

Christoph Arns

List of Publications by Year in descending order

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133
papers

5,233
citations

94381

37
h-index

91828

69
g-index

134
all docs

134
docs citations

134
times ranked

4798
citing authors

#	ARTICLE	IF	CITATIONS
1	Minimal surface scaffold designs for tissue engineering. <i>Biomaterials</i> , 2011, 32, 6875-6882.	5.7	417
2	Assessment of bone ingrowth into porous biomaterials using MICRO-CT. <i>Biomaterials</i> , 2007, 28, 2491-2504.	5.7	370
3	Computation of linear elastic properties from microtomographic images: Methodology and agreement between theory and experiment. <i>Geophysics</i> , 2002, 67, 1396-1405.	1.4	341
4	The correlation of pore morphology, interconnectivity and physical properties of 3D ceramic scaffolds with bone ingrowth. <i>Biomaterials</i> , 2009, 30, 1440-1451.	5.7	297
5	Pore Scale Characterization of Carbonates Using X-Ray Microtomography. <i>SPE Journal</i> , 2005, 10, 475-484.	1.7	194
6	Accurate estimation of transport properties from microtomographic images. <i>Geophysical Research Letters</i> , 2001, 28, 3361-3364.	1.5	182
7	Virtual permeametry on microtomographic images. <i>Journal of Petroleum Science and Engineering</i> , 2004, 45, 41-46.	2.1	170
8	Developing a virtual materials laboratory. <i>Materials Today</i> , 2007, 10, 44-51.	8.3	160
9	Techniques in helical scanning, dynamic imaging and image segmentation for improved quantitative analysis with X-ray micro-CT. <i>Nuclear Instruments & Methods in Physics Research B</i> , 2014, 324, 49-56.	0.6	121
10	Digital rock physics: 3D imaging of core material and correlations to acoustic and flow properties. <i>The Leading Edge</i> , 2009, 28, 28-33.	0.4	119
11	Porous Media Characterization Using Minkowski Functionals: Theories, Applications and Future Directions. <i>Transport in Porous Media</i> , 2019, 130, 305-335.	1.2	114
12	Cross-property correlations and permeability estimation in sandstone. <i>Physical Review E</i> , 2005, 72, 046304.	0.8	101
13	Three-dimensional imaging of multiphase flow in porous media. <i>Physica A: Statistical Mechanics and Its Applications</i> , 2004, 339, 166-172.	1.2	89
14	Euler-Poincaré characteristics of classes of disordered media. <i>Physical Review E</i> , 2001, 63, 031112.	0.8	82
15	A comparison of pore size distributions derived by NMR and X-ray-CT techniques. <i>Physica A: Statistical Mechanics and Its Applications</i> , 2004, 339, 159-165.	1.2	78
16	Characterisation of irregular spatial structures by parallel sets and integral geometric measures. <i>Colloids and Surfaces A: Physicochemical and Engineering Aspects</i> , 2004, 241, 351-372.	2.3	74
17	Pore-Scale Characterization of Two-Phase Flow Using Integral Geometry. <i>Transport in Porous Media</i> , 2017, 118, 99-117.	1.2	73
18	High-fidelity replication of thermoplastic microneedles with open microfluidic channels. <i>Microsystems and Nanoengineering</i> , 2017, 3, 17034.	3.4	70

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19	Reconstructing Complex Materials via Effective Grain Shapes. <i>Physical Review Letters</i> , 2003, 91, 215506.	2.9	69
20	Numerical Simulation of Reactive Transport on Micro-CT Images. <i>Mathematical Geosciences</i> , 2016, 48, 963-983.	1.4	67
21	Investigation of early hydration dynamics and microstructural development in ordinary Portland cement using ¹ H NMR relaxometry and isothermal calorimetry. <i>Cement and Concrete Research</i> , 2016, 83, 131-139.	4.6	67
22	Structure and properties of clinical coralline implants measured via 3D imaging and analysis. <i>Biomaterials</i> , 2006, 27, 2776-2786.	5.7	66
23	Fluids in porous media: a morphometric approach. <i>Journal of Physics Condensed Matter</i> , 2005, 17, S503-S534.	0.7	63
24	Recent Fourier and Laplace perspectives for multidimensional NMR in porous media. <i>Magnetic Resonance Imaging</i> , 2007, 25, 441-444.	1.0	60
25	Porous Structure Reconstruction Using Convolutional Neural Networks. <i>Mathematical Geosciences</i> , 2018, 50, 781-799.	1.4	60
26	Relative permeability from tomographic images; effect of correlated heterogeneity. <i>Journal of Petroleum Science and Engineering</i> , 2003, 39, 247-259.	2.1	54
27	Image-based relative permeability upscaling from the pore scale. <i>Advances in Water Resources</i> , 2016, 95, 161-175.	1.7	51
28	Experimental and Theoretical Evidence for Increased Ganglion Dynamics During Fractional Flow in Mixed-Wet Porous Media. <i>Water Resources Research</i> , 2018, 54, 3277-3289.	1.7	50
29	Elastic and transport properties of cellular solids derived from three-dimensional tomographic images. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 2006, 462, 2833-2862.	1.0	48
30	3D Imaging and Simulation of Elastic Properties of Porous Materials. <i>Computing in Science and Engineering</i> , 2009, 11, 65-73.	1.2	48
31	Qualitative and Quantitative Analyses of the Three-Phase Distribution of Oil, Water, and Gas in Bentheimer Sandstone by Use of Micro-CT Imaging. <i>SPE Reservoir Evaluation and Engineering</i> , 2012, 15, 706-711.	1.1	48
32	Imaging analysis of fines migration during water flow with salinity alteration. <i>Advances in Water Resources</i> , 2018, 121, 150-161.	1.7	45
33	Morphology and Linear Elastic Moduli of Random Network Solids. <i>Advanced Materials</i> , 2011, 23, 2633-2637.	11.1	44
34	Digital Core Laboratory: Properties of reservoir core derived from 3D images. , 2004, , .		42
35	Visualization and numerical analysis of adhesive distribution in particleboard using X-ray micro-computed tomography. <i>International Journal of Adhesion and Adhesives</i> , 2010, 30, 754-762.	1.4	42
36	Microtomographic Characterization of Dissolution-Induced Local Porosity Changes Including Fines Migration in Carbonate Rock. <i>SPE Journal</i> , 2013, 18, 545-562.	1.7	42

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37	Gradient-based fibre detection method on 3D micro-CT tomographic image for defining fibre orientation bias in ultra-high-performance concrete. Cement and Concrete Research, 2020, 129, 105962.	4.6	39
38	Numerical analysis of nuclear magnetic resonance relaxation diffusion responses of sedimentary rock. New Journal of Physics, 2011, 13, 015004.	1.2	38
39	Permeability Upscaling for Carbonates From the Pore Scale by Use of Multiscale X-Ray-CT Images. SPE Reservoir Evaluation and Engineering, 2013, 16, 353-368.	1.1	38
40	Super resolution reconstruction of $\frac{1}{4}$ -CT image of rock sample using neighbour embedding algorithm. Physica A: Statistical Mechanics and Its Applications, 2018, 493, 177-188.	1.2	37
41	Mechanical and transport properties of polymeric foams derived from 3D images. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2005, 263, 284-289.	2.3	34
42	Velocity porosity relationships, 1: Accurate velocity model for clean consolidated sandstones. Geophysics, 2003, 68, 1822-1834.	1.4	32
43	3D structural analysis: sensitivity of Minkowski functionals. Journal of Microscopy, 2010, 240, 181-196.	0.8	32
44	Three-dimensional analysis of cortical bone structure using X-ray micro-computed tomography. Physica A: Statistical Mechanics and Its Applications, 2004, 339, 125-130.	1.2	31
45	Relaxation and relaxation exchange NMR to characterise asphaltene adsorption and wettability dynamics in siliceous systems. Fuel, 2018, 220, 692-705.	3.4	31
46	Characterising the Morphology of Disordered Materials. Lecture Notes in Physics, 2002, , 37-74.	0.3	31
47	Characterization of reactive flow-induced evolution of carbonate rocks using digital core analysis-part 1: Assessment of pore-scale mineral dissolution and deposition. Journal of Contaminant Hydrology, 2016, 192, 60-86.	1.6	29
48	Second-order analysis by variograms for curvature measures of two-phase structures. European Physical Journal B, 2005, 47, 397-409.	0.6	28
49	Evaluation of Capillary Pressure Methods via Digital Rock Simulations. Transport in Porous Media, 2015, 107, 623-640.	1.2	28
50	Finite element modelling of the effective elastic properties of partially saturated rocks. Computers and Geosciences, 2008, 34, 647-657.	2.0	27
51	Boolean reconstructions of complex materials: Integral geometric approach. Physical Review E, 2009, 80, 051303.	0.8	27
52	Computation of Relative Permeability from Imaged Fluid Distributions at the Pore Scale. Transport in Porous Media, 2014, 104, 91-107.	1.2	27
53	Decoupling Minimal Surface Metamaterial Properties Through Multi-Material Hyperbolic Tilings. Advanced Functional Materials, 2021, 31, 2101373.	7.8	27
54	An Experimental and Numerical Study of Relative Permeability Estimates Using Spatially Resolved ^1H NMR. Transport in Porous Media, 2017, 118, 225-250.	1.2	25

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55	Theoretical investigation of heterogeneous wettability in porous media using NMR. Scientific Reports, 2018, 8, 13450.	1.6	25
56	A microstructural investigation of a Na ₂ SO ₄ activated cement-slag blend. Cement and Concrete Research, 2021, 150, 106609.	4.6	25
57	Velocity-porosity relationships: Predictive velocity model for cemented sands composed of multiple mineral phases. Geophysical Prospecting, 2005, 53, 349-372.	1.0	24
58	Three-dimensional porous structure reconstruction based on structural local similarity via sparse representation on micro-computed-tomography images. Physical Review E, 2018, 98, .	0.8	24
59	Computation of Relative Permeability From In-Situ Imaged Fluid Distributions at the Pore Scale. SPE Journal, 2018, 23, 737-749.	1.7	23
60	Investigation of microstructural features in regenerating bone using micro computed tomography. Journal of Materials Science: Materials in Medicine, 2004, 15, 529-532.	1.7	22
61	Fast Laplace solver approach to pore-scale permeability. Physical Review E, 2018, 97, 023303.	0.8	22
62	The heterogeneity in femoral neck structure and strength. Journal of Bone and Mineral Research, 2013, 28, 1022-1028.	3.1	21
63	Temperature-Dependent Oxygen Effect on NMR D- T_2 Relaxation-Diffusion Correlation of n-Alkanes. Applied Magnetic Resonance, 2016, 47, 1391-1408.	0.6	21
64	Virtual Materials Design: Properties of Cellular Solids Derived from 3D Tomographic Images. Advanced Engineering Materials, 2005, 7, 238-243.	1.6	20
65	Semi-quantitative multiscale modelling and flow simulation in a nanoscale porous system of shale. Fuel, 2018, 234, 1181-1192.	3.4	19
66	Morphology, Cocontinuity, and Conductive Properties of Anisotropic Polymer Blends. Macromolecules, 1999, 32, 5964-5966.	2.2	17
67	Polymeric foam properties derived from 3D images. Physica A: Statistical Mechanics and Its Applications, 2004, 339, 131-136.	1.2	17
68	Percolation Effects of Grain Contacts in Partially Saturated Sandstones: Deviations from Archie's Law. Transport in Porous Media, 2013, 96, 457-467.	1.2	17
69	Digital and experimental rock analysis of proppant injection into naturally fractured coal. Fuel, 2021, 286, 119368.	3.4	16
70	An x-ray tomography facility for quantitative prediction of mechanical and transport properties in geological, biological, and synthetic systems. , 2004, , .		15
71	PETROPHYSICAL PROPERTIES DERIVED FROM X-RAY CT IMAGES. APPEA Journal, 2003, 43, 577.	0.4	15
72	A numerical study of field strength and clay morphology impact on NMR transverse relaxation in sandstones. Journal of Petroleum Science and Engineering, 2021, 202, 108521.	2.1	14

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73	Accurate V_p : V_s relationship for dry consolidated sandstones. <i>Geophysical Research Letters</i> , 2002, 29, 44-1-44-4.	1.5	12
74	Permeability evaluation in a glauconite-rich formation in the Carnarvon Basin, Western Australia. <i>Geophysics</i> , 2000, 65, 46-53.	1.4	11
75	Pore characterization through propagator-resolved transverse relaxation exchange. <i>Physical Review E</i> , 2008, 77, 051203.	0.8	11
76	Characterization of reactive flow-induced evolution of carbonate rocks using digital core analysis - part 2: Calculation of the evolution of percolation and transport properties. <i>Journal of Contaminant Hydrology</i> , 2017, 204, 11-27.	1.6	11
77	On the Optimum Aging Time: Magnetic Resonance Study of Asphaltene Adsorption Dynamics in Sandstone Rock. <i>Energy & Fuels</i> , 2019, 33, 8184-8201.	2.5	11
78	Experimental Investigation of Drainage Capillary Pressure Computed From Digitized Tomographic Images. , 2006, , .		10
79	Linear elastic properties of granular rocks derived from X-ray CT images. , 2007, , .		10
80	Tuning Elasticity of Open-Cell Solid Foams and Bone Scaffolds via Randomized Vertex Connectivity. <i>Advanced Engineering Materials</i> , 2012, 14, 120-124.	1.6	10
81	Correlations Between NMR-Relaxation Response and Relative Permeability From Tomographic Reservoir-Rock Images. <i>SPE Reservoir Evaluation and Engineering</i> , 2013, 16, 369-377.	1.1	10
82	Humidity Effects on Effective Elastic Properties of Rock: An Integrated Experimental and Numerical Study. <i>Journal of Geophysical Research: Solid Earth</i> , 2019, 124, 7771-7791.	1.4	10
83	Fast Fourier transform and support-shift techniques for pore-scale microstructure classification using additive morphological measures. <i>Physical Review E</i> , 2020, 101, 033302.	0.8	10
84	3D Imaging of Reservoir Core at Multiple Scales; Correlations to Petrophysical Properties and Pore Scale Fluid Distributions. , 2008, , .		9
85	An Assessment of the Influence of Micro-porosity for Effective Permeability Using Local Flux Analysis on Tomographic Images. , 2014, , .		9
86	What is the Characteristic Length Scale for Permeability? Direct Analysis From Microtomographic Data. , 2005, , .		8
87	The Influence of Syndepositional Macropores on the Hydraulic Integrity of Thick Alluvial Clay Aquitards. <i>Water Resources Research</i> , 2018, 54, 3122-3138.	1.7	8
88	Application of low-field, $^1\text{H}/^{13}\text{C}$ high-field solution and solid state NMR for characterisation of oil fractions responsible for wettability change in sandstones. <i>Magnetic Resonance Imaging</i> , 2019, 56, 77-85.	1.0	8
89	Micro-CT analysis of process-induced defects in composite laminates using AFP. <i>Materials and Manufacturing Processes</i> , 2021, 36, 1561-1570.	2.7	8
90	Micro-CT facility for imaging reservoir rocks at pore scales. , 2003, , .		8

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91	Rock-typing using the complete set of additive morphological descriptors. , 2013, , .		7
92	A Poreâ€Scale Upscaling Approach for Laminated Sandstones using Minkowski Maps and Hydraulic Attributes. Water Resources Research, 2020, 56, e2020WR027978.	1.7	7
93	Solving Multiphysics, Multiparameter, Multimodal Inverse Problems: An Application to NMR Relaxation in Porous Media. Physical Review Applied, 2021, 15, .	1.5	7
94	3D Pore Scale Characterisation of Carbonate Core: Relating pore types and interconnectivity to petrophysical and multiphase flow properties.. , 2007, , .		7
95	Quantitative properties of complex porous materials calculated from x-ray Î¼CT images. , 2006, , .		6
96	Experimental and Numerical Investigation on Stress Dependence of Sandstone Electrical Properties and Deviations from Archie's Law. , 2016, , .		6
97	Regional analysis techniques for integrating experimental and numerical measurements of transport properties of reservoir rocks. Advances in Water Resources, 2017, 100, 48-61.	1.7	6
98	On the influence of wetting behaviour on relaxation of adsorbed liquids â€“ A combined NMR, EPR and DNP study of aged rocks. Magnetic Resonance Imaging, 2019, 56, 63-69.	1.0	6
99	Poreâ€Scale MultiResolution Rockâ€Typing of Layered Sandstones via Minkowski Maps. Water Resources Research, 2021, 57, e2020WR029144.	1.7	6
100	Chemically Induced Evolution of Morphological and Connectivity Characteristics of Pore Space of Complex Carbonate Rock via Digital Core Analysis. Water Resources Research, 2022, 58, .	1.7	6
101	Micro-tomographic Characterization of Dissolution-induced Local Porosity Changes including Fines Migration in Carbonate Rock. , 2012, , .		5
102	About the connectivity of dual-scale media based on micro-structure based regional analysis of NMR flow propagators. Journal of Contaminant Hydrology, 2018, 212, 143-151.	1.6	5
103	Image-based rock typing using local homogeneity filter and Chan-Vese model. Computers and Geosciences, 2021, 150, 104712.	2.0	5
104	A comparison between the characteristics of a biochar-NPK granule and a commercial NPK granule for application in the soil. Science of the Total Environment, 2022, 832, 155021.	3.9	5
105	Virtual core laboratory: Properties of reservoir rock derived from Xâ€ray CT images. , 2003, , .		4
106	Experimental Verification of Effect of Size on Drainage Capillary Pressure Computed from Digitized Tomographic Images. International Journal of Engineering Research in Africa, 0, 1, 1-10.	0.7	4
107	A digital rock physics approach to effective and total porosity for complex carbonates: pore-typing and applications to electrical conductivity. E3S Web of Conferences, 2019, 89, 05002.	0.2	4
108	A solid/fluid substitution scheme constrained by pore-scale numerical simulations. Geophysical Journal International, 2020, 220, 1804-1812.	1.0	3

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109	NMR Relaxation Modelling in Porous Media with Dual-Scale-Resolved Internal Magnetic Fields. Transport in Porous Media, 2022, 142, 453-474.	1.2	3
110	Elastic and flow properties of carbonate core derived from 3D X rayâ€CT images. , 2008, , .		2
111	Predicting Relative Permeability from NMR Relaxation-Diffusion Responses Utilizing High Resolution Micro Xray-CT Images. , 2012, , .		2
112	Micro-Petrophysical Experiments Via Tomography and Simulation. , 2013, , 238-253.		2
113	Dynamic imaging of multiphase flow through porous media using 4D cumulative reconstruction. Journal of Microscopy, 2018, 272, 12-24.	0.8	2
114	Mechanisms of Confining Pressure Dependence of Resistivity Index for Tight Sandstones by Digital Core Analysis. SPE Journal, 2021, 26, 883-896.	1.7	2
115	Lattice Boltzmann framework for accurate NMR simulation in porous media. Physical Review E, 2022, 105, .	0.8	2
116	Euler-PoincarÃ© Characteristics of Disordered Media: An Application in Effective Medium Theories. Microscopy and Microanalysis, 2004, 10, 714-715.	0.2	1
117	X-Ray Micro-Tomography Applications Of Relevance To The Petroleum Industry. AIP Conference Proceedings, 2007, , .	0.3	1
118	Tomographic image analysis and processing to simulate micro-petrophysical experiments. , 2010, , .		1
119	Computation of Relative Permeability from In Situ Imaged Fluid Distributions at the Pore Scale. , 2016, , .		1
120	A fast FFT method for 3D pore-scale rock-typing of heterogeneous rock samples via Minkowski functionals and hydraulic attributes. E3S Web of Conferences, 2020, 146, 04002.	0.2	1
121	A Bayesian Optimization Approach to the Simultaneous Extraction of Intrinsic Physical Parameters from<i>T</i>1 and<i>T</i>2 Relaxation Responses. SPE Journal, 2023, 28, 319-341.	1.7	1
122	Fluid substitution in porous rocks with aligned cracks: Theory versus numerical modeling. , 2006, , .		0
123	Velocity-porosity relationships, 1: Accurate velocity model for clean consolidated sandstones, GEOPHYSICS, 68, 1822â€“1834.. Geophysics, 2006, 71, Y3-Y3.	1.4	0
124	Velocity-Porosity Relationships: Predictive velocity model for cemented sands composed of multiple mineral phases.. Geophysical Prospecting, 2006, 54, 237-237.	1.0	0
125	Propagator Resolved Transverse Relaxation Exchange Spectroscopy. , 2008, , .		0
126	Fiber Network Elasticity as Function of Crosslinker Density. Biophysical Journal, 2010, 98, 161a.	0.2	0

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127	Tuning Elasticity of Open-Cell Solid Foams and Bone Scaffolds via Randomized Vertex Connectivity. <i>Advanced Engineering Materials</i> , 2012, 14, n/a-n/a.	1.6	0
128	An Analysis of Sleeve Effects for Petrophysical Measurements using Digital Core Analysis. , 2015, , .		0
129	Proceeding of the 13th international Bologna conference on magnetic resonance in porous media (MRPM13). <i>Microporous and Mesoporous Materials</i> , 2018, 269, 1-2.	2.2	0
130	Metamaterial Design: Decoupling Minimal Surface Metamaterial Properties Through Multi-Material Hyperbolic Tilings (Adv. Funct. Mater. 30/2021). <i>Advanced Functional Materials</i> , 2021, 31, 2170214.	7.8	0
131	High-Precision Tracking of Sandstone Deformation From Micro-CT Images. <i>Journal of Geophysical Research: Solid Earth</i> , 2021, 126, e2021JB022283.	1.4	0
132	Pore scale imaging and modelling of coal properties. <i>APPEA Journal</i> , 2015, 55, 468.	0.4	0
133	Mechanisms of Confining Pressure Dependence of Resistivity Index for Tight Sandstones. , 2020, , .		0