

Robert W Zimmerman

List of Publications by Year in descending order

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110
papers

7,933
citations

50276

46
h-index

49909

87
g-index

115
all docs

115
docs citations

115
times ranked

5260
citing authors

#	ARTICLE	IF	CITATIONS
1	Hydraulic conductivity of rock fractures. <i>Transport in Porous Media</i> , 1996, 23, 1.	2.6	1,021
2	Relation between the Mogi and the Coulomb failure criteria. <i>International Journal of Rock Mechanics and Minings Sciences</i> , 2005, 42, 431-439.	5.8	388
3	Compressibility of porous rocks. <i>Journal of Geophysical Research</i> , 1986, 91, 12765-12777.	3.3	381
4	Non-linear regimes of fluid flow in rock fractures. <i>International Journal of Rock Mechanics and Minings Sciences</i> , 2004, 41, 163-169.	5.8	277
5	A numerical dual-porosity model with semianalytical treatment of fracture/matrix flow. <i>Water Resources Research</i> , 1993, 29, 2127-2137.	4.2	248
6	The effect of contact area on the permeability of fractures. <i>Journal of Hydrology</i> , 1992, 139, 79-96.	5.4	236
7	Elastic moduli of a solid containing spherical inclusions. <i>Mechanics of Materials</i> , 1991, 12, 17-24.	3.2	216
8	Influence of the interfacial transition zone and microcracking on the diffusivity, permeability and sorptivity of cement-based materials after drying. <i>Magazine of Concrete Research</i> , 2009, 61, 571-589.	2.0	202
9	Permeability tensor of three-dimensional fractured porous rock and a comparison to trace map predictions. <i>Journal of Geophysical Research: Solid Earth</i> , 2014, 119, 6288-6307.	3.4	193
10	Thermal conductivity of fluid-saturated rocks. <i>Journal of Petroleum Science and Engineering</i> , 1989, 3, 219-227.	4.2	189
11	Rheology and Permeability of Crosslinked Polyacrylamide Gel. <i>Journal of Colloid and Interface Science</i> , 2001, 240, 601-607.	9.4	163
12	INHOMOGENEOUS INTERFACIAL TRANSITION ZONE MODEL FOR THE BULK MODULUS OF MORTAR. <i>Cement and Concrete Research</i> , 1997, 27, 1113-1122.	11.0	156
13	A three-dimensional coupled thermo-hydro-mechanical model for deformable fractured geothermal systems. <i>Geothermics</i> , 2018, 71, 212-224.	3.4	145
14	The effect of microcracks on the elastic moduli of brittle materials. <i>Journal of Materials Science Letters</i> , 1985, 4, 1457-1460.	0.5	135
15	Effect of entrained air voids on the microstructure and mass transport properties of concrete. <i>Cement and Concrete Research</i> , 2011, 41, 1067-1077.	11.0	133
16	Approximate Solutions for Pressure Buildup During CO ₂ Injection in Brine Aquifers. <i>Transport in Porous Media</i> , 2009, 79, 265-284.	2.6	129
17	An effective thermal conductivity model of geological porous media for coupled thermo-hydro-mechanical systems with multiphase flow. <i>International Journal of Rock Mechanics and Minings Sciences</i> , 2009, 46, 1358-1369.	5.8	125
18	A fully coupled thermo-hydro-mechanical model for simulating multiphase flow, deformation and heat transfer in buffer material and rock masses. <i>International Journal of Rock Mechanics and Minings Sciences</i> , 2010, 47, 205-217.	5.8	105

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19	Fluid flow in rock fractures: From the Navier-Stokes equations to the cubic law. Geophysical Monograph Series, 2000, , 213-224.	0.1	99
20	Estimating the Hydraulic Conductivity of Two-Dimensional Fracture Networks Using Network Geometric Properties. Transport in Porous Media, 2012, 93, 777-797.	2.6	99
21	Effective stress law for the permeability of clay-rich sandstones. Journal of Geophysical Research, 2004, 109, .	3.3	95
22	Screening and selection of sites for CO2 sequestration based on pressure buildup. International Journal of Greenhouse Gas Control, 2009, 3, 577-585.	4.6	95
23	Effect of an inhomogeneous interphase zone on the bulk modulus and conductivity of a particulate composite. International Journal of Solids and Structures, 2005, 42, 429-437.	2.7	93
24	Sensitivity of the impact of geological uncertainty on production from faulted and unfaulted shallow-marine oil reservoirs: objectives and methods. Petroleum Geoscience, 2008, 14, 3-15.	1.5	93
25	Three-dimensional poroelastic effects during hydraulic fracturing in permeable rocks. International Journal of Solids and Structures, 2017, 108, 153-163.	2.7	88
26	Numerical simulation of multiple 3D fracture propagation using arbitrary meshes. Computer Methods in Applied Mechanics and Engineering, 2011, 200, 953-966.	6.6	87
27	Pressure Buildup During CO2 Injection into a Closed Brine Aquifer. Transport in Porous Media, 2011, 89, 383-397.	2.6	86
28	Analytic Analysis for Oil Recovery During Counter-Current Imbibition in Strongly Water-Wet Systems. Transport in Porous Media, 2005, 58, 173-189.	2.6	82
29	Predicting the permeability of sandstone from image analysis of pore structure. Journal of Applied Physics, 2002, 92, 6311-6319.	2.5	77
30	Finite element simulations of interactions between multiple hydraulic fractures in a poroelastic rock. International Journal of Rock Mechanics and Minings Sciences, 2017, 99, 9-20.	5.8	77
31	Creeping flow through a pipe of varying radius. Physics of Fluids, 2001, 13, 2762-2772.	4.0	72
32	Pore-scale modelling of NMR relaxation for the characterization of wettability. Journal of Petroleum Science and Engineering, 2006, 52, 172-186.	4.2	66
33	A new well path optimization model for increased mechanical borehole stability. Journal of Petroleum Science and Engineering, 2009, 69, 53-62.	4.2	64
34	Compressibility and shear compliance of spheroidal pores: Exact derivation via the Eshelby tensor, and asymptotic expressions in limiting cases. International Journal of Solids and Structures, 2011, 48, 680-686.	2.7	64
35	An approximate solution for one-dimensional absorption in unsaturated porous media. Water Resources Research, 1989, 25, 1422-1428.	4.2	63
36	A new lumped-parameter model for flow in unsaturated dual-porosity media. Advances in Water Resources, 1996, 19, 317-327.	3.8	62

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37	Analysis of counter-current imbibition with gravity in weakly water-wet systems. Journal of Petroleum Science and Engineering, 2005, 48, 94-104.	4.2	62
38	Polymers as relative permeability modifiers: adsorption and the dynamic formation of thick polyacrylamide layers. Journal of Petroleum Science and Engineering, 2004, 45, 233-245.	4.2	61
39	Laboratory measurements of low- and high-frequency elastic moduli in Fontainebleau sandstone. Geophysics, 2013, 78, D369-D379.	2.6	60
40	Elastic moduli of solids containing spheroidal pores. International Journal of Engineering Science, 2011, 49, 544-560.	5.0	57
41	Estimating the permeability of cement pastes and mortars using image analysis and effective medium theory. Cement and Concrete Research, 2012, 42, 476-483.	11.0	57
42	Hydromechanical Behavior of Fractured Rocks. International Geophysics, 2004, , 363-421.	0.6	55
43	On the use of quarter-point tetrahedral finite elements in linear elastic fracture mechanics. Engineering Fracture Mechanics, 2015, 144, 194-221.	4.3	55
44	Inclusion-Based Effective Medium Models for the Permeability of a 3D Fractured Rock Mass. Transport in Porous Media, 2016, 113, 137-158.	2.6	54
45	Hashin-Shtrikman bounds on the poisson ratio of a composite material. Mechanics Research Communications, 1992, 19, 563-569.	1.8	53
46	Influence of volume/mass on grain-size curves and conversion of image-analysis size to sieve size. Engineering Geology, 2007, 90, 124-137.	6.3	52
47	A direct fragmentation method with Weibull function distribution of sizes based on finite- and discrete element simulations. International Journal of Solids and Structures, 2016, 80, 38-51.	2.7	50
48	Absorption of Water Into Porous Blocks of Various Shapes and Sizes. Water Resources Research, 1990, 26, 2797-2806.	4.2	49
49	A finite element framework for modeling internal frictional contact in three-dimensional fractured media using unstructured tetrahedral meshes. Computer Methods in Applied Mechanics and Engineering, 2016, 306, 123-150.	6.6	47
50	Laminar Flow Through Irregularly-Shaped Pores in Sedimentary Rocks. Transport in Porous Media, 2001, 45, 41-62.	2.6	46
51	Fracture and impulse based finite-discrete element modeling of fragmentation. Computational Mechanics, 2013, 52, 1071-1084.	4.0	45
52	Hydraulic sealing due to pressure solution contact zone growth in siliciclastic rock fractures. Journal of Geophysical Research: Solid Earth, 2015, 120, 4080-4101.	3.4	45
53	The elastic moduli of mortar as a porous-granular material. Cement and Concrete Research, 1986, 16, 239-245.	11.0	41
54	A simple approximate solution for horizontal infiltration in a Brooks-Corey medium. Transport in Porous Media, 1991, 6, 195.	2.6	41

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55	Creeping Flow Through an Axisymmetric Sudden Contraction or Expansion. <i>Journal of Fluids Engineering, Transactions of the ASME</i> , 2002, 124, 273-278.	1.5	41
56	Effect of cold CO ₂ injection on fracture apertures and growth. <i>International Journal of Greenhouse Gas Control</i> , 2018, 74, 130-141.	4.6	40
57	A disk-shaped domain integral method for the computation of stress intensity factors using tetrahedral meshes. <i>International Journal of Solids and Structures</i> , 2015, 69-70, 230-251.	2.7	39
58	Effective block size for imbibition or absorption in dual-porosity media. <i>Geophysical Research Letters</i> , 1995, 22, 1461-1464.	4.0	38
59	Caprock integrity and public perception studies of carbon storage in depleted hydrocarbon reservoirs. <i>International Journal of Greenhouse Gas Control</i> , 2020, 98, 103057.	4.6	38
60	Behavior of the Poisson Ratio of a Two-Phase Composite Material in the High-Concentration Limit. <i>Applied Mechanics Reviews</i> , 1994, 47, S38-S44.	10.1	35
61	Assessing the effect of geological uncertainty on recovery estimates in shallow-marine reservoirs: the application of reservoir engineering to the SAIGUP project. <i>Petroleum Geoscience</i> , 2008, 14, 35-44.	1.5	34
62	Numerical fracture growth modeling using smooth surface geometric deformation. <i>Engineering Fracture Mechanics</i> , 2013, 108, 19-36.	4.3	34
63	Impact of stress on solute transport in a fracture network: A comparison study. <i>Journal of Rock Mechanics and Geotechnical Engineering</i> , 2013, 5, 110-123.	8.1	33
64	Pore Volume and Porosity Changes under Uniaxial Strain Conditions. <i>Transport in Porous Media</i> , 2017, 119, 481-498.	2.6	33
65	Permeability of Three-Dimensional Numerically Grown Geomechanical Discrete Fracture Networks With Evolving Geometry and Mechanical Apertures. <i>Journal of Geophysical Research: Solid Earth</i> , 2020, 125, e2019JB018899.	3.4	32
66	Second-Order Approximation for the Compression of an Elastic Plate Containing a Pair of Circular Holes. <i>ZAMM Zeitschrift Fur Angewandte Mathematik Und Mechanik</i> , 1988, 68, 575-577.	1.6	31
67	An impulse-based energy tracking method for collision resolution. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2014, 278, 160-185.	6.6	30
68	Compressibility of two-dimensional pores having n-fold axes of symmetry. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 2006, 462, 1933-1947.	2.1	29
69	Coupled reservoir-wellbore simulation of geothermal reservoir behavior. <i>Geothermics</i> , 1995, 24, 145-166.	3.4	28
70	Energy conservative property of impulse-based methods for collision resolution. <i>International Journal for Numerical Methods in Engineering</i> , 2013, 95, 529-540.	2.8	27
71	Relationship Between the Orientation of Maximum Permeability and Intermediate Principal Stress in Fractured Rocks. <i>Water Resources Research</i> , 2018, 54, 8734-8755.	4.2	27
72	Title is missing!. <i>Transport in Porous Media</i> , 2001, 45, 129-138.	2.6	26

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73	Evolution of fracture normal stiffness due to pressure dissolution and precipitation. International Journal of Rock Mechanics and Minings Sciences, 2016, 88, 12-22.	5.8	26
74	Permeability of a fracture with cylindrical asperities. Fluid Dynamics Research, 1991, 7, 131-137.	1.3	25
75	Navier-Stokes Simulations of Fluid Flow Through a Rock Fracture. Geophysical Monograph Series, 0, , 55-64.	0.1	25
76	Integral method solution for diffusion into a spherical block. Journal of Hydrology, 1989, 111, 213-224.	5.4	23
77	Stress singularity around two nearby holes. Mechanics Research Communications, 1988, 15, 87-90.	1.8	22
78	Growth of three-dimensional fractures, arrays, and networks in brittle rocks under tension and compression. Computers and Geotechnics, 2020, 121, 103447.	4.7	22
79	Shear compliance of two-dimensional pores possessing N-fold axis of rotational symmetry. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2008, 464, 759-775.	2.1	21
80	Boundary Perturbation Solution for Nearly Circular Holes and Rigid Inclusions in an Infinite Elastic Medium. Journal of Applied Mechanics, Transactions ASME, 2008, 75, .	2.2	20
81	Effect of the interphase zone on the conductivity or diffusivity of a particulate composite using Maxwell's homogenization method. International Journal of Engineering Science, 2016, 98, 51-59.	5.0	20
82	Flow of Water through Channels Filled with Deformable Polymer Gels. Journal of Colloid and Interface Science, 2002, 250, 466-470.	9.4	19
83	Quantification of Fracture Interaction Using Stress Intensity Factor Variation Maps. Journal of Geophysical Research: Solid Earth, 2017, 122, 7698-7717.	3.4	19
84	Hydro-mechanical interaction effects and channelling in three-dimensional fracture networks undergoing growth and nucleation. Journal of Rock Mechanics and Geotechnical Engineering, 2020, 12, 707-719.	8.1	19
85	Validity of linear elasticity in the crack-tip region of ideal brittle solids. International Journal of Fracture, 2014, 189, 103-110.	2.2	18
86	The effect of pore shape on the Poisson ratio of porous materials. Mathematics and Mechanics of Solids, 2021, 26, 1191-1203.	2.4	18
87	Comparison of methods for upscaling permeability from the pore scale to the core scale. Journal of Hydraulic Research/De Recherches Hydrauliques, 2004, 42, 3-8.	1.7	16
88	Comparison of discrete fracture network and equivalent continuum simulations of fluid flow through two-dimensional fracture networks for the DECOVALEX'2011 project. Mineralogical Magazine, 2012, 76, 3179-3190.	1.4	16
89	A unified methodology for computing the stresses around an arbitrarily-shaped hole in isotropic or anisotropic materials. International Journal of Solids and Structures, 2020, 199, 131-143.	2.7	16
90	Gravity Hydraulic Fracturing: A Method to Create Self-Driven Fractures. Geophysical Research Letters, 2020, 47, e2020GL087563.	4.0	15

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91	A Model for Steady Laminar Flow through a Deformable Gel-Coated Channel. Journal of Colloid and Interface Science, 2000, 226, 105-111.	9.4	14
92	Modification of Griffith's McClintock-Walsh model for crack growth under compression to incorporate stick-slip along the crack faces. International Journal of Rock Mechanics and Minings Sciences, 2014, 72, 311-318.	5.8	14
93	Commemorating Dr. Gudmundur 'Bo' Bodvarsson (1951-2006), a Leader of the Deep Unsaturated Flow and Transport Investigations. Water (Switzerland), 2018, 10, 18.	2.7	13
94	Mechanical characterization of Laffan and Nahr Umr anisotropic shales. Journal of Petroleum Science and Engineering, 2021, 200, 108195.	4.2	13
95	Laplace transform inversion for late-time behavior of groundwater flow problems. Water Resources Research, 2003, 39, .	4.2	11
96	Segregated pathways mechanism for oil and water flow through an oil-based gelant. Journal of Petroleum Science and Engineering, 2002, 35, 183-190.	4.2	10
97	Finite-Element Modeling of the Growth and Interaction of Hydraulic Fractures in Poroelastic Rock Formations. , 2018, , 1-19.		7
98	Semi-analytical Method for Modeling Wellbore Breakout Development. Rock Mechanics and Rock Engineering, 2022, 55, 2987-3000.	5.4	6
99	Wettability alteration by aging of a gel placed within a porous medium. Journal of Petroleum Science and Engineering, 2002, 33, 135-145.	4.2	5
100	Effect of Poroelasticity on Hydraulic Fracture Interactions. , 2017, , .		5
101	Micromechanics of Poroelastic Rocks. Modeling and Simulation in Science, Engineering and Technology, 2000, , 411-469.	0.6	5
102	Fracture growth leading to mechanical spalling around deposition boreholes of an underground nuclear waste repository. International Journal of Rock Mechanics and Minings Sciences, 2022, 152, 105038.	5.8	5
103	Analytic Analysis for Oil Recovery During Counter-Current Imbibition in Strongly Water-Wet Systems. , 2005, , 173-189.		4
104	Permeability of observed three dimensional fracture networks in spent fuel pins. Journal of Nuclear Materials, 2018, 510, 613-622.	2.7	3
105	Perturbation Solution for One-Dimensional Flow to a Constant-Pressure Boundary in a Stress-Sensitive Reservoir. Transport in Porous Media, 2021, 137, 471-487.	2.6	2
106	Reply [to 'Comment on 'An Approximate Solution for One-Dimensional Absorption in Unsaturated Porous Media' by R. W. Zimmerman and G. S. Bodvarsson]. Water Resources Research, 1991, 27, 2161-2162.	4.2	1
107	Comment and Reply on "Application of linear elastic fracture mechanics to the quantitative evaluation of fluid-inclusion decrepitation". Geology, 1991, 19, 663.	4.4	1
108	Model for Frequency-Dependence of Elastic Wave Velocities in Porous Rocks. , 2013, , .		1

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109	Introduction to Rock Properties. , 2017, , 1-46.		1
110	Thermal and Electrical Conductivity of Composites with Graded Interfaces. Advances in Science and Technology, 2006, 45, 1097.	0.2	0