Guy Metcalfe

List of Publications by Year
in descending order

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88 papers	2,439 citations	172207 29 h-index	205818 48 g-index
91 all docs	91 docs citations	91 times ranked	1562 citing authors

#	Article	IF	Citations
1	A Primer on the Dynamical Systems Approach to Transport in Porous Media. Transport in Porous Media, 2023, 146, 55-84.	1.2	3
2	Lagrangian Transport and Chaotic Advection in Three-Dimensional Laminar Flows. Applied Mechanics Reviews, 2021, 73, .	4.5	18
3	Lagrangian Complexity Persists with Multimodal Flow Forcing in Compressible Porous Systems. Transport in Porous Media, 2020, 135, 555-586.	1.2	2
4	Global organization of three-dimensional, volume-preserving flows: Constraints, degenerate points, and Lagrangian structure. Chaos, 2020, 30, 033124.	1.0	2
5	When Do Complex Transport Dynamics Arise in Natural Groundwater Systems?. Water Resources Research, 2020, 56, e2019WR025982.	1.7	4
6	Push and pull: attractors and repellors of a dynamical system can localize inertial particles. Granular Matter, 2019, 21, 1.	1.1	2
7	Field Trials of Chaotic Advection to Enhance Reagent Delivery. Ground Water Monitoring and Remediation, 2019, 39, 23-39.	0.6	22
8	Temporal Fluctuations and Poroelasticity Can Generate Chaotic Advection in Natural Groundwater Systems. Water Resources Research, 2019, 55, 3347-3374.	1.7	16
9	Chaos and the Flow Capture Problem: Polluting is Easy, Cleaning is Hard. Physical Review Applied, 2018, 10, .	1.5	2
10	The mathematics of market timing. PLoS ONE, 2018, 13, e0200561.	1.1	2
11	Multiplexed detection of cancer biomarkers using a microfluidic platform integrating single bead trapping and acoustic mixing techniques. Nanoscale, 2018, 10, 20196-20206.	2.8	55
12	Simultaneous optimisation of residence time, heat and mass transfer in laminar duct flows. Chemical Engineering Science, 2018, 191, 511-524.	1.9	3
13	Impact of discontinuous deformation upon the rate of chaotic mixing. Physical Review E, 2017, 95, 022213.	0.8	7
14	Localized shear generates three-dimensional transport. Chaos, 2017, 27, 043102.	1.0	6
15	Frontiers of chaotic advection. Reviews of Modern Physics, 2017, 89, .	16.4	146
16	Rapid detection of Hendra virus antibodies: an integrated device with nanoparticle assay and chaotic micromixing. Lab on A Chip, 2017, 17, 169-177.	3.1	35
17	Bifurcations and degenerate periodic points in a three dimensional chaotic fluid flow. Chaos, 2016, 26, 053106.	1.0	9
18	Mixing of discontinuously deforming media. Chaos, 2016, 26, 023113.	1.0	16

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19	Chaotic advection at the pore scale: Mechanisms, upscaling and implications for macroscopic transport. Advances in Water Resources, 2016, 97, 175-192.	1.7	16
20	Creating analytically divergence-free velocity fields from grid-based data. Journal of Computational Physics, 2016, 323, 75-94.	1.9	11
21	Experimental and numerical parametric analysis of a reoriented duct flow. European Journal of Mechanics, B/Fluids, 2016, 57, 1-14.	1.2	6
22	Visualization of the trapping of inertial particles in a laminar mixing tank. Chemical Engineering Science, 2016, 143, 99-104.	1.9	7
23	Direct experimental visualization of the global Hamiltonian progression of two-dimensional Lagrangian flow topologies from integrable to chaotic state. Chaos, 2015, 25, 103106.	1.0	6
24	Experimental and computational study of scalar modes in a periodic laminar flow. International Journal of Thermal Sciences, 2015, 96, 102-118.	2.6	7
25	Convection-Enhanced Transport into Open Cavities. Cardiovascular Engineering and Technology, 2015, 6, 352-363.	0.7	11
26	Groundwater cooling of a supercomputer in Perth, Western Australia: hydrogeological simulations and thermal sustainability. Hydrogeology Journal, 2015, 23, 1831-1849.	0.9	12
27	Anomalous transport and chaotic advection in homogeneous porous media. Physical Review E, 2014, 90, 063012.	0.8	26
28	Lagrangian transport characteristics of a class of three-dimensional inline-mixing flows with fluid inertia. Physics of Fluids, 2014, 26, .	1.6	12
29	Solidâ€“liquid separation by particle-flow-instability. Energy and Environmental Science, 2014, 7, 3982-3988.	15.6	18
30	Control mechanisms for the global structure of scalar dispersion in chaotic flows. Physical Review E, 2014, 90, 022908.	0.8	8
31	Unravelling Convective Heat Transfer in the Rotated Arc Mixer. , 2014, , .		0
32	Is Chaotic Advection Inherent to Porous Media Flow?. Physical Review Letters, 2013, 111, 174101.	2.9	66
33	Comment on â€œPlume spreading in groundwater by stretching and foldingâ€•by D. C. Mays and R. M. Neupauer. Water Resources Research, 2013, 49, 1189-1191.	1.7	1
34	Beyond Passive. Advances in Applied Mechanics, 2012, , 109-188.	1.4	27
35	Experimental study of density segregation at end walls in a horizontal rotating cylinder saturated with fluid: friction to lubrication transition. Granular Matter, 2012, 14, 319-332.	1.1	12
36	Toward enhanced subsurface intervention methods using chaotic advection. Journal of Contaminant Hydrology, 2012, 127, 15-29.	1.6	54

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37	Stochastic relationships for periodic responses in randomly heterogeneous aquifers. Water Resources Research, 2011, 47, .	1.7	7
38	Insights from simulations into mechanisms for density segregation of granular mixtures in rotating cylinders. Granular Matter, 2011, 13, 53-74.	1.1	54
39	A partially open porous media flow with chaotic advection: towards a model of coupled fields. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2010, 368, 217-230.	1.6	25
40	An experimental and theoretical study of the mixing characteristics of a periodically reoriented irrotational flow. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2010, 368, 2147-2162.	1.6	21
41	Scalar dispersion in a periodically reoriented potential flow: Acceleration via Lagrangian chaos. Physical Review E, 2010, 81, 046319.	0.8	27
42	On oscillating flows in randomly heterogeneous porous media. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2010, 368, 197-216.	1.6	9
43	Applied Fluid Chaos: Designing Advection with Periodically Reoriented Flows for Micro to Geophysical Mixing and Transport Enhancement. , 2010, , .		3
44	Lagrangian topology of a periodically reoriented potential flow: Symmetry, optimization, and mixing. Physical Review E, 2009, 80, 036208.	0.8	33
45	Low Reynolds number scalar transport enhancement in viscous and non-Newtonian fluids. International Journal of Heat and Mass Transfer, 2009, 52, 655-664.	2.5	42
46	Mixing and heat transfer of highly viscous food products with a continuous chaotic duct flow. Journal of Food Engineering, 2009, 95, 21-29.	2.7	34
47	Global parametric solutions of scalar transport. Journal of Computational Physics, 2008, 227, 3032-3057.	1.9	31
48	Experimental comparison between acoustic and pressure signals from a bubbling flow. Chemical Engineering Science, 2008, 63, 5860-5869.	1.9	33
49	Density segregation of granular material in a rotating cylindrical tumbler. Proceedings of SPIE, 2008, , .	0.8	5
50	Nonmixing vortex cores in wavy Taylor vortex flow. Physics of Fluids, 2008, 20, 063602.	1.6	6
51	Lagrangian topology of reoriented potential flows. Proceedings of SPIE, 2008, , .	0.8	2
52	Transport in a partially open porous media flow. Proceedings of SPIE, 2007, , .	0.8	7
53	Complete parametric scalar dispersion. Proceedings of SPIE, 2007, , .	0.8	2
54	Experimental and analytical study of the effect of contact angle on liquid convective heat transfer in microchannels. International Journal of Heat and Mass Transfer, 2006, 49, 4161-4170.	2.5	46

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55	Composing chaos: An experimental and numerical study of an open duct mixing flow. AICHE Journal, 2006, 52, 9-28.	1.8	59
56	Flow regime analysis of non-Newtonian duct flows. Physics of Fluids, 2006, 18, 013101.	1.6	7
57	Topological mixing study of non-Newtonian duct flows. Physics of Fluids, 2006, 18, 103103.	1.6	38
58	PROSPECTS FOR EFFICIENT ENHANCED HEAT TRANSFER IN AN OPEN CHAOTIC FLOW. , 2006, , .		2
59	Granular friction, Coulomb failure, and the fluid-solid transition for horizontally shaken granular materials. Physical Review E, 2002, 65, 031302.	0.8	51
60	Transport enhancement mechanisms in open cavities. Journal of Fluid Mechanics, 2002, 452, 199-229.	1.4	54
61	Forces in piles of granular material: an analytic and 3D DEM study. Granular Matter, 2001, 3, 165-176.	1.1	40
62	A segregation mechanism in a vertically shaken bed. Granular Matter, 2001, 3, 205-214.	1.1	56
63	The separate roles of shear rate and mixing on gibbsite precipitation. Chemical Engineering Science, 2001, 56, 2521-2530.	1.9	20
64	Science in the Sandbox: Fluctuations, Friction and Instabilities. Lecture Notes in Physics, 2001, , 351-391.	0.3	3
65	Friction and Flow in Granular Materials. Materials Research Society Symposia Proceedings, 2000, 627, 1.	0.1	0
66	Measurement of particle motions within tumbling granular flows. Chaos, 1999, 9, 581-593.	1.0	30
67	How well do discrete element granular flow models capture the essentials of mixing processes?. Applied Mathematical Modelling, 1998, 22, 995-1008.	2.2	113
68	Granular Convection and Transport due to Horizontal Shaking. Physical Review Letters, 1997, 79, 4574-4576.	2.9	74
69	Isolated mixing regions: origin, robustness and control. Chemical Engineering Science, 1997, 52, 1623-1636.	1.9	58
70	Tracking Particles in Tumbling Containers. Solid Mechanics and Its Applications, 1997, , 287-298.	0.1	0
71	Convection in 3Heâ€“superfluid-4He mixtures. Part 1. A Boussinesq analogue. Journal of Fluid Mechanics, 1996, 307, 269-296.	1.4	5
72	Convection in 3Heâ€“superfluid-4He mixtures. Part 2. A survey of instabilities. Journal of Fluid Mechanics, 1996, 307, 297-331.	1.4	5

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73	Mixing of granular materials in slowly rotated containers. AICHE Journal, 1996, 42, 3351-3363.	1.8	102
74	Pattern formation during mixing and segregation of flowing granular materials. Physica A: Statistical Mechanics and Its Applications, 1996, 233, 709-717.	1.2	75
75	Avalanche mixing of granular solids. Nature, 1995, 374, 39-41.	13.7	212
76	Chaotic mixing processes: New problems and computational issues. Chaos, Solitons and Fractals, 1995, 6, 425-438.	2.5	15
77	Kinematic considerations for mantle mixing. Geophysical Research Letters, 1995, 22, 743-746.	1.5	35
78	Autocatalytic Processes in Mixing Flows. Physical Review Letters, 1994, 73, 212-212.	2.9	4
79	Autocatalytic processes in mixing flows. Physical Review Letters, 1994, 72, 2875-2878.	2.9	75
80	Transition to large aspect ratio convection. Physical Review E, 1994, 49, R3572-R3575.	0.8	1
81	Experimental and computational studies of mixing in complex Stokes flows: the vortex mixing flow and multicellular cavity flows. Journal of Fluid Mechanics, 1994, 269, 199-246.	1.4	168
82	Superfluid effects at the onset of convection in3He-superfluid-4He mixtures. Journal of Low Temperature Physics, 1993, 90, 95-117.	0.6	2
83	CHAOTIC BURSTING IN A CONVECTING FLUID. International Journal of Bifurcation and Chaos in Applied Sciences and Engineering, 1993, 03, 677-684.	0.7	2
84	Observation of chaotic bursting and attractor switching in a fluid. Physical Review A, 1992, 46, R711-R714.	1.0	6
85	Using superfluid mixtures to probe convective instabilities. Physica D: Nonlinear Phenomena, 1991, 51, 520-530.	1.3	47
86	Critical Rayleigh numbers for cryogenic experiments. Journal of Low Temperature Physics, 1990, 78, 231-246.	0.6	13
87	Convection inâ˜'43He mixtures: Measurement of the superfluid effects. Physical Review A, 1990, 41, 5735-5738.	1.0	13
88	Heat-flow experiments in liquid 4He with a variable cylindrical geometry. Journal of Fluid Mechanics, 1987, 174, 209-231.	1.4	16