Xiaodu Wang

List of Publications by Year
in descending order

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59 papers	2,592 citations	218677 26 h-index	189892 50 g-index
60 all docs	60 docs citations	60 times ranked	2377 citing authors

#	Article	IF	Citations
1	The role of collagen in determining bone mechanical properties. Journal of Orthopaedic Research, 2001, 19, 1021-1026.	2.3	299
2	The influence of water removal on the strength and toughness of cortical bone. Journal of Biomechanics, 2006, 39, 931-938.	2.1	292
3	Measurements of mobile and bound water by nuclear magnetic resonance correlate with mechanical properties of bone. Bone, 2008, 42, 193-199.	2.9	177
4	Determination of cortical bone porosity and pore size distribution using a low field pulsed NMR approach. Journal of Orthopaedic Research, 2003, 21, 312-319.	2.3	161
5	The use of dynamic mechanical analysis to assess the viscoelastic properties of human cortical bone. Journal of Biomedical Materials Research Part B, 2001, 58, 47-53.	3.1	116
6	Collagen and bone viscoelasticity: A dynamic mechanical analysis. Journal of Biomedical Materials Research Part B, 2002, 63, 31-36.	3.1	116
7	Age-related factors affecting the postyield energy dissipation of human cortical bone. Journal of Orthopaedic Research, 2007, 25, 646-655.	2.3	115
8	Effect of ultrastructural changes on the toughness of bone. Micron, 2005, 36, 566-582.	2.2	88
9	The Toughness of Cortical Bone and Its Relationship with Age. Annals of Biomedical Engineering, 2004, 32, 123-135.	2.5	85
10	Age-related effect on the concentration of collagen crosslinks in human osteonal and interstitial bone tissue. Bone, 2006, 39, 1210-1217.	2.9	81
11	In situ accumulation of advanced glycation endproducts (AGEs) in bone matrix and its correlation with osteoclastic bone resorption. Bone, 2011, 49, 174-183.	2.9	64
12	Differences in the mechanical behavior of cortical bone between compression and tension when subjected to progressive loading. Journal of the Mechanical Behavior of Biomedical Materials, 2009, 2, 613-619.	3.1	60
13	Progressive post-yield behavior of human cortical bone in compression for middle-aged and elderly groups. Journal of Biomechanics, 2009, 42, 491-497.	2.1	54
14	Effect of mineralâ€"collagen interfacial behavior on the microdamage progression in bone using a probabilistic cohesive finite element model. Journal of the Mechanical Behavior of Biomedical Materials, 2011, 4, 943-952.	3.1	51
15	Age-Related Changes of Noncalcified Collagen in Human Cortical Bone. Annals of Biomedical Engineering, 2003, 31, 1365-1371.	2.5	50
16	Orientation dependence of progressive post-yield behavior of human cortical bone in compression. Journal of Biomechanics, 2012, 45, 2829-2834.	2.1	47
17	Effect of water on nanomechanics of bone is different between tension and compression. Journal of the Mechanical Behavior of Biomedical Materials, 2016, 57, 128-138.	3.1	44
18	Water residing in small ultrastructural spaces plays a critical role in the mechanical behavior of bone. Bone, 2014, 59, 199-206.	2.9	38

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19	Ageâ€Related Deterioration of Bone Toughness Is Related to Diminishing Amount of Matrix Glycosaminoglycans (GAGs). JBMR Plus, 2018, 2, 164-173.	2.7	37
20	Contribution of extrafibrillar matrix to the mechanical behavior of bone using a novel cohesive finite element model. Journal of the Mechanical Behavior of Biomedical Materials, 2017, 65, 224-235.	3.1	36
21	Coupling Effect of Water and Proteoglycans on the In Situ Toughness of Bone. Journal of Bone and Mineral Research, 2016, 31, 1026-1029.	2.8	35
22	Biglycan and chondroitin sulfate play pivotal roles in bone toughness via retaining bound water in bone mineral matrix. Matrix Biology, 2020, 94, 95-109.	3.6	35
23	Post-yield nanomechanics of human cortical bone in compression using synchrotron X-ray scattering techniques. Journal of Biomechanics, 2011, 44, 676-682.	2.1	33
24	Computational investigation of the effect of water on the nanomechanical behavior of bone. Journal of the Mechanical Behavior of Biomedical Materials, 2020, 101, 103454.	3.1	32
25	A novel approach to assess post-yield energy dissipation of bone in tension. Journal of Biomechanics, 2007, 40, 674-677.	2.1	31
26	Bone Formation is Affected by Matrix Advanced Glycation End Products (AGEs) In Vivo. Calcified Tissue International, 2016, 99, 373-383.	3.1	31
27	Prediction of microdamage formation using a mineral-collagen composite model of bone. Journal of Biomechanics, 2006, 39, 595-602.	2.1	26
28	Effect of age on mechanical properties of the collagen phase in different orientations of human cortical bone. Bone, 2013, 55, 288-291.	2.9	25
29	Computational investigation of ultrastructural behavior of bone using a cohesive finite element approach. Biomechanics and Modeling in Mechanobiology, 2019, 18, 463-478.	2.8	25
30	A mixed mode fracture toughness test of bone-biomaterial interfaces. Journal of Biomedical Materials Research Part B, 2000, 53, 664-672.	3.1	23
31	Probabilistic failure analysis of bone using a finite element model of mineralâ€"collagen composites. Journal of Biomechanics, 2009, 42, 202-209.	2.1	22
32	Mechanical behavior of human cortical bone in cycles of advancing tensile strain for two age groups. Journal of Biomedical Materials Research - Part A, 2009, 89A, 521-529.	4.0	21
33	Biomechanical properties and microarchitecture parameters of trabecular bone are correlated with stochastic measures of 2D projection images. Bone, 2013, 56, 327-336.	2.9	19
34	Bioinspired design of hybrid composite materials. International Journal of Smart and Nano Materials, 2019, 10, 90-105.	4.2	18
35	Collagen mutation causes changes of the microdamage morphology in bone of an OI mouse model. Bone, 2010, 47, 1071-1075.	2.9	17
36	Random field assessment of nanoscopic inhomogeneity of bone. Bone, 2010, 47, 1080-1084.	2.9	17

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37	In situ mechanical behavior of mineral crystals in human cortical bone under compressive load using synchrotron X-ray scattering techniques. Journal of the Mechanical Behavior of Biomedical Materials, 2012, 14, 101-112.	3.1	17
38	Intrafibrillar mineralization deficiency and osteogenesis imperfecta mouse bone fragility. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 117, 104377.	3.1	15
39	Progressive post-yield behavior of human cortical bone in shear. Bone, 2013, 53, 1-5.	2.9	14
40	An improved interfacial bonding model for material interface modeling. Engineering Fracture Mechanics, 2017, 169, 276-291.	4.3	13
41	Commonality in the microarchitecture of trabecular bone: A preliminary study. Bone, 2018, 111, 59-70.	2.9	13
42	Prediction of trabecular bone architectural features by deep learning models using simulated DXA images. Bone Reports, 2020, 13, 100295.	0.4	13
43	Mechanistic modeling of a nanoscratch test for determination of in situ toughness of bone. Journal of the Mechanical Behavior of Biomedical Materials, 2012, 5, 156-164.	3.1	12
44	Constitutive relationship of tissue behavior with damage accumulation of human cortical bone. Journal of Biomechanics, 2010, 43, 2356-2361.	2.1	10
45	Computational modeling of interfacial behaviors in nanocomposite materials. International Journal of Solids and Structures, 2017, 115-116, 43-52.	2.7	10
46	Three-dimensional rendering of trabecular bone microarchitecture using a probabilistic approach. Biomechanics and Modeling in Mechanobiology, 2020, 19, 1263-1281.	2.8	9
47	Age-Related Effects of Advanced Glycation End Products (Ages) in Bone Matrix on Osteoclastic Resorption. Calcified Tissue International, 2015, 97, 592-601.	3.1	8
48	Removal of glycosaminoglycans affects the in situ mechanical behavior of extrafibrillar matrix in bone. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 123, 104766.	3.1	8
49	Computational Modeling of the Mechanical Behavior of 3D Hybrid Organicâ€"Inorganic Nanocomposites. Jom, 2019, 71, 3951-3961.	1.9	6
50	Can DXA image-based deep learning model predict the anisotropic elastic behavior of trabecular bone?. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 124, 104834.	3.1	6
51	Prediction of Elastic Behavior of Human Trabecular Bone Using A DXA Image-Based Deep Learning Model. Jom, 2021, 73, 2366-2376.	1.9	3
52	FINITE ELEMENT SIMULATION OF ELASTIC COMPLIANCE TECHNIQUE FOR FORMULATING A TEST METHOD TO DETERMINE THE FRACTURE TOUGHNESS OF BONE. Journal of Mechanics in Medicine and Biology, 2002, 02, 473-486.	0.7	2
53	VALIDITY OF THE DIRECT RELATION BETWEEN THE FRACTURE MECHANICS PARAMETERS, K AND G, IN THE CASE OF BONE. Journal of Mechanics in Medicine and Biology, 2004, 04, 321-331.	0.7	2
54	Osteoporosis affects both post-yield microdamage accumulation and plasticity degradation in vertebra of ovariectomized rats. Acta Mechanica Sinica/Lixue Xuebao, 2017, 33, 267-273.	3.4	2

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55	Effect of coring conditions on temperature rise in bone. Bio-Medical Materials and Engineering, 2017, 28, 201-211.	0.6	2
56	Finite element simulation of nanoindentation tests for cortical bone using a damage plastic model. Strength, Fracture and Complexity, 2010, 6, 83-89.	0.3	1
57	Quantifying Engineering Faculty Performance Based on Expectations on Key Activities and Integration Using Flexible Weighting Factors. Journal of Biomechanical Engineering, 2020, 142, .	1.3	1
58	Characterization of Microstructural Changes on Biglycan Induced Mice Bone by Low-Field Nuclear Magnetic Resonance. , 2021, 4, 58.		0
59	Probability-based approach for characterization of microarchitecture and its effect on elastic properties of trabecular bone. Journal of the Mechanical Behavior of Biomedical Materials, 2022, 131, 105254.	3.1	0