Hari S Viswanathan

List of Publications by Year
in descending order

106 papers	6,405 citations	61984 43 h-index	69250 77 g-index
114 all docs	114 docs citations	114 times ranked	4541 citing authors

#	Article	IF	Citations
1	From Fluid Flow to Coupled Processes in Fractured Rock: Recent Advances and New Frontiers. Reviews of Geophysics, 2022, 60, e2021RG000744.	23.0	61
2	Molecular Modeling of Subsurface Phenomena Related to Petroleum Engineering. Energy & Fuels, 2021, 35, 2851-2869.	5.1	12
3	Complex Fracture Depletion Model for Reserves Estimations in Shale. Journal of Energy Resources Technology, Transactions of the ASME, 2021, 143, .	2.3	1
4	Risk Assessment and Management Workflowâ€"An Example of the Southwest Regional Partnership. Energies, 2021, 14, 1908.	3.1	6
5	Injection Parameters That Promote Branching of Hydraulic Cracks. Geophysical Research Letters, 2021, 48, e2021GL093321.	4.0	4
6	Scaleâ€Bridging in Threeâ€Dimensional Fracture Networks: Characterizing the Effects of Variable Fracture Apertures on Networkâ€Scale Flow Channelization. Geophysical Research Letters, 2021, 48, e2021GL094400.	4.0	18
7	A physics-informed and hierarchically regularized data-driven model for predicting fluid flow through porous media. Journal of Computational Physics, 2021, 443, 110526.	3.8	21
8	A machine learning framework for rapid forecasting and history matching in unconventional reservoirs. Scientific Reports, 2021, 11, 21730.	3.3	21
9	A framework for data-driven solution and parameter estimation of PDEs using conditional generative adversarial networks. Nature Computational Science, 2021, 1, 819-829.	8.0	44
10	Frankensteinâ€™s ROMster: Avoiding pitfalls of reduced-order model development. International Journal of Greenhouse Gas Control, 2020, 93, 102892.	4.6	16
11	Modeling Nanoconfinement Effects Using Active Learning. Journal of Physical Chemistry C, 2020, 124, 22200-22211.	3.1	24
12	Reactive chemical transport simulations of geologic carbon sequestration: Methods and applications. Earth-Science Reviews, 2020, 208, 103265.	9.1	86
13	Great SCOT! Rapid tool for carbon sequestration science, engineering, and economics. Applied Computing and Geosciences, 2020, 7, 100035.	2.2	17
14	Crustal fingering facilitates free-gas methane migration through the hydrate stability zone. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 31660-31664.	7.1	22
15	Reduced methane recovery at high pressure due to methane trapping in shale nanopores. Communications Earth & Environment, 2020, 1, .	6.8	26
16	Modeling and scale-bridging using machine learning: nanoconfinement effects in porous media. Scientific Reports, 2020, 10, 13312.	3.3	24
17	3D particle transport in multichannel microfluidic networks with rough surfaces. Scientific Reports, 2020, 10, 13848.	3.3	8
18	Molecular-Scale Considerations of Enhanced Oil Recovery in Shale. Energies, 2020, 13, 6619.	3.1	5

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19	Chemical Impacts of Potential CO2 and Brine Leakage on Groundwater Quality with Quantitative Risk Assessment: A Case Study of the Farnsworth Unit. Energies, 2020, 13, 6574.	3.1	14
20	Transient flow modeling in fractured media using graphs. Physical Review E, 2020, 102, 052310.	2.1	4
21	Towards real-time forecasting of natural gas production by harnessing graph theory for stochastic discrete fracture networks. Journal of Petroleum Science and Engineering, 2020, 195, 107791.	4.2	8
22	Machine learning techniques for fractured media. Advances in Geophysics, 2020, 61, 109-150.	2.8	8
23	Physics-informed machine learning for backbone identification in discrete fracture networks. Computational Geosciences, 2020, 24, 1429-1444.	2.4	6
24	Modeling CO 2 plume migration using an invasionâ€percolation approach that includes dissolution. , 2020, 10, 283-295.		5
25	Proppant placement in complex fracture geometries: A computational fluid dynamics study. Journal of Natural Gas Science and Engineering, 2020, 79, 103295.	4.4	35
26	Homogenization of Dissolution and Enhanced Precipitation Induced by Bubbles in Multiphase Flow Systems. Geophysical Research Letters, 2020, 47, e2020GL087163.	4.0	21
27	Role of interaction between hydraulic and natural fractures on production. Journal of Natural Gas Science and Engineering, 2020, 82, 103451.	4.4	12
28	Surrogate Models for Estimating Failure in Brittle and Quasi-Brittle Materials. Applied Sciences (Switzerland), 2019, 9, 2706.	2.5	11
29	Model reduction for fractured porous media: a machine learning approach for identifying main flow pathways. Computational Geosciences, 2019, 23, 617-629.	2.4	26
30	Learning to fail: Predicting fracture evolution in brittle material models using recurrent graph convolutional neural networks. Computational Materials Science, 2019, 162, 322-332.	3.0	58
31	Simulation of discrete cracks driven by nearly incompressible fluid via 2D combined finiteâ€discrete element method. International Journal for Numerical and Analytical Methods in Geomechanics, 2019, 43, 1724-1743.	3.3	36
32	Matrix Diffusion in Fractured Media: New Insights Into Power Law Scaling of Breakthrough Curves. Geophysical Research Letters, 2019, 46, 13785-13795.	4.0	30
33	Inertial Effects During the Process of Supercritical CO₂ Displacing Brine in a Sandstone: Lattice Boltzmann Simulations Based on the Continuumâ€Surfaceâ€Force and Geometrical Wetting Models. Water Resources Research, 2019, 55, 11144-11165.	4.2	36
34	Reactive Transport Modeling of Geological Carbon Storage Associated With CO2 and Brine Leakage. , 2019, , 89-116.		3
35	Reduced-order modeling through machine learning and graph-theoretic approaches for brittle fracture applications. Computational Materials Science, 2019, 157, 87-98.	3.0	33
36	Branching of hydraulic cracks enabling permeability of gas or oil shale with closed natural fractures. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 1532-1537.	7.1	49

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37	Predictive modeling of dynamic fracture growth in brittle materials with machine learning. Computational Materials Science, 2018, 148, 46-53.	3.0	66
38	Discontinuities in effective permeability due to fracture percolation. Mechanics of Materials, 2018, 119, 25-33.	3.2	11
39	The Effect of Wettability Heterogeneity on Relative Permeability of Twoâ€Phase Flow in Porous Media: A Lattice Boltzmann Study. Water Resources Research, 2018, 54, 1295-1311.	4.2	104
40	Modeling flow and transport in fracture networks using graphs. Physical Review E, 2018, 97, 033304.	2.1	41
41	Experimental investigation on oil migration and accumulation in tight sandstones. Journal of Petroleum Science and Engineering, 2018, 160, 267-275.	4.2	31
42	Identifying Backbones in Three-Dimensional Discrete Fracture Networks: A Bipartite Graph-Based Approach. Multiscale Modeling and Simulation, 2018, 16, 1948-1968.	1.6	34
43	Immobile Pore-Water Storage Enhancement and Retardation of Gas Transport in Fractured Rock. Transport in Porous Media, 2018, 124, 369-394.	2.6	16
44	Robust system size reduction of discrete fracture networks: a multi-fidelity method that preserves transport characteristics. Computational Geosciences, 2018, 22, 1515-1526.	2.4	17
45	Efficient Monte Carlo With Graphâ€Based Subsurface Flow and Transport Models. Water Resources Research, 2018, 54, 3758-3766.	4.2	27
46	Advancing Graphâ€Based Algorithms for Predicting Flow and Transport in Fractured Rock. Water Resources Research, 2018, 54, 6085-6099.	4.2	37
47	The mechanisms, dynamics, and implications of self-sealing and CO2 resistance in wellbore cements. International Journal of Greenhouse Gas Control, 2018, 75, 162-179.	4.6	15
48	Machine learning for graph-based representations of three-dimensional discrete fracture networks. Computational Geosciences, 2018, 22, 695-710.	2.4	49
49	Quantifying Topological Uncertainty in Fractured Systems using Graph Theory and Machine Learning. Scientific Reports, 2018, 8, 11665.	3.3	38
50	Effectiveness of supercritical-CO2 and N2 huff-and-puff methods of enhanced oil recovery in shale fracture networks using microfluidic experiments. Applied Energy, 2018, 230, 160-174.	10.1	116
51	Extracting Hydrocarbon From Shale: An Investigation of the Factors That Influence the Decline and the Tail of the Production Curve. Water Resources Research, 2018, 54, 3748-3757.	4.2	9
52	Analysis and Visualization of Discrete Fracture Networks Using a Flow Topology Graph. IEEE Transactions on Visualization and Computer Graphics, 2017, 23, 1896-1909.	4.4	34
53	The shale gas revolution: Barriers, sustainability, and emerging opportunities. Applied Energy, 2017, 199, 88-95.	10.1	242
54	Reactive transport modeling of arsenic mobilization in shallow groundwater: impacts of CO2 and brine leakage. Geomechanics and Geophysics for Geo-Energy and Geo-Resources, 2017, 3, 339-350.	2.9	15

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55	Quantification of CO2-cement-rock interactions at the well-caprock-reservoir interface and implications for geological CO2 storage. International Journal of Greenhouse Gas Control, 2017, 63, 126-140.	4.6	35
56	CO2 Sequestration and Enhanced Oil Recovery at Depleted Oil/Gas Reservoirs. Energy Procedia, 2017, 114, 6957-6967.	1.8	23
57	Regression-based reduced-order models to predict transient thermal output for enhanced geothermal systems. Geothermics, 2017, 70, 192-205.	3.4	20
58	Caprock integrity susceptibility to permeable fracture creation. International Journal of Greenhouse Gas Control, 2017, 64, 60-72.	4.6	31
59	A comparative study of discrete fracture network and equivalent continuum models for simulating flow and transport in the far field of a hypothetical nuclear waste repository in crystalline host rock. Journal of Hydrology, 2017, 553, 59-70.	5.4	70
60	Predictions of first passage times in sparse discrete fracture networks using graph-based reductions. Physical Review E, 2017, 96, 013304.	2.1	46
61	Arsenic mobilization in shallow aquifers due to CO2 and brine intrusion from storage reservoirs. Scientific Reports, 2017, 7, 2763.	3.3	16
62	Where Does Water Go During Hydraulic Fracturing?. Ground Water, 2016, 54, 488-497.	1.3	48
63	CO₂ Accounting and Risk Analysis for CO₂ Sequestration at Enhanced Oil Recovery Sites. Environmental Science & Technology, 2016, 50, 7546-7554.	10.0	228
64	Mixing in a threeâ€phase system: Enhanced production of oilâ€wet reservoirs by CO₂ injection. Geophysical Research Letters, 2016, 43, 196-205.	4.0	38
65	Introduction: energy and the subsurface. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2016, 374, 20150430.	3.4	1
66	Understanding hydraulic fracturing: a multi-scale problem. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2016, 374, 20150426.	3.4	92
67	Highâ€stress triaxial directâ€shear fracturing of Utica shale and in situ Xâ€ray microtomography with permeability measurement. Journal of Geophysical Research: Solid Earth, 2016, 121, 5493-5508.	3.4	51
68	Evaluating the effect of internal aperture variability on transport in kilometer scale discrete fracture networks. Advances in Water Resources, 2016, 94, 486-497.	3.8	75
69	Uncertainty analysis of carbon sequestration in an active CO2-EOR field. International Journal of Greenhouse Gas Control, 2016, 51, 18-28.	4.6	81
70	Effect of advective flow in fractures and matrix diffusion on natural gas production. Water Resources Research, 2015, 51, 8646-8657.	4.2	85
71	Hydraulic fracturing fluid migration in the subsurface: A review and expanded modeling results. Water Resources Research, 2015, 51, 7159-7188.	4.2	121
72	Using Discovery Science To Increase Efficiency of Hydraulic Fracturing While Reducing Water Usage. ACS Symposium Series, 2015, , 71-88.	0.5	0

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73	Nanoscale simulation of shale transport properties using the lattice Boltzmann method: permeability and diffusivity. Scientific Reports, 2015, 5, 8089.	3.3	206
74	Generalized lattice Boltzmann model for flow through tight porous media with Klinkenberg's effect. Physical Review E, 2015, 91, 033004.	2.1	96
75	Permeability prediction of shale matrix reconstructed using the elementary building block model. Fuel, 2015, 160, 346-356.	6.4	89
76	Fracture-permeability behavior of shale. Journal of Unconventional Oil and Gas Resources, 2015, 11, 27-43.	3.5	117
77	Shale gas and non-aqueous fracturing fluids: Opportunities and challenges for supercritical CO2. Applied Energy, 2015, 147, 500-509.	10.1	622
78	dfnWorks: A discrete fracture network framework for modeling subsurface flow and transport. Computers and Geosciences, 2015, 84, 10-19.	4.2	264
79	Geo-material microfluidics at reservoir conditions for subsurface energy resource applications. Lab on A Chip, 2015, 15, 4044-4053.	6.0	87
80	Poreâ€scale study of dissolutionâ€induced changes in hydrologic properties of rocks with binary minerals. Water Resources Research, 2014, 50, 9343-9365.	4.2	91
81	Why Fracking Works. Journal of Applied Mechanics, Transactions ASME, 2014, 81, .	2.2	147
82	CO2 as a fracturing fluid: Potential for commercial-scale shale gas production and CO2 sequestration. Energy Procedia, 2014, 63, 7780-7784.	1.8	128
83	An Integrated Framework for Optimizing CO₂ Sequestration and Enhanced Oil Recovery. Environmental Science and Technology Letters, 2014, 1, 49-54.	8.7	280
84	Pore-scale study of dissolution-induced changes in permeability and porosity of porous media. Journal of Hydrology, 2014, 517, 1049-1055.	5.4	130
85	Uncertainty Quantification for CO2 Sequestration and Enhanced Oil Recovery. Energy Procedia, 2014, 63, 7685-7693.	1.8	69
86	Probabilistic evaluation of shallow groundwater resources at a hypothetical carbon sequestration site. Scientific Reports, 2014, 4, 4006.	3.3	74
87	CO₂/Brine Transport into Shallow Aquifers along Fault Zones. Environmental Science & Technology, 2013, 47, 290-297.	10.0	52
88	CO2 leakage impacts on shallow groundwater: Field-scale reactive-transport simulations informed by observations at a natural analog site. Applied Geochemistry, 2013, 30, 136-147.	3.0	60
89	The cross-scale science of CO2 capture and storage: from pore scale to regional scale. Energy and Environmental Science, 2012, 5, 7328.	30.8	132
90	Effects of geologic reservoir uncertainty on CO2 transport and storage infrastructure. International Journal of Greenhouse Gas Control, 2012, 8, 132-142.	4.6	65

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91	Developing a robust geochemical and reactive transport model to evaluate possible sources of arsenic at the CO2 sequestration natural analog site in Chimayo, New Mexico. International Journal of Greenhouse Gas Control, 2012, 10, 199-214.	4.6	69
92	Mesoscale Carbon Sequestration Site Screening and CCS Infrastructure Analysis. Environmental Science & Technology, 2011, 45, 215-222.	10.0	42
93	Greening Coal: Breakthroughs and Challenges in Carbon Capture and Storage. Environmental Science & Technology, 2011, 45, 8597-8604.	10.0	110
94	Relative stability and significance of dawsonite and aluminum minerals in geologic carbon sequestration. Geophysical Research Letters, 2011, 38, n/a-n/a.	4.0	30
95	How storage uncertainty will drive CCS infrastructure. Energy Procedia, 2011, 4, 2393-2400.	1.8	30
96	The challenge of predicting groundwater quality impacts in a CO2 leakage scenario: Results from field, laboratory, and modeling studies at a natural analog site in New Mexico, USA. Energy Procedia, 2011, 4, 3239-3245.	1.8	31
97	Application of the CO2 -PENS risk analysis tool to the Rock Springs Uplift, Wyoming. Energy Procedia, 2011, 4, 4084-4091.	1.8	10
98	Pore Scale Modeling of Reactive Transport Involved in Geologic CO2 Sequestration. Transport in Porous Media, 2010, 82, 197-213.	2.6	166
99	A System Model for Geologic Sequestration of Carbon Dioxide. Environmental Science & Technology, 2009, 43, 565-570.	10.0	117
100	Generalized dual porosity: A numerical method for representing spatially variable sub-grid scale processes. Advances in Water Resources, 2008, 31, 535-544.	3.8	27
101	Development of a Hybrid Process and System Model for the Assessment of Wellbore Leakage at a Geologic CO₂ Sequestration Site. Environmental Science & Technology, 2008, 42, 7280-7286.	10.0	137
102	A colloid-facilitated transport model with variable colloid transport properties. Geophysical Research Letters, 2007, 34, .	4.0	13
103	Comparison of streamtube and three-dimensional models of reactive transport in heterogeneous media. Journal of Hydraulic Research/De Recherches Hydrauliques, 2004, 42, 141-145.	1.7	7
104	A geostatistical modeling study of the effect of heterogeneity on radionuclide transport in the unsaturated zone, Yucca Mountain. Journal of Contaminant Hydrology, 2003, 62-63, 319-336.	3.3	10
105	Efficient numerical techniques for modeling multicomponent ground-water transport based upon simultaneous solution of strongly coupled subsets of chemical components. Advances in Water Resources, 2000, 23, 307-324.	3.8	39
106	A reactive transport model of neptunium migration from the potential repository at Yucca Mountain. Journal of Hydrology, 1998, 209, 251-280.	5.4	84