Martin O Saar

List of Publications by Year
in descending order

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123	5,195	94433	102487
papers	citations	37 h-index	66 g-index

134	134	134	4800
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Using pyrosequencing to shed light on deep mine microbial ecology. BMC Genomics, 2006, 7, 57.	2.8	405
2	Permeability-porosity relationship in vesicular basalts. Geophysical Research Letters, 1999, 26, 111-114.	4.0	266
3	Numerical models of the onset of yield strength in crystalâ€“melt suspensions. Earth and Planetary Science Letters, 2001, 187, 367-379.	4.4	177
4	Review: Geothermal heat as a tracer of large-scale groundwater flow and as a means to determine permeability fields. Hydrogeology Journal, 2011, 19, 31-52.	2.1	172
5	Seismicity induced by seasonal groundwater recharge at Mt. Hood, Oregon. Earth and Planetary Science Letters, 2003, 214, 605-618.	4.4	168
6	Combining geothermal energy capture with geologic carbon dioxide sequestration. Geophysical Research Letters, 2011, 38, n/a-n/a.	4.0	166
7	Depth dependence of permeability in the Oregon Cascades inferred from hydrogeologic, thermal, seismic, and magmatic modeling constraints. Journal of Geophysical Research, 2004, 109, .	3.3	161
8	Coupling carbon dioxide sequestration with geothermal energy capture in naturally permeable, porous geologic formations: Implications for CO2 sequestration. Energy Procedia, 2011, 4, 2206-2213.	1.8	139
9	The seismo-hydromechanical behavior during deep geothermal reservoir stimulations: open questions tackled in a decameter-scale in situ stimulation experiment. Solid Earth, 2018, 9, 115-137.	2.8	126
10	A comparison of electric power output of CO2 Plume Geothermal (CPG) and brine geothermal systems for varying reservoir conditions. Applied Energy, 2015, 140, 365-377.	10.1	115
11	Did melting glaciers cause volcanic eruptions in eastern California? Probing the mechanics of dike formation. Journal of Geophysical Research, 2004, 109, n/a-n/a.	3.3	103
12	Accelerating Lattice Boltzmann Fluid Flow Simulations Using Graphics Processors. , 2009, , .		103
13	On the importance of the thermosiphon effect in CPG (CO2 plume geothermal) power systems. Energy, 2014, 69, 409-418.	8.8	97
14	Experimental dissolution of dolomite by CO2-charged brine at 100Â°C and 150bar: Evolution of porosity, permeability, and reactive surface area. Chemical Geology, 2014, 380, 145-160.	3.3	94
15	A new partial-bounceback lattice-Boltzmann method for fluid flow through heterogeneous media. Computers and Geosciences, 2009, 35, 1186-1193.	4.2	92
16	The Effects of High Heating Rate and High Temperature on the Rock Strength: Feasibility Study of a Thermally Assisted Drilling Method. Rock Mechanics and Rock Engineering, 2018, 51, 2957-2964.	5.4	88
17	CO2 sequestration in feldspar-rich sandstone: Coupled evolution of fluid chemistry, mineral reaction rates, and hydrogeochemical properties. Geochimica Et Cosmochimica Acta, 2015, 160, 132-154.	3.9	87
18	Brine displacement by CO2, energy extraction rates, and lifespan of a CO2-limited CO2-Plume Geothermal (CPG) system with a horizontal production well. Geothermics, 2015, 55, 182-194.	3.4	78

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19	Combining natural gas recovery and CO2-based geothermal energy extraction for electric power generation. Applied Energy, 2020, 269, 115012.	10.1	70
20	Seasonal seismicity at western United States volcanic centers. Earth and Planetary Science Letters, 2005, 240, 307-321.	4.4	68
21	Nanoscale constraints on porosity generation and fluid flow during serpentinization. Geology, 2016, 44, 103-106.	4.4	68
22	Continuum percolation for randomly oriented soft-core prisms. Physical Review E, 2002, 65, 056131.	2.1	67
23	Permeability, porosity, and mineral surface area changes in basalt cores induced by reactive transport of <scp>CO</scp>₂â€rich brine. Water Resources Research, 2017, 53, 1908-1927.	4.2	65
24	ModeÂI fracture growth in anisotropic rocks: Theory and experiment. International Journal of Solids and Structures, 2020, 195, 74-90.	2.7	65
25	Accelerating geoscience and engineering system simulations on graphics hardware. Computers and Geosciences, 2009, 35, 2353-2364.	4.2	58
26	Magnetotelluric Image of Transcrustal Magmatic System Beneath the Tulu Moye Geothermal Prospect in the Ethiopian Rift. Geophysical Research Letters, 2018, 45, 12,847.	4.0	58
27	Hydraulic stimulation and fluid circulation experiments in underground laboratories: Stepping up the scale towards engineered geothermal systems. Geomechanics for Energy and the Environment, 2020, 24, 100175.	2.5	55
28	DBCreate: A SUPCRT92-based program for producing EQ3/6, TOUGHREACT, and GWB thermodynamic databases at user-defined T and P. Computers and Geosciences, 2013, 51, 415-417.	4.2	53
29	Whole rock basalt alteration from CO2-rich brine during flow-through experiments at 150 Â°C and 150 bar. Chemical Geology, 2017, 453, 92-110.	3.3	52
30	A dimensionless number describing the effects of recharge and geometry on discharge from simple karstic aquifers. Water Resources Research, 2009, 45, .	4.2	51
31	Silica-Encapsulated DNA-Based Tracers for Aquifer Characterization. Environmental Science & Technology, 2018, 52, 12142-12152.	10.0	50
32	Modified semi-circular bend test to determine the fracture toughness of anisotropic rocks. Engineering Fracture Mechanics, 2019, 213, 153-171.	4.3	50
33	Mechanisms of heat exchange between water and rock in karst conduits. Water Resources Research, 2011, 47, .	4.2	47
34	An overview of computational methods for chemical equilibrium and kinetic calculations for geochemical and reactive transport modeling. Pure and Applied Chemistry, 2017, 89, 597-643.	1.9	45
35	Quantifying magmatic, crustal, and atmospheric helium contributions to volcanic aquifers using all stable noble gases: Implications for magmatism and groundwater flow. Geochemistry, Geophysics, Geosystems, 2005, 6, n/a-n/a.	2.5	43
36	Interpolated lattice Boltzmann boundary conditions for surface reaction kinetics. Physical Review E, 2010, 82, 066703.	2.1	43

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37	A methodology to determine the elastic properties of anisotropic rocks from a single uniaxial compression test. Journal of Rock Mechanics and Geotechnical Engineering, 2019, 11, 1166-1183.	8.1	42
38	Multifluid geo-energy systems: Using geologic CO₂storage for geothermal energy production and grid-scale energy storage in sedimentary basins. , 2016, 12, 678-696.		41
39	High performance reactive transport simulations examining the effects of thermal, hydraulic, and chemical (THC) gradients on fluid injectivity at carbonate CCUS reservoir scales. International Journal of Greenhouse Gas Control, 2015, 39, 285-301.	4.6	39
40	Three thousand years of extreme rainfall events recorded in stalagmites from Spring Valley Caverns, Minnesota. Earth and Planetary Science Letters, 2010, 300, 46-54.	4.4	38
41	Magma yield stress and permeability: Insights from multiphase percolation theory. Journal of Volcanology and Geothermal Research, 2008, 177, 1011-1019.	2.1	37
42	Performance analysis of singleâ€phase, multiphase, and multicomponent latticeâ€Boltzmann fluid flow simulations on GPU clusters. Concurrency Computation Practice and Experience, 2011, 23, 332-350.	2.2	36
43	Tomographic Reservoir Imaging with DNA-Labeled Silica Nanotracers: The First Field Validation. Environmental Science & Technology, 2018, 52, 13681-13689.	10.0	35
44	Field Comparison of DNAâ€Labeled Nanoparticle and Solute Tracer Transport in a Fractured Crystalline Rock. Water Resources Research, 2019, 55, 6577-6595.	4.2	35
45	On the directional dependency of Mode I fracture toughness in anisotropic rocks. Theoretical and Applied Fracture Mechanics, 2020, 107, 102494.	4.7	35
46	Internal consistency in aqueous geochemical data revisited: Applications to the aluminum system. Geochimica Et Cosmochimica Acta, 2014, 133, 216-234.	3.9	33
47	Numerical study of the effects of permeability heterogeneity on density-driven convective mixing during CO2 dissolution storage. International Journal of Greenhouse Gas Control, 2013, 19, 160-173.	4.6	32
48	Permeability Reduction Produced by Grain Reorganization and Accumulation of Exsolved CO₂ during Geologic Carbon Sequestration: A New CO₂ Trapping Mechanism. Environmental Science & Technology, 2013, 47, 242-251.	10.0	32
49	3D non-conforming mesh model for flow in fractured porous media using Lagrange multipliers. Computers and Geosciences, 2019, 132, 42-55.	4.2	32
50	On the direct measurement of shear moduli in transversely isotropic rocks using the uniaxial compression test. International Journal of Rock Mechanics and Minings Sciences, 2019, 113, 220-240.	5.8	32
51	A combined thermo-mechanical drilling technology for deep geothermal and hard rock reservoirs. Geothermics, 2020, 85, 101771.	3.4	32
52	Numerical models of stiffness and yield stress growth in crystal-melt suspensions. Earth and Planetary Science Letters, 2008, 267, 32-44.	4.4	30
53	Macroscale latticeâ€Boltzmann methods for low Peclet number solute and heat transport in heterogeneous porous media. Water Resources Research, 2010, 46, .	4.2	30
54	Process length scales and longitudinal damping in karst conduits. Journal of Geophysical Research, 2012, 117, .	3.3	30

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55	Heat depletion in sedimentary basins and its effect on the design and electric power output of CO2 Plume Geothermal (CPG) systems. Renewable Energy, 2021, 172, 1393-1403.	8.9	30
56	Increased Power Generation due to Exothermic Water Exsolution in CO2 Plume Geothermal (CPG) Power Plants. Geothermics, 2020, 88, 101865.	3.4	28
57	Thermal damping and retardation in karst conduits. Hydrology and Earth System Sciences, 2015, 19, 137-157.	4.9	27
58	CO2-Plume Geothermal (CPG) Heat Extraction in Multi-layered Geologic Reservoirs. Energy Procedia, 2014, 63, 7631-7643.	1.8	26
59	Demonstration of thermal borehole enlargement to facilitate controlled reservoir engineering for deep geothermal, oil or gas systems. Applied Energy, 2018, 212, 1501-1509.	10.1	26
60	Numerical analysis and optimization of the performance of CO2-Plume Geothermal (CPG) production wells and implications for electric power generation. Geothermics, 2022, 98, 102270.	3.4	26
61	Statistically reconstructing continuous isotropic and anisotropic two-phase media while preserving macroscopic material properties. Physical Review E, 2011, 83, 026706.	2.1	25
62	Effects of permeability fields on fluid, heat, and oxygen isotope transport in extensional detachment systems. Geochemistry, Geophysics, Geosystems, 2013, 14, 1493-1522.	2.5	25
63	Geothermal Energy Production at Geologic CO2 Sequestration sites: Impact of Thermal Drawdown on Reservoir Pressure. Energy Procedia, 2013, 37, 6625-6635.	1.8	24
64	The value of bulk energy storage for reducing CO2 emissions and water requirements from regional electricity systems. Energy Conversion and Management, 2019, 181, 674-685.	9.2	24
65	Thermally driven fracture aperture variation in naturally fractured granites. Geothermal Energy, 2019, 7, .	1.9	23
66	Accelerating Reactive Transport Modeling: On-Demand Machine Learning Algorithm for Chemical Equilibrium Calculations. Transport in Porous Media, 2020, 133, 161-204.	2.6	23
67	Quantifying the effects of glacier conduit geometry and recharge on proglacial hydrograph form. Journal of Hydrology, 2012, 414-415, 59-71.	5.4	22
68	A numerical investigation into key factors controlling hard rock excavation via electropulse stimulation. Journal of Rock Mechanics and Geotechnical Engineering, 2020, 12, 793-801.	8.1	22
69	Experimental Observation of Permeability Changes In Dolomite at CO₂Sequestration Conditions. Environmental Science & Technology, 2014, 48, 140203132426009.	10.0	21
70	High-Resolution Temporo-Ensemble PIV to Resolve Pore-Scale Flow in 3D-Printed Fractured Porous Media. Transport in Porous Media, 2019, 129, 467-483.	2.6	21
71	Review: Induced Seismicity During Geoenergy Developmentâ€"A Hydromechanical Perspective. Journal of Geophysical Research: Solid Earth, 2022, 127, .	3.4	21
72	Integrating CO2 Storage with Geothermal Resources for Dispatchable Renewable Electricity. Energy Procedia, 2014, 63, 7619-7630.	1.8	20

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73	Integrated magnetotelluric and petrological analysis of felsic magma reservoirs: Insights from Ethiopian rift volcanoes. Earth and Planetary Science Letters, 2021, 559, 116765.	4.4	19
74	Noâ€Flow Fraction (NFF) Permeability Model for Rough Fractures Under Normal Stress. Water Resources Research, 2021, 57, e2020WR029080.	4.2	18
75	On the validation of mixed-mode I/II crack growth theories for anisotropic rocks. International Journal of Solids and Structures, 2022, 241, 111484.	2.7	18
76	A Hybrid Geothermal Energy Conversion Technology - A Potential Solution for Production of Electricity from Shallow Geothermal Resources. Energy Procedia, 2017, 114, 7107-7117.	1.8	17
77	Multi-disciplinary characterizations of the BedrettoLab â€“ a new underground geoscience research facility. Solid Earth, 2022, 13, 301-322.	2.8	17
78	Computational methods for reactive transport modeling: An extended law of mass-action, xLMA, method for multiphase equilibrium calculations. Advances in Water Resources, 2016, 96, 405-422.	3.8	16
79	Simulation of rock failure modes in thermal spallation drilling. Acta Geotechnica, 2020, 15, 2327-2340.	5.7	16
80	Enabling Gibbs energy minimization algorithms to use equilibrium constants of reactions in multiphase equilibrium calculations. Chemical Geology, 2016, 437, 170-181.	3.3	15
81	TNT-NN: A Fast Active Set Method for Solving Large Non-Negative Least Squares Problems. Procedia Computer Science, 2017, 108, 755-764.	2.0	15
82	Synchrotron-based pore-network modeling of two-phase flow in Nubian Sandstone and implications for capillary trapping of carbon dioxide. International Journal of Greenhouse Gas Control, 2020, 103, 103164.	4.6	15
83	Field test of a Combined Thermo-Mechanical Drilling technology. Mode I: Thermal spallation drilling. Journal of Petroleum Science and Engineering, 2020, 190, 107005.	4.2	15
84	Field test of a Combined Thermo-Mechanical Drilling technology. Mode II: Flame-assisted rotary drilling. Journal of Petroleum Science and Engineering, 2020, 190, 106880.	4.2	15
85	Quantification of mineral accessible surface area and flow-dependent fluid-mineral reactivity at the pore scale. Chemical Geology, 2021, 563, 120042.	3.3	15
86	Minimum transmissivity and optimal well spacing and flow rate for high-temperature aquifer thermal energy storage. Applied Energy, 2021, 289, 116658.	10.1	15
87	Flexible CO2-plume geothermal (CPG-F): Using geologically stored CO2 to provide dispatchable power and energy storage. Energy Conversion and Management, 2022, 253, 115082.	9.2	15
88	Toward a Spatiotemporal Understanding of Dolomite Dissolution in Sandstone by CO₂-Enriched Brine Circulation. Environmental Science & Technology, 2019, 53, 12458-12466.	10.0	14
89	A lattice-Boltzmann study of permeability-porosity relationships and mineral precipitation patterns in fractured porous media. Computational Geosciences, 2020, 24, 1865-1882.	2.4	14
90	Combining brine or CO2 geothermal preheating with low-temperature waste heat: A higher-efficiency hybrid geothermal power system. Journal of CO2 Utilization, 2020, 42, 101323.	6.8	14

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91	Permeability Impairment and Salt Precipitation Patterns During CO₂ Injection Into Single Natural Brineâ€Filled Fractures. Water Resources Research, 2020, 56, e2020WR027213.	4.2	14
92	Calculating thermophysical fluid properties during geothermal energy production with NESS and Reaktoro. Geothermics, 2017, 70, 146-154.	3.4	13
93	Solute tracer test quantification of the effects of hot water injection into hydraulically stimulated crystalline rock. Geothermal Energy, 2020, 8, .	1.9	11
94	Estimating fluid flow rates through fracture networks using combinatorial optimization. Advances in Water Resources, 2018, 122, 85-97.	3.8	10
95	Simulation of hydro-mechanically coupled processes in rough rock fractures using an immersed boundary method and variational transfer operators. Computational Geosciences, 2019, 23, 1125-1140.	2.4	10
96	The Effect of Mineral Dissolution on the Effective Stress Law for Permeability in a Tight Sandstone. Geophysical Research Letters, 2020, 47, e2020GL088346.	4.0	10
97	Simulating Plasma Formation in Pores under Short Electric Pulses for Plasma Pulse Geo Drilling (PPGD). Energies, 2021, 14, 4717.	3.1	10
98	The influence of thermal treatment on rockâ€“bit interaction: a study of a combined thermoâ€“mechanical drilling (CTMD) concept. Geothermal Energy, 2020, 8, .	1.9	10
99	Implications of the redissociation phenomenon for mineral-buffered fluids and aqueous species transport at elevated temperatures and pressures. Applied Geochemistry, 2015, 55, 119-127.	3.0	9
100	The value of CO2-Bulk energy storage with wind in transmission-constrained electric power systems. Energy Conversion and Management, 2021, 228, 113548.	9.2	9
101	Sensitivity of Reservoir and Operational Parameters on the Energy Extraction Performance of Combined CO2-EGRâ€“CPG Systems. Energies, 2021, 14, 6122.	3.1	9
102	Coulomb criterion - bounding crustal stress limit and intact rock failure: Perspectives. Powder Technology, 2020, 374, 106-110.	4.2	8
103	Developing Extensible Lattice-Boltzmann Simulators for General-Purpose Graphics-Processing Units. Communications in Computational Physics, 2013, 13, 867-879.	1.7	7
104	Techno-economic analysis of Advanced Geothermal Systems (AGS). Renewable Energy, 2022, 186, 927-943.	8.9	7
105	The Importance of Modeling Carbon Dioxide Transportation and Geologic Storage in Energy System Planning Tools. Frontiers in Energy Research, 2022, 10, .	2.3	7
106	Improved Characterization of Small â€œuâ€•for Jacob Pumping Test Analysis Methods. Ground Water, 2012, 50, 256-265.	1.3	6
107	Modelling of hydro-mechanical processes in heterogeneous fracture intersections using a fictitious domain method with variational transfer operators. Computational Geosciences, 2020, 24, 1799-1814.	2.4	6
108	Using TNT-NN to unlock the fast full spatial inversion of large magnetic microscopy data sets. Earth, Planets and Space, 2019, 71, .	2.5	5

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109	Benchmark study of simulators for thermo-hydraulic modelling of low enthalpy geothermal processes. Geothermics, 2021, 96, 102130.	3.4	5
110	On the applicability of connectivity metrics to rough fractures under normal stress. Advances in Water Resources, 2022, 161, 104122.	3.8	5
111	Contact between rough rock surfaces using a dual mortar method. International Journal of Rock Mechanics and Minings Sciences, 2020, 133, 104414.	5.8	4
112	Accelerated reactive transport simulations in heterogeneous porous media using Reaktoro and Firedrake. Computational Geosciences, 2022, 26, 295-327.	2.4	4
113	Numerical Modeling of the Effects of Pore Characteristics on the Electric Breakdown of Rock for Plasma Pulse Geo Drilling. Energies, 2022, 15, 250.	3.1	4
114	Shear induced fluid flow path evolution in rough-wall fractures: A particle image velocimetry examination. Journal of Hydrology, 2022, 610, 127793.	5.4	3
115	Corrigendum to â€œHydraulic stimulation and fluid circulation experiments in underground laboratories: Stepping up the scale towards engineered geothermal systemsâ€•by Gischig et al. https://doi.org/10.1016/j.gete.2019.100175. Geomechanics for Energy and the Environment, 2020, 24, 100190.	2.5	2
116	Using <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si1.svg"><mml:msub><mml:mtext>CO</mml:mtext><mml:mn>2</mml:mn></mml:msub></mml:math>-Plume geothermal (CPG) energy technologies to support wind and solar power in renewable-heavy electricity systems. Renewable and Sustainable Energy Transition, 2022, 2, 100026.	2.9	2
117	Lattice-Boltzmann Simulations of Carbonate Systems. , 2008, , .		1
118	TNT: A Solver for Large Dense Least-Squares Problems that Takes Conjugate Gradient from Bad in Theory, to Good in Practice. , 2018, , .		1
119	Flow-through Drying during CO2 Injection into Brine-filled Natural Fractures: A Tale of Effective Normal Stress. International Journal of Greenhouse Gas Control, 2021, 109, 103378.	4.6	1
120	On Reliable Prediction of Fracture Path in Anisotropic Rocks. Procedia Structural Integrity, 2022, 39, 792-800.	0.8	1
121	Relating Darcy-Scale Chemical Reaction Order to Pore-Scale Spatial Heterogeneity. Transport in Porous Media, 2022, 144, 507-543.	2.6	1
122	Corrigendum to "Thermal damping and retardation in karst conduits" published in Hydrol. Earth Syst. Sci., 19, 137â€“157, 2015. Hydrology and Earth System Sciences, 2015, 19, 451-451.	4.9	0
123	Modelling Potential Geological CO2 Storage Combined with CO2-Plume Geothermal CPG Energy Extraction in Switzerland. , 2022, , .		0