192-200	4.7	62
441	Hierarchical Calcite Crystals with Occlusions of a Simple Polyelectrolyte Mimic Complex Biomineral Structures. <i>Advanced Functional Materials</i> , 2012 , 22, 4668-4676	15.6	62
440	Intrafibrillar plasticity through mineral/collagen sliding is the dominant mechanism for the extreme toughness of antler bone. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2013 , 28, 366-82	4.1	62
439	Moisture changes in the plant cell wall force cellulose crystallites to deform. <i>Journal of Structural Biology</i> , 2010 , 171, 133-41	3.4	62
438	Fragility of Bone Material Controlled by Internal Interfaces. <i>Calcified Tissue International</i> , 2015 , 97, 201-139	3.9	61
437	Multiscale structural gradients enhance the biomechanical functionality of the spider fang. <i>Nature Communications</i> , 2014 , 5, 3894	17.4	61
436	X-ray vector radiography for bone micro-architecture diagnostics. <i>Physics in Medicine and Biology</i> , 2012 , 57, 3451-61	3.8	61

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