

# Christoph Arns

## List of Publications by Year in descending order

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133  
papers

5,233  
citations

94381

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docs citations

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times ranked

4798  
citing authors

#	ARTICLE	IF	CITATIONS
1	A Bayesian Optimization Approach to the Simultaneous Extraction of Intrinsic Physical Parameters from $T_1$ and $T_2$ Relaxation Responses. SPE Journal, 2023, 28, 319-341.	1.7	1
2	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
3	NMR Relaxation Modelling in Porous Media with Dual-Scale-Resolved Internal Magnetic Fields. Transport in Porous Media, 2022, 142, 453-474.	1.2	3
4	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
5	Lattice Boltzmann framework for accurate NMR simulation in porous media. Physical Review E, 2022, 105, .	0.8	2
6	Digital and experimental rock analysis of proppant injection into naturally fractured coal. Fuel, 2021, 286, 119368.	3.4	16
7	Mechanisms of Confining Pressure Dependence of Resistivity Index for Tight Sandstones by Digital Core Analysis. SPE Journal, 2021, 26, 883-896.	1.7	2
8	Pore-Scale Multi-Resolution Rock Typing of Layered Sandstones via Minkowski Maps. Water Resources Research, 2021, 57, e2020WR029144.	1.7	6
9	Decoupling Minimal Surface Metamaterial Properties Through Multi-Material Hyperbolic Tilings. Advanced Functional Materials, 2021, 31, 2101373.	7.8	27
10	Image-based rock typing using local homogeneity filter and Chan-Vese model. Computers and Geosciences, 2021, 150, 104712.	2.0	5
11	Solving Multiphysics, Multiparameter, Multimodal Inverse Problems: An Application to NMR Relaxation in Porous Media. Physical Review Applied, 2021, 15, .	1.5	7
12	Metamaterial Design: Decoupling Minimal Surface Metamaterial Properties Through Multi-Material Hyperbolic Tilings (Adv. Funct. Mater. 30/2021). Advanced Functional Materials, 2021, 31, 2170214.	7.8	0
13	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
14	High-Precision Tracking of Sandstone Deformation From Micro-CT Images. Journal of Geophysical Research: Solid Earth, 2021, 126, e2021JB022283.	1.4	0
15	A microstructural investigation of a Na <sub>2</sub> SO <sub>4</sub> activated cement-slag blend. Cement and Concrete Research, 2021, 150, 106609.	4.6	25
16	Micro-CT analysis of process-induced defects in composite laminates using AFP. Materials and Manufacturing Processes, 2021, 36, 1561-1570.	2.7	8
17	A solid/fluid substitution scheme constrained by pore-scale numerical simulations. Geophysical Journal International, 2020, 220, 1804-1812.	1.0	3
18	A Pore-Scale Upscaling Approach for Laminated Sandstones using Minkowski Maps and Hydraulic Attributes. Water Resources Research, 2020, 56, e2020WR027978.	1.7	7

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19	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
20	Gradient-based fibre detection method on 3D micro-CT tomographic image for defining fibre orientation bias in ultra-high-performance concrete. <i>Cement and Concrete Research</i> , 2020, 129, 105962.	4.6	39
21	A fast FFT method for 3D pore-scale rock-typing of heterogeneous rock samples via Minkowski functionals and hydraulic attributes. <i>E3S Web of Conferences</i> , 2020, 146, 04002.	0.2	1
22	Mechanisms of Confining Pressure Dependence of Resistivity Index for Tight Sandstones. , 2020, , .		0
23	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
24	On the Optimum Aging Time: Magnetic Resonance Study of Asphaltene Adsorption Dynamics in Sandstone Rock. <i>Energy &amp; Fuels</i> , 2019, 33, 8184-8201.	2.5	11
25	A digital rock physics approach to effective and total porosity for complex carbonates: pore-typing and applications to electrical conductivity. <i>E3S Web of Conferences</i> , 2019, 89, 05002.	0.2	4
26	Application of low-field, <sup>1</sup> H/ <sup>13</sup> 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
27	Porous Media Characterization Using Minkowski Functionals: Theories, Applications and Future Directions. <i>Transport in Porous Media</i> , 2019, 130, 305-335.	1.2	114
28	On the influence of wetting behaviour on relaxation of adsorbed liquids – A combined NMR, EPR and DNP study of aged rocks. <i>Magnetic Resonance Imaging</i> , 2019, 56, 63-69.	1.0	6
29	Relaxation and relaxation exchange NMR to characterise asphaltene adsorption and wettability dynamics in siliceous systems. <i>Fuel</i> , 2018, 220, 692-705.	3.4	31
30	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
31	Fast Laplace solver approach to pore-scale permeability. <i>Physical Review E</i> , 2018, 97, 023303.	0.8	22
32	Computation of Relative Permeability From In-Situ Imaged Fluid Distributions at the Pore Scale. <i>SPE Journal</i> , 2018, 23, 737-749.	1.7	23
33	About the connectivity of dual-scale media based on micro-structure based regional analysis of NMR flow propagators. <i>Journal of Contaminant Hydrology</i> , 2018, 212, 143-151.	1.6	5
34	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
35	Super resolution reconstruction of $\sqrt[4]{}$ -CT image of rock sample using neighbour embedding algorithm. <i>Physica A: Statistical Mechanics and Its Applications</i> . 2018. 493. 177-188.	1.2	37
36	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

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37	Semi-quantitative multiscale modelling and flow simulation in a nanoscale porous system of shale. Fuel, 2018, 234, 1181-1192.	3.4	19
38	Theoretical investigation of heterogeneous wettability in porous media using NMR. Scientific Reports, 2018, 8, 13450.	1.6	25
39	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
40	Porous Structure Reconstruction Using Convolutional Neural Networks. Mathematical Geosciences, 2018, 50, 781-799.	1.4	60
41	Dynamic imaging of multiphase flow through porous media using 4D cumulative reconstruction. Journal of Microscopy, 2018, 272, 12-24.	0.8	2
42	Imaging analysis of fines migration during water flow with salinity alteration. Advances in Water Resources, 2018, 121, 150-161.	1.7	45
43	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
44	An Experimental and Numerical Study of Relative Permeability Estimates Using Spatially Resolved $^{15}\text{N}$ NMR. Transport in Porous Media, 2017, 118, 225-250.	1.2	25
45	Pore-Scale Characterization of Two-Phase Flow Using Integral Geometry. Transport in Porous Media, 2017, 118, 99-117.	1.2	73
46	Characterization of reactive flow-induced evolution of carbonate rocks using digital core analysis - part 2: Calculation of the evolution of percolation and transport properties. Journal of Contaminant Hydrology, 2017, 204, 11-27.	1.6	11
47	High-fidelity replication of thermoplastic microneedles with open microfluidic channels. Microsystems and Nanoengineering, 2017, 3, 17034.	3.4	70
48	Numerical Simulation of Reactive Transport on Micro-CT Images. Mathematical Geosciences, 2016, 48, 963-983.	1.4	67
49	Temperature-Dependent Oxygen Effect on NMR $T_2$ Relaxation-Diffusion Correlation of n-Alkanes. Applied Magnetic Resonance, 2016, 47, 1391-1408.	0.6	21
50	Investigation of early hydration dynamics and microstructural development in ordinary Portland cement using $^1\text{H}$ NMR relaxometry and isothermal calorimetry. Cement and Concrete Research, 2016, 83, 131-139.	4.6	67
51	Experimental and Numerical Investigation on Stress Dependence of Sandstone Electrical Properties and Deviations from Archie's Law. , 2016, , .		6
52	Computation of Relative Permeability from In Situ Imaged Fluid Distributions at the Pore Scale. , 2016, , .		1
53	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
54	Image-based relative permeability upscaling from the pore scale. Advances in Water Resources, 2016, 95, 161-175.	1.7	51

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55	An Analysis of Sleeve Effects for Petrophysical Measurements using Digital Core Analysis. , 2015, , .		0
56	Evaluation of Capillary Pressure Methods via Digital Rock Simulations. Transport in Porous Media, 2015, 107, 623-640.	1.2	28
57	Pore scale imaging and modelling of coal properties. APPEA Journal, 2015, 55, 468.	0.4	0
58	Computation of Relative Permeability from Imaged Fluid Distributions at the Pore Scale. Transport in Porous Media, 2014, 104, 91-107.	1.2	27
59	Techniques in helical scanning, dynamic imaging and image segmentation for improved quantitative analysis with X-ray micro-CT. Nuclear Instruments & Methods in Physics Research B, 2014, 324, 49-56.	0.6	121
60	An Assessment of the Influence of Micro-porosity for Effective Permeability Using Local Flux Analysis on Tomographic Images. , 2014, , .		9
61	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
62	The heterogeneity in femoral neck structure and strength. Journal of Bone and Mineral Research, 2013, 28, 1022-1028.	3.1	21
63	Micro-Petrophysical Experiments Via Tomography and Simulation. , 2013, , 238-253.		2
64	Correlations Between NMR-Relaxation Response and Relative Permeability From Tomographic Reservoir-Rock Images. SPE Reservoir Evaluation and Engineering, 2013, 16, 369-377.	1.1	10
65	Rock-typing using the complete set of additive morphological descriptors. , 2013, , .		7
66	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
67	Microtomographic Characterization of Dissolution-Induced Local Porosity Changes Including Fines Migration in Carbonate Rock. SPE Journal, 2013, 18, 545-562.	1.7	42
68	Micro-tomographic Characterization of Dissolution-induced Local Porosity Changes including Fines Migration in Carbonate Rock. , 2012, , .		5
69	Predicting Relative Permeability from NMR Relaxation-Diffusion Responses Utilizing High Resolution Micro Xray-CT Images. , 2012, , .		2
70	Qualitative and Quantitative Analyses of the Three-Phase Distribution of Oil, Water, and Gas in Bentheimer Sandstone by Use of Micro-CT Imaging. SPE Reservoir Evaluation and Engineering, 2012, 15, 706-711.	1.1	48
71	Tuning Elasticity of Open-Cell Solid Foams and Bone Scaffolds via Randomized Vertex Connectivity. Advanced Engineering Materials, 2012, 14, 120-124.	1.6	10
72	Tuning Elasticity of Open-Cell Solid Foams and Bone Scaffolds via Randomized Vertex Connectivity. Advanced Engineering Materials, 2012, 14, n/a-n/a.	1.6	0

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73	Numerical analysis of nuclear magnetic resonance relaxationâ€“diffusion responses of sedimentary rock. <i>New Journal of Physics</i> , 2011, 13, 015004.	1.2	38
74	Minimal surface scaffold designs for tissue engineering. <i>Biomaterials</i> , 2011, 32, 6875-6882.	5.7	417
75	Morphology and Linearâ€“Elastic Moduli of Random Network Solids. <i>Advanced Materials</i> , 2011, 23, 2633-2637.	11.1	44
76	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
77	3D structural analysis: sensitivity of Minkowski functionals. <i>Journal of Microscopy</i> , 2010, 240, 181-196.	0.8	32
78	Tomographic image analysis and processing to simulate micro-petrophysical experiments. , 2010, , .		1
79	Fiber Network Elasticity as Function of Crosslinker Density. <i>Biophysical Journal</i> , 2010, 98, 161a.	0.2	0
80	Boolean reconstructions of complex materials: Integral geometric approach. <i>Physical Review E</i> , 2009, 80, 051303.	0.8	27
81	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
82	3D Imaging and Simulation of Elastic Properties of Porous Materials. <i>Computing in Science and Engineering</i> , 2009, 11, 65-73.	1.2	48
83	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
84	Finite element modelling of the effective elastic properties of partially saturated rocks. <i>Computers and Geosciences</i> , 2008, 34, 647-657.	2.0	27
85	Elastic and flow properties of carbonate core derived from 3D X rayâ€“CT images. , 2008, , .		2
86	Pore characterization through propagator-resolved transverse relaxation exchange. <i>Physical Review E</i> , 2008, 77, 051203.	0.8	11
87	Propagator Resolved Transverse Relaxation Exchange Spectroscopy. , 2008, , .		0
88	3D Imaging of Reservoir Core at Multiple Scales; Correlations to Petrophysical Properties and Pore Scale Fluid Distributions. , 2008, , .		9
89	X-Ray Micro-Tomography Applications Of Relevance To The Petroleum Industry. <i>AIP Conference Proceedings</i> , 2007, , .	0.3	1
90	Linear elastic properties of granular rocks derived from Xâ€“rayâ€“CT images. , 2007, , .		10

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91	Recent Fourier and Laplace perspectives for multidimensional NMR in porous media. Magnetic Resonance Imaging, 2007, 25, 441-444.	1.0	60
92	Developing a virtual materials laboratory. Materials Today, 2007, 10, 44-51.	8.3	160
93	Assessment of bone ingrowth into porous biomaterials using MICRO-CT. Biomaterials, 2007, 28, 2491-2504.	5.7	370
94	3D Pore Scale Characterisation of Carbonate Core: Relating pore types and interconnectivity to petrophysical and multiphase flow properties.. , 2007, , .		7
95	Elastic and transport properties of cellular solids derived from three-dimensional tomographic images. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2006, 462, 2833-2862.	1.0	48
96	Fluid substitution in porous rocks with aligned cracks: Theory versus numerical modeling. , 2006, , .		0
97	Velocity-porosity relationships, 1: Accurate velocity model for clean consolidated sandstones, GEOPHYSICS, 68, 1822â€“1834.. Geophysics, 2006, 71, Y3-Y3.	1.4	0
98	Experimental Investigation of Drainage Capillary Pressure Computed From Digitized Tomographic Images. , 2006, , .		10
99	Velocity-Porosity Relationships: Predictive velocity model for cemented sands composed of multiple mineral phases.. Geophysical Prospecting, 2006, 54, 237-237.	1.0	0
100	Structure and properties of clinical coralline implants measured via 3D imaging and analysis. Biomaterials, 2006, 27, 2776-2786.	5.7	66
101	Quantitative properties of complex porous materials calculated from x-ray $\mu$ CT images. , 2006, , .		6
102	Pore Scale Characterization of Carbonates Using X-Ray Microtomography. SPE Journal, 2005, 10, 475-484.	1.7	194
103	What is the Characteristic Length Scale for Permeability? Direct Analysis From Microtomographic Data. , 2005, , .		8
104	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
105	Second-order analysis by variograms for curvature measures of two-phase structures. European Physical Journal B, 2005, 47, 397-409.	0.6	28
106	Velocity-porosity relationships: Predictive velocity model for cemented sands composed of multiple mineral phases. Geophysical Prospecting, 2005, 53, 349-372.	1.0	24
107	Virtual Materials Design: Properties of Cellular Solids Derived from 3D Tomographic Images. Advanced Engineering Materials, 2005, 7, 238-243.	1.6	20
108	Cross-property correlations and permeability estimation in sandstone. Physical Review E, 2005, 72, 046304.	0.8	101

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109	Fluids in porous media: a morphometric approach. Journal of Physics Condensed Matter, 2005, 17, S503-S534.	0.7	63
110	An x-ray tomography facility for quantitative prediction of mechanical and transport properties in geological, biological, and synthetic systems. , 2004, , .		15
111	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
112	Virtual permeametry on microtomographic images. Journal of Petroleum Science and Engineering, 2004, 45, 41-46.	2.1	170
113	A comparison of pore size distributions derived by NMR and X-ray-CT techniques. Physica A: Statistical Mechanics and Its Applications, 2004, 339, 159-165.	1.2	78
114	Polymeric foam properties derived from 3D images. Physica A: Statistical Mechanics and Its Applications, 2004, 339, 131-136.	1.2	17
115	Three-dimensional imaging of multiphase flow in porous media. Physica A: Statistical Mechanics and Its Applications, 2004, 339, 166-172.	1.2	89
116	Characterisation of irregular spatial structures by parallel sets and integral geometric measures. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2004, 241, 351-372.	2.3	74
117	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
118	Digital Core Laboratory: Properties of reservoir core derived from 3D images. , 2004, , .		42
119	Euler-Poincaré Characteristics of Disordered Media: An Application in Effective Medium Theories. Microscopy and Microanalysis, 2004, 10, 714-715.	0.2	1
120	Relative permeability from tomographic images; effect of correlated heterogeneity. Journal of Petroleum Science and Engineering, 2003, 39, 247-259.	2.1	54
121	Velocity- porosity relationships, 1: Accurate velocity model for clean consolidated sandstones. Geophysics, 2003, 68, 1822-1834.	1.4	32
122	Virtual core laboratory: Properties of reservoir rock derived from X-ray CT images. , 2003, , .		4
123	Reconstructing Complex Materials via Effective Grain Shapes. Physical Review Letters, 2003, 91, 215506.	2.9	69
124	PETROPHYSICAL PROPERTIES DERIVED FROM X-RAY CT IMAGES. APPEA Journal, 2003, 43, 577.	0.4	15
125	Micro-CT facility for imaging reservoir rocks at pore scales. , 2003, , .		8
126	Computation of linear elastic properties from microtomographic images: Methodology and agreement between theory and experiment. Geophysics, 2002, 67, 1396-1405.	1.4	341



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127	Accurate $V_p$ : $V_s$ relationship for dry consolidated sandstones. Geophysical Research Letters, 2002, 29, 44-1-44-4.	1.5	12
128	Characterising the Morphology of Disordered Materials. Lecture Notes in Physics, 2002, , 37-74.	0.3	31
129	Euler-Poincaré characteristics of classes of disordered media. Physical Review E, 2001, 63, 031112.	0.8	82
130	Accurate estimation of transport properties from microtomographic images. Geophysical Research Letters, 2001, 28, 3361-3364.	1.5	182
131	Permeability evaluation in a glauconite-rich formation in the Carnarvon Basin, Western Australia. Geophysics, 2000, 65, 46-53.	1.4	11
132	Morphology, Cocontinuity, and Conductive Properties of Anisotropic Polymer Blends. Macromolecules, 1999, 32, 5964-5966.	2.2	17
133	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