Ruben Juanes

List of Publications by Year
in descending order

135 papers	8,823 citations	36203 51 h-index	46693 89 g-index
139 all docs	139 docs citations	139 times ranked	5527 citing authors

#	Article	IF	Citations
1	Avalanches in strong imbibition. Communications Physics, 2022, 5, .	2.0	3
2	Gravity fingering control on evaporation and deep drainage in a 3D porous medium. Journal of Hydrology, 2022, 610, 127723.	2.3	6
3	Physics-informed neural network simulation of multiphase poroelasticity using stress-split sequential training. Computer Methods in Applied Mechanics and Engineering, 2022, 397, 115141.	3.4	40
4	SciANN: A Keras/TensorFlow wrapper for scientific computations and physics-informed deep learning using artificial neural networks. Computer Methods in Applied Mechanics and Engineering, 2021, 373, 113552.	3.4	182
5	Chemotaxis under flow disorder shapes microbial dispersion in porous media. Nature Physics, 2021, 17, 68-73.	6.5	46
6	Rheology of bacterial superfluids in viscous environments. Soft Matter, 2021, 17, 7004-7013.	1.2	7
7	Optimal Wetting Angles in Lattice Boltzmann Simulations of Viscous Fingering. Transport in Porous Media, 2021, 136, 831-842.	1.2	15
8	The Impact of the Geometry of the Effective Propped Volume on the Economic Performance of Shale Gas Well Production. Energies, 2021, 14, 2475.	1.6	1
9	Influence of Wetting on Viscous Fingering Via 2D Lattice Boltzmann Simulations. Transport in Porous Media, 2021, 138, 511-538.	1.2	11
10	A physics-informed deep learning framework for inversion and surrogate modeling in solid mechanics. Computer Methods in Applied Mechanics and Engineering, 2021, 379, 113741.	3.4	340
11	A process-based approach to understanding and managing triggered seismicity. Nature, 2021, 595, 684-689.	13.7	28
12	Photoporomechanics: An Experimental Method to Visualize the Effective Stress Field in Fluid-Filled Granular Media. Physical Review Applied, 2021, 16, .	1.5	4
13	Revisiting the Classical Experiment in Earthquake Control at the Rangely Oil Field, Colorado, 1970, Using a Coupled Flow and Geomechanical Model. Bulletin of the Seismological Society of America, 2021, 111, 3136-3159.	1.1	4
14	Wettability and Lenormand's diagram. Journal of Fluid Mechanics, 2021, 923, .	1.4	47
15	A nonlocal physics-informed deep learning framework using the peridynamic differential operator. Computer Methods in Applied Mechanics and Engineering, 2021, 385, 114012.	3.4	58
16	Phase space study of viscous fingering and saturation pre- and post-breakthrough using lattice Boltzmann simulations of two-phase flow. Arabian Journal of Geosciences, 2021, 14, 1.	0.6	1
17	Handâ€Hygiene Mitigation Strategies Against Global Disease Spreading through the Air Transportation Network. Risk Analysis, 2020, 40, 723-740.	1.5	53
18	Characterizing Dissipation in Fluid-Fluid Displacement Using Constant-Rate Spontaneous Imbibition. Physical Review Letters, 2020, 125, 174503.	2.9	10

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19	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.	3.3	22
20	The Groundbreaking Experiment in Earthquake Control at Rangely, Colorado, Revisited. Geophysical Research Letters, 2020, 47, e2020GL088257.	1.5	7
21	Understanding rate effects in injection-induced earthquakes. Nature Communications, 2020, 11, 3053.	5.8	56
22	A viscoplastic model of creep in shale. Geophysics, 2020, 85, MR155-MR166.	1.4	15
23	Spin coating of capillary tubes. Journal of Fluid Mechanics, 2020, 886, .	1.4	8
24	Interplay between Fingering Instabilities and Initial Soil Moisture in Solute Transport through the Vadose Zone. Water (Switzerland), 2020, 12, 917.	1.2	5
25	Numerical Simulation of Unstable Preferential Flow during Water Infiltration into Heterogeneous Dry Soil. Water (Switzerland), 2020, 12, 909.	1.2	11
26	Multiphase flow and granular mechanics. Physical Review Fluids, 2020, 5, .	1.0	18
27	Jamming transition and emergence of fracturing in wet granular media. Physical Review Research, 2020, 2, .	1.3	20
28	Signatures of fluidâ€“fluid displacement in porous media: wettability, patterns and pressures. Journal of Fluid Mechanics, 2019, 875, .	1.4	72
29	Impact of Confining Stress on Capillary Pressure Behavior During Drainage Through Rough Fractures. Geophysical Research Letters, 2019, 46, 7424-7436.	1.5	12
30	Restoring universality to the pinch-off of a bubble. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 13780-13784.	3.3	18
31	Comprehensive comparison of pore-scale models for multiphase flow in porous media. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 13799-13806.	3.3	162
32	Xenon Hydrate as an Analog of Methane Hydrate in Geologic Systems Out of Thermodynamic Equilibrium. Geochemistry, Geophysics, Geosystems, 2019, 20, 2462-2472.	1.0	11
33	Stressâ€Induced Anomalous Transport in Natural Fracture Networks. Water Resources Research, 2019, 55, 4163-4185.	1.7	46
34	Forced Wetting Transition and Bubble Pinch-Off in a Capillary Tube. Physical Review Letters, 2018, 120, 084501.	2.9	52
35	Morphodynamics of Fluid-Fluid Displacement in Three-Dimensional Deformable Granular Media. Physical Review Applied, 2018, 9, .	1.5	15
36	Two sides of a fault: Grain-scale analysis of pore pressure control on fault slip. Physical Review E, 2018, 97, 022906.	0.8	16

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37	Inferring Fault Frictional and Reservoir Hydraulic Properties From Injectionâ€induced Seismicity. Geophysical Research Letters, 2018, 45, 1313-1320.	1.5	16
38	Phase Field Model of Hydraulic Fracturing in Poroelastic Media: Fracture Propagation, Arrest, and Branching Under Fluid Injection and Extraction. Journal of Geophysical Research: Solid Earth, 2018, 123, 2127-2155.	1.4	61
39	Wettability control of droplet durotaxis. Soft Matter, 2018, 14, 1417-1426.	1.2	30
40	Thin films in partial wetting: stability, dewetting and coarsening. Journal of Fluid Mechanics, 2018, 845, 642-681.	1.4	41
41	Nonequilibrium Thermodynamics of Hydrate Growth on a Gas-Liquid Interface. Physical Review Letters, 2018, 120, 144501.	2.9	22
42	Pore geometry control of apparent wetting in porous media. Scientific Reports, 2018, 8, 15729.	1.6	63
43	Quasistatic fluid-fluid displacement in porous media: Invasion-percolation through a wetting transition. Physical Review Fluids, 2018, 3, .	1.0	54
44	Droplet motion driven by tensotaxis. Extreme Mechanics Letters, 2017, 13, 10-16.	2.0	32
45	Persistence of bubble outlets in soft, methaneâ€generating sediments. Journal of Geophysical Research G: Biogeosciences, 2017, 122, 1298-1320.	1.3	25
46	Improved characterization of heterogeneous permeability in saline aquifers from transient pressure data during freshwater injection. Water Resources Research, 2017, 53, 4444-4458.	1.7	26
47	Anomalous transport in disordered fracture networks: Spatial Markov model for dispersion with variable injection modes. Advances in Water Resources, 2017, 106, 80-94.	1.7	59
48	Phase field model of fluidâ€driven fracture in elastic media: Immersedâ€fracture formulation and validation with analytical solutions. Journal of Geophysical Research: Solid Earth, 2017, 122, 2565-2589.	1.4	64
49	Maximizing the value of pressure data in saline aquifer characterization. Advances in Water Resources, 2017, 109, 14-28.	1.7	7
50	Prediction of the low-velocity distribution from the pore structure in simple porous media. Physical Review Fluids, 2017, 2, .	1.0	59
51	Ephemerality of discrete methane vents in lake sediments. Geophysical Research Letters, 2016, 43, 4374-4381.	1.5	32
52	Sequential approach to joint flowâ€seismic inversion for improved characterization of fractured media. Water Resources Research, 2016, 52, 903-919.	1.7	29
53	Emergence of anomalous transport in stressed rough fractures. Earth and Planetary Science Letters, 2016, 454, 46-54.	1.8	109
54	A discreteâ€domain description of multiphase flow in porous media: Rugged energy landscapes and the origin of hysteresis. Geophysical Research Letters, 2016, 43, 1615-1622.	1.5	27

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55	Wettability control on multiphase flow in patterned microfluidics. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 10251-10256.	3.3	416
56	Were the May 2012 Emiliaâ€Romagna earthquakes induced? A coupled flowâ€geomechanics modeling assessment. Geophysical Research Letters, 2016, 43, 6891-6897.	1.5	53
57	Self-organization of network dynamics into local quantized states. Scientific Reports, 2016, 6, 21360.	1.6	6
58	Rock dissolution patterns and geochemical shutdown of â€“brineâ€“carbonate reactions during convective mixing in porous media. Journal of Fluid Mechanics, 2015, 764, 296-315.	1.4	43
59	Stabilizing Fluid-Fluid Displacements in Porous Media Through Wettability Alteration. Physical Review Applied, 2015, 3, .	1.5	144
60	Regime shifts in bistable water-stressed ecosystems due to amplification of stochastic rainfall patterns. Physical Review E, 2015, 91, 052148.	0.8	6
61	Anomalous transport on regular fracture networks: Impact of conductivity heterogeneity and mixing at fracture intersections. Physical Review E, 2015, 92, 022148.	0.8	84
62	Impact of viscous fingering and permeability heterogeneity on fluid mixing in porous media. Water Resources Research, 2015, 51, 2634-2647.	1.7	61
63	Reservoir characterization in an underground gas storage field using joint inversion of flow and geodetic data. International Journal for Numerical and Analytical Methods in Geomechanics, 2015, 39, 1619-1638.	1.7	33
64	Thin Films in Partial Wetting: Internal Selection of Contact-Line Dynamics. Physical Review Letters, 2015, 115, 034502.	2.9	22
65	Impact of velocity correlation and distribution on transport in fractured media: Field evidence and theoretical model. Water Resources Research, 2015, 51, 940-959.	1.7	124
66	Quantitative and qualitative study of density driven CO2 mass transfer in a vertical Hele-Shaw cell. International Journal of Heat and Mass Transfer, 2015, 81, 901-914.	2.5	53
67	A phase-field model of two-phase Hele-ShawÂflow. Journal of Fluid Mechanics, 2014, 758, 522-552.	1.4	47
68	Coupled multiphase flow and poromechanics: A computational model of pore pressure effects on fault slip and earthquake triggering. Water Resources Research, 2014, 50, 3776-3808.	1.7	220
69	Characterization of the crossover from capillary invasion to viscous fingering to fracturing during drainage in a vertical 2D porous medium. International Journal of Multiphase Flow, 2014, 58, 279-291.	1.6	34
70	Theoretical analysis of how pressure buildup and CO2 migration can both constrain storage capacity in deep saline aquifers. International Journal of Greenhouse Gas Control, 2014, 23, 113-118.	2.3	24
71	Capillary pinning and blunting of immiscible gravity currents in porous media. Water Resources Research, 2014, 50, 7067-7081.	1.7	26
72	Poreâ€scale intermittent velocity structure underpinning anomalous transport through 3â€D porous media. Geophysical Research Letters, 2014, 41, 6184-6190.	1.5	131

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73	Dynamics of convective dissolution from a migrating current of carbon dioxide. Advances in Water Resources, 2013, 62, 511-519.	1.7	29
74	Synergetic Fluid Mixing from Viscous Fingering and Alternating Injection. Physical Review Letters, 2013, 111, 144501.	2.9	52
75	Carbon dioxide dissolution in structural and stratigraphic traps. Journal of Fluid Mechanics, 2013, 736, 287-315.	1.4	86
76	Three-dimensional simulation of unstable gravity-driven infiltration of water into a porous medium. Journal of Computational Physics, 2013, 238, 217-239.	1.9	44
77	The evolution of miscible gravity currents in horizontal porous layers. Journal of Fluid Mechanics, 2013, 719, 82-96.	1.4	33
78	Buoyant currents arrested by convective dissolution. Geophysical Research Letters, 2013, 40, 2017-2022.	1.5	63
79	The price of anarchy in mobility-driven contagion dynamics. Journal of the Royal Society Interface, 2013, 10, 20130495.	1.5	14
80	Rigorous Coupling of Geomechanics and Multiphase Flow with Strong Capillarity. SPE Journal, 2013, 18, 1123-1139.	1.7	63
81	Interface pinning of immiscible gravity-exchange flows in porous media. Physical Review E, 2013, 87, 023015.	0.8	20
82	Forecasting long-term gas production from shale. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 19660-19661.	3.3	75
83	Pattern formation and coarsening dynamics in three-dimensional convective mixing in porous media. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2013, 371, 20120355.	1.6	1
84	Lifetime of carbon capture and storage as a climate-change mitigation technology. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 5185-5189.	3.3	381
85	Macroscopic Phase-Field Model of Partial Wetting: Bubbles in a Capillary Tube. Physical Review Letters, 2012, 108, 144502.	2.9	44
86	Scaling of Convective Mixing in Porous Media. Physical Review Letters, 2012, 109, 264503.	2.9	119
87	A Metric of Influential Spreading during Contagion Dynamics through the Air Transportation Network. PLoS ONE, 2012, 7, e40961.	1.1	64
88	Capillary Fracturing in Granular Media. Physical Review Letters, 2012, 108, 264504.	2.9	93
89	A conduit dilation model of methane venting from lake sediments. Geophysical Research Letters, 2011, 38, n/a-n/a.	1.5	88
90	Thermodynamic and hydrodynamic constraints on overpressure caused by hydrate dissociation: A pore-scale model. Geophysical Research Letters, 2011, 38, n/a-n/a.	1.5	26

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91	X-ray computed-tomography imaging of gas migration in water-saturated sediments: From capillary invasion to conduit opening. Geophysical Research Letters, 2011, 38, n/a-n/a.	1.5	55
92	Fluid Mixing from Viscous Fingering. Physical Review Letters, 2011, 106, 194502.	2.9	181
93	Stability, Accuracy, and Efficiency of Sequential Methods for Coupled Flow and Geomechanics. SPE Journal, 2011, 16, 249-262.	1.7	141
94	CO₂ migration in saline aquifers. Part 2. Capillary and solubility trapping. Journal of Fluid Mechanics, 2011, 688, 321-351.	1.4	105
95	Stability and convergence of sequential methods for coupled flow and geomechanics: Fixed-stress and fixed-strain splits. Computer Methods in Applied Mechanics and Engineering, 2011, 200, 1591-1606.	3.4	280
96	Stability and convergence of sequential methods for coupled flow and geomechanics: Drained and undrained splits. Computer Methods in Applied Mechanics and Engineering, 2011, 200, 2094-2116.	3.4	137
97	Predictability of anomalous transport on lattice networks with quenched disorder. Physical Review E, 2011, 83, 030101.	0.8	19
98	Quantifying mixing in viscously unstable porous media flows. Physical Review E, 2011, 84, 066312.	0.8	65
99	Spatial Markov Model of Anomalous Transport Through Random Lattice Networks. Physical Review Letters, 2011, 107, 180602.	2.9	96
100	CO₂ migration in saline aquifers. Part 1. Capillary trapping under slope and groundwater flow. Journal of Fluid Mechanics, 2010, 662, 329-351.	1.4	137
101	The Footprint of the CO2 Plume during Carbon Dioxide Storage in Saline Aquifers: Storage Efficiency for Capillary Trapping at the Basin Scale. Transport in Porous Media, 2010, 82, 19-30.	1.2	192
102	Reply to comment by David A. DiCarlo on â€œA phase field model of unsaturated flowâ€• Water Resources Research, 2010, 46, .	1.7	3
103	Crossover from fingering to fracturing in deformable disordered media. Physical Review E, 2010, 82, 046305.	0.8	75
104	Post-injection spreading and trapping of CO2 in saline aquifers: impact of the plume shape at the end of injection. Computational Geosciences, 2009, 13, 483-491.	1.2	34
105	Unified Formulation for High-Order Streamline Tracing on Two-Dimensional Unstructured Grids. Journal of Scientific Computing, 2009, 38, 50-73.	1.1	17
106	A simple but rigorous model for calculating CO2 storage capacity in deep saline aquifers at the basin scale. Energy Procedia, 2009, 1, 3307-3314.	1.8	31
107	A phase field model of unsaturated flow. Water Resources Research, 2009, 45, .	1.7	80
108	Preferential Mode of gas invasion in sediments: Grainâ€scale mechanistic model of coupled multiphase fluid flow and sediment mechanics. Journal of Geophysical Research, 2009, 114, .	3.3	183

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109	A locally conservative variational multiscale method for the simulation of porous media flow with multiscale source terms. Computational Geosciences, 2008, 12, 273-295.	1.2	29
110	Special issue on multiscale methods for flow and transport in heterogeneous porous media. Computational Geosciences, 2008, 12, 255-256.	1.2	14
111	Numerical modeling of multiphase first-contact miscible flows. Part 2. Front-tracking/streamline simulation. Transport in Porous Media, 2008, 72, 97-120.	1.2	24
112	Nonequilibrium effects in models of three-phase flow in porous media. Advances in Water Resources, 2008, 31, 661-673.	1.7	44
113	A robust negative flash based on a parameterization of the tie-line field. Fluid Phase Equilibria, 2008, 267, 6-17.	1.4	19
114	Nonmonotonic traveling wave solutions of infiltration into porous media. Water Resources Research, 2008, 44, .	1.7	37
115	A New Model of Trapping and Relative Permeability Hysteresis for All Wettability Characteristics. SPE Journal, 2008, 13, 277-288.	1.7	197
116	Tracing Streamlines on Unstructured Grids From Finite Volume Discretizations. SPE Journal, 2008, 13, 423-431.	1.7	14
117	Nonlocal Interface Dynamics and Pattern Formation in Gravity-Driven Unsaturated Flow through Porous Media. Physical Review Letters, 2008, 101, 244504.	2.9	130
118	Streamline Tracing on General Triangular or Quadrilateral Grids. SPE Journal, 2007, 12, 217-233.	1.7	34
119	Impact of Viscous Fingering on the Prediction of Optimum WAG Ratio. SPE Journal, 2007, 12, 486-495.	1.7	20
120	Numerical modeling of multiphase first-contact miscible flows. Part 1. Analytical Riemann solver. Transport in Porous Media, 2007, 67, 375-393.	1.2	10
121	A locally conservative finite element framework for the simulation of coupled flow and reservoir geomechanics. Acta Geotechnica, 2007, 2, 139-153.	2.9	123
122	Impact of relative permeability hysteresis on geological CO2storage. Water Resources Research, 2006, 42, .	1.7	669
123	An Experimental and Numerical Investigation of Crossflow Effects in Two-Phase Displacements. SPE Journal, 2006, 11, 216-226.	1.7	40
124	Impact of relative permeability hysteresis on the numerical simulation of WAG injection. Journal of Petroleum Science and Engineering, 2006, 50, 115-139.	2.1	123
125	Analytical Solutions to Multiphase First-Contact Miscible Models with Viscous Fingering. Transport in Porous Media, 2006, 64, 339-373.	1.2	26
126	Robust streamline tracing for the simulation of porous media flow on general triangular and quadrilateral grids. Journal of Computational Physics, 2006, 219, 992-1012.	1.9	53

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127	A variational multiscale finite element method for multiphase flow in porous media. Finite Elements in Analysis and Design, 2005, 41, 763-777.	1.7	42
128	Determination of the Wave Structure of the Three-Phase Flow Riemann Problem. Transport in Porous Media, 2005, 60, 135-139.	1.2	7
129	A front-tracking method for the simulation of three-phase flow in porous media. Computational Geosciences, 2005, 9, 29-59.	1.2	38
130	Analytical Solution to the Riemann Problem of Three-Phase Flow in Porous Media. Transport in Porous Media, 2004, 55, 47-70.	1.2	39
131	Relative Permeabilities for Strictly Hyperbolic Models of Three-Phase Flow in Porous Media. Transport in Porous Media, 2004, 57, 125-152.	1.2	39
132	Multiscale-stabilized finite element methods for miscible and immiscible flow in porous media. Journal of Hydraulic Research/De Recherches Hydrauliques, 2004, 42, 131-140.	0.7	11
133	Three-Phase Displacement Theory: An Improved Description of Relative Permeabilities. SPE Journal, 2004, 9, 302-313.	1.7	21
134	A general and efficient formulation of fractures and boundary conditions in the finite element method. International Journal for Numerical Methods in Engineering, 2002, 54, 1751-1774.	1.5	111
135	Numerical modeling of the transient hydrogeological response produced by tunnel construction in fractured bedrocks. Engineering Geology, 2002, 64, 369-386.	2.9	78