Michael D Graham

List of Publications by Year
in descending order

146 papers	7,149 citations	46918 47 h-index	64668 79 g-index
155 all docs	155 docs citations	155 times ranked	4240 citing authors

#	Article	IF	Citations
1	Transport and Collective Dynamics in Suspensions of Confined Swimming Particles. Physical Review Letters, 2005, 95, 204501.	2.9	340
2	A single-molecule barcoding system using nanoslits for DNA analysis. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 2673-2678.	3.3	285
3	Stochastic simulations of DNA in flow: Dynamics and the effects of hydrodynamic interactions. Journal of Chemical Physics, 2002, 116, 7752-7759.	1.2	252
4	Shear-induced migration in flowing polymer solutions: Simulation of long-chain DNA in microchannels. Journal of Chemical Physics, 2004, 120, 2513-2529.	1.2	228
5	Diffusion and Spatial Correlations in Suspensions of Swimming Particles. Physical Review Letters, 2008, 100, 248101.	2.9	191
6	A Microfluidic System for Large DNA Molecule Arrays. Analytical Chemistry, 2004, 76, 5293-5301.	3.2	175
7	Theory of shear-induced migration in dilute polymer solutions near solid boundaries. Physics of Fluids, 2005, 17, 083103.	1.6	168
8	DNA Dynamics in a Microchannel. Physical Review Letters, 2003, 91, 038102.	2.9	161
9	Effect of confinement on DNA dynamics in microfluidic devices. Journal of Chemical Physics, 2003, 119, 1165-1173.	1.2	160
10	Hydrodynamic interactions in long chain polymers: Application of the Chebyshev polynomial approximation in stochastic simulations. Journal of Chemical Physics, 2000, 113, 2894-2900.	1.2	153
11	Effects of Boundaries on Pattern Formation: Catalytic Oxidation of CO on Platinum. Science, 1994, 264, 80-82.	6.0	145
12	Alternative approaches to the Karhunen-LoÃ¨ve decomposition for model reduction and data analysis. Computers and Chemical Engineering, 1996, 20, 495-506.	2.0	145
13	Conformation and dynamics of single DNA molecules in parallel-plate slit microchannels. Physical Review E, 2004, 70, 060901.	0.8	139
14	Drag reduction and the dynamics of turbulence in simple and complex fluids. Physics of Fluids, 2014, 26, .	1.6	135
15	Fast Computation of Many-Particle Hydrodynamic and Electrostatic Interactions in a Confined Geometry. Physical Review Letters, 2007, 98, 140602.	2.9	134
16	Mechanism of Margination in Confined Flows of Blood and Other Multicomponent Suspensions. Physical Review Letters, 2012, 109, 108102.	2.9	134
17	Fluid Dynamics of Dissolved Polymer Molecules in Confined Geometries. Annual Review of Fluid Mechanics, 2011, 43, 273-298.	10.8	127
18	Margination and segregation in confined flows of blood and other multicomponent suspensions. Soft Matter, 2012, 8, 10536.	1.2	126

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19	Wall slip and the nonlinear dynamics of large amplitude oscillatory shear flows. Journal of Rheology, 1995, 39, 697-712.	1.3	96
20	An externally driven magnetic microstirrer. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2004, 362, 1059-1068.	1.6	93
21	Active and Hibernating Turbulence in Minimal Channel Flow of Newtonian and Polymeric Fluids. Physical Review Letters, 2010, 104, 218301.	2.9	86
22	Symmetric diblock copolymer thin films confined between homogeneous and patterned surfaces: Simulations and theory. Journal of Chemical Physics, 2000, 112, 9996-10010.	1.2	84
23	Coarse Brownian dynamics for nematic liquid crystals: Bifurcation, projective integration, and control via stochastic simulation. Journal of Chemical Physics, 2003, 118, 10149-10156.	1.2	82
24	Cellular softening mediates leukocyte demargination and trafficking, thereby increasing clinical blood counts. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 1987-1992.	3.3	82
25	Concentration dependence of shear and extensional rheology of polymer solutions: Brownian dynamics simulations. Journal of Rheology, 2006, 50, 137-167.	1.3	80
26	Dynamics of confined suspensions of swimming particles. Journal of Physics Condensed Matter, 2009, 21, 204107.	0.7	77
27	Flow-induced segregation in confined multicomponent suspensions: effects of particle size and rigidity. Journal of Fluid Mechanics, 2014, 738, 423-462.	1.4	72
28	Polymer drag reduction in exact coherent structures of plane shear flow. Physics of Fluids, 2004, 16, 3470-3482.	1.6	71
29	Pattern selection in controlled reactionâ€“diffusion systems. Journal of Chemical Physics, 1993, 98, 2823-2836.	1.2	70
30	Segregation by membrane rigidity in flowing binary suspensions of elastic capsules. Physical Review E, 2011, 84, 066316.	0.8	70
31	Cross-Stream Migration of Flexible Molecules in a Nanochannel. Physical Review Letters, 2006, 96, 224505.	2.9	66
32	Toward a Structural Understanding of Turbulent Drag Reduction: Nonlinear Coherent States in Viscoelastic Shear Flows. Physical Review Letters, 2002, 89, 208301.	2.9	64
33	Catalysis on microstructured surfaces: Pattern formation during CO oxidation in complex Pt domains. Physical Review E, 1995, 52, 76-93.	0.8	63
34	Turbulent drag reduction and multistage transitions in viscoelastic minimal flow units. Journal of Fluid Mechanics, 2010, 647, 421-452.	1.4	62
35	Dynamics on the Laminar-Turbulent Boundary and the Origin of the Maximum Drag Reduction Asymptote. Physical Review Letters, 2012, 108, 028301.	2.9	62
36	Dynamics of a single red blood cell in simple shear flow. Physical Review E, 2015, 92, 042710.	0.8	61

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37	Critical-Layer Structures and Mechanisms in Elastoinertial Turbulence. Physical Review Letters, 2019, 122, 124503.	2.9	61
38	Exact Coherent States and the Nonlinear Dynamics of Wall-Bounded Turbulent Flows. Annual Review of Fluid Mechanics, 2021, 53, 227-253.	10.8	61
39	DNA Molecules in Microfluidic Oscillatory Flow. Macromolecules, 2005, 38, 6680-6687.	2.2	59
40	Cross-stream-line migration in confined flowing polymer solutions: Theory and simulation. Physics of Fluids, 2006, 18, 123101.	1.6	59
41	The effect of hydrodynamic interactions on the dynamics of DNA translocation through pores. Journal of Chemical Physics, 2008, 128, 085102.	1.2	57
42	Plume formation and resonant bifurcations in porous-media convection. Journal of Fluid Mechanics, 1994, 272, 67-90.	1.4	55
43	A model for slip at polymer/solid interfaces. Journal of Rheology, 1998, 42, 1491-1504.	1.3	55
44	Accelerated boundary integral method for multiphase flow in non-periodic geometries. Journal of Computational Physics, 2012, 231, 6682-6713.	1.9	54
45	Exact coherent states and connections to turbulent dynamics in minimal channel flow. Journal of Fluid Mechanics, 2015, 782, 430-454.	1.4	53
46	Mass transport in a novel two-fluid taylor vortex extractor. AICHE Journal, 2000, 46, 2395-2407.	1.8	51
47	Structure evolution in electrorheological and magnetorheological suspensions from a continuum perspective. Journal of Applied Physics, 2003, 93, 5769-5779.	1.1	51
48	Patterns of temperature pulses on electrically heated catalytic ribbons. Physica D: Nonlinear Phenomena, 1993, 63, 393-409.	1.3	50
49	Wall-Slip and Polymer-Melt Flow Instability. Physical Review Letters, 1996, 77, 956-959.	2.9	49
50	Polymer induced drag reduction in exact coherent structures of plane Poiseuille flow. Physics of Fluids, 2007, 19, .	1.6	48
51	Depletion layer formation in suspensions of elastic capsules in Newtonian and viscoelastic fluids. Physics of Fluids, 2012, 24, .	1.6	48
52	An immersed boundary method for Brownian dynamics simulation of polymers in complex geometries: Application to DNA flowing through a nanoslit with embedded nanopits. Journal of Chemical Physics, 2012, 136, 014901.	1.2	48
53	Two-fluid Taylorâ€“Couette flow: Experiments and linear theory for immiscible liquids between corotating cylinders. Physics of Fluids, 1998, 10, 3045-3055.	1.6	47
54	Interfacial hoop stress and instability of viscoelastic free surface flows. Physics of Fluids, 2003, 15, 1702.	1.6	47

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55	The sharkskin instability of polymer melt flows. Chaos, 1999, 9, 154-163.	1.0	46
56	Intermittent dynamics of turbulence hibernation in Newtonian and viscoelastic minimal channel flows. Journal of Fluid Mechanics, 2012, 693, 433-472.	1.4	46
57	Proper orthogonal decomposition analysis of spatiotemporal temperature patterns. The Journal of Physical Chemistry, 1993, 97, 889-894.	2.9	45
58	Polymer dynamics in a model of the turbulent buffer layer. Physics of Fluids, 2003, 15, 1247-1256.	1.6	45
59	Temperature pulse dynamics on a catalytic ring. The Journal of Physical Chemistry, 1993, 97, 7564-7571.	2.9	43
60	Pattern Formation in Flowing Electrorheological Fluids. Physical Review Letters, 2002, 88, 188301.	2.9	43
61	A mechanism for oscillatory instability in viscoelastic cross-slot flow. Journal of Fluid Mechanics, 2009, 622, 145-165.	1.4	42
62	Pair collisions of fluid-filled elastic capsules in shear flow: Effects of membrane properties and polymer additives. Physics of Fluids, 2010, 22, .	1.6	40
63	Computational efficiency and approximate inertial manifolds for a BÃ©nard convection system. Journal of Nonlinear Science, 1993, 3, 153-167.	1.0	38
64	Prediction of mass transfer rates in spatially periodic flows. Chemical Engineering Science, 1999, 54, 343-355.	1.9	38
65	Deep learning to discover and predict dynamics on an inertial manifold. Physical Review E, 2020, 101, 062209.	0.8	38
66	Mechanistic theory of margination and flow-induced segregation in confined multicomponent suspensions: Simple shear and Poiseuille flows. Physical Review Fluids, 2016, 1, .	1.0	38
67	Nonlinear travelling waves as a framework for understanding turbulent drag reduction. Journal of Fluid Mechanics, 2006, 565, 353.	1.4	36
68	Modeling DNA in Confinement:â€‰ A Comparison between the Brownian Dynamics and Lattice Boltzmann Method. Macromolecules, 2007, 40, 5978-5984.	2.2	36
69	Tethered DNA dynamics in shear flow. Journal of Chemical Physics, 2009, 130, 234902.	1.2	36
70	NlogN method for hydrodynamic interactions of confined polymer systems: Brownian dynamics. Journal of Chemical Physics, 2006, 125, 164906.	1.2	32
71	Coexistence of tight and loose bundled states in a model of bacterial flagellar dynamics. Physical Review E, 2011, 84, 011910.	0.8	32
72	Timeâ€series and extended Karhunenâ€“LoÃ¨ve analysis of turbulent drag reduction in polymer solutions. AICHE Journal, 2014, 60, 1460-1475.	1.8	31

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73	Streamwise variation of turbulent dynamics in boundary layer flow of drag-reducing fluid. Journal of Fluid Mechanics, 2011, 686, 352-377.	1.4	29
74	Self-sustained elastoinertial Tollmienâ€“Schlichting waves. Journal of Fluid Mechanics, 2020, 897, .	1.4	29
75	Two-fluid Taylor-Couette flow with countercurrent axial flow: Linear theory for immiscible liquids between corotating cylinders. Physics of Fluids, 2000, 12, 294-303.	1.6	28
76	Margination Regimes and Drainage Transition in Confined Multicomponent Suspensions. Physical Review Letters, 2015, 114, 188101.	2.9	28
77	Predicting Emissions from the Thermal Processing of Hazardous Wastes. Hazardous Waste and Hazardous Materials, 1986, 3, 293-307.	0.4	25
78	Flipping, scooping, and spinning: Drift of rigid curved nonchiral fibers in simple shear flow. Physics of Fluids, 2012, 24, .	1.6	25
79	Spatiotemporal dynamics of viscoelastic turbulence in transitional channel flow. Journal of Non-Newtonian Fluid Mechanics, 2017, 244, 104-122.	1.0	25
80	Low-drag events in transitional wall-bounded turbulence. Physical Review Fluids, 2017, 2, .	1.0	24
81	Slip, Concentration Fluctuations, and Flow Instability in Sheared Polymer Solutions. Macromolecules, 2001, 34, 5731-5733.	2.2	23
82	Shear-induced diffusion in dilute suspensions of spherical or nonspherical particles: Effects of irreversibility and symmetry breaking. Physics of Fluids, 2007, 19, 073602.	1.6	23
83	Correlations and fluctuations of stress and velocity in suspensions of swimming microorganisms. Physics of Fluids, 2011, 23, .	1.6	23
84	Temporal and spatial intermittencies within channel flow turbulence near transition. Physical Review Fluids, 2017, 2, .	1.0	23
85	Mechanistic constitutive model for wormlike micelle solutions with flow-induced structure formation. Journal of Non-Newtonian Fluid Mechanics, 2018, 251, 97-106.	1.0	22
86	Impacts of multiflagellarity on stability and speed of bacterial locomotion. Physical Review E, 2018, 98, .	0.8	22
87	Simulation of nonlinear shear rheology of dilute salt-free polyelectrolyte solutions. Journal of Chemical Physics, 2007, 126, 124906.	1.2	21
88	Enhancement of mixing and adsorption in microfluidic devices by shear-induced diffusion and topography-induced secondary flow. Physics of Fluids, 2008, 20, .	1.6	21
89	Strongly interacting travelling waves and quasiperiodic dynamics in porous medium convection. Physica D: Nonlinear Phenomena, 1992, 54, 331-350.	1.3	20
90	Shape-mediated margination and demargination in flowing multicomponent suspensions of deformable capsules. Soft Matter, 2016, 12, 1683-1700.	1.2	20

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91	Spatiotemporal temperature patterns during hydrogen oxidation on a nickel disk. AICHE Journal, 1993, 39, 1497-1508.	1.8	19
92	Solitary Coherent Structures in Viscoelastic Shear Flow: Computation and Mechanism. Physical Review Letters, 2000, 85, 4056-4059.	2.9	18
93	A method for multiscale simulation of flowing complex fluids. Journal of Non-Newtonian Fluid Mechanics, 2002, 108, 123-142.	1.0	18
94	Flow-induced segregation and dynamics of red blood cells in sickle cell disease. Physical Review Fluids, 2020, 5, .	1.0	18
95	Effect of wall slip on the stability of viscoelastic plane shear flow. Physics of Fluids, 1999, 11, 1749-1756.	1.6	17
96	Tollmien-Schlichting route to elastoinertial turbulence in channel flow. Physical Review Fluids, 2021, 6, .	1.0	17
97	Role of Desorption Kinetics in Determining Marangoni Flows Generated by Using Electrochemical Methods and Redox-Active Surfactants. Langmuir, 2005, 21, 2235-2241.	1.6	16
98	Effect of pressure-dependent slip on flow curve multiplicity. Rheologica Acta, 1998, 37, 245-255.	1.1	15
99	Low-dimensional representations of exact coherent states of the Navier-Stokes equations from the resolvent model of wall turbulence. Physical Review E, 2016, 93, 021102.	0.8	15
100	Exact coherent states with hairpin-like vortex structure in channel flow. Journal of Fluid Mechanics, 2018, 849, 76-89.	1.4	15
101	Finite-amplitude solitary states in viscoelastic shear flow: computation and mechanism. Journal of Fluid Mechanics, 2001, 443, 301-328.	1.4	14
102	Symmetry reduction for deep reinforcement learning active control of chaotic spatiotemporal dynamics. Physical Review E, 2021, 104, 014210.	0.8	14
103	Timeâ€periodic thermal convection in Heleâ€“Shaw slots: The diagonal oscillation. Physics of Fluids A, Fluid Dynamics, 1992, 4, 2382-2393.	1.6	12
104	Buckling instabilities in models of viscoelastic free surface flows. Journal of Non-Newtonian Fluid Mechanics, 2000, 89, 337-351.	1.0	12
105	Numerical modeling of two-fluid Taylorâ€“Couette flow with deformable capillary liquidâ€“liquid interface. Physics of Fluids, 2004, 16, 4066-4074.	1.6	12
106	Dynamics of virus spread in the presence of fluid flow. Integrative Biology (United Kingdom), 2009, 1, 664.	0.6	12
107	Buckling Instabilities and Complex Trajectories in a Simple Model of Uniflagellar Bacteria. Biophysical Journal, 2017, 112, 1010-1022.	0.2	12
108	Data-driven reduced-order modeling of spatiotemporal chaos with neural ordinary differential equations. Chaos, 2022, 32, .	1.0	12

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109	Pulses and global bifurcations in a nonlocal reaction-diffusion system. Physical Review E, 1993, 48, 2917-2923.	0.8	11
110	Constitutive modeling of dilute wormlike micelle solutions: Shear-induced structure and transient dynamics. Journal of Non-Newtonian Fluid Mechanics, 2021, 295, 104606.	1.0	11
111	Bursting and critical layer frequencies in minimal turbulent dynamics and connections to exact coherent states. Physical Review Fluids, 2018, 3, .	1.0	11
112	Coilâ€“stretch-like transition of elastic sheets in extensional flows. Soft Matter, 2021, 17, 543-553.	1.2	10
113	Dynamics of deformable straight and curved prolate capsules in simple shear flow. Physical Review Fluids, 2019, 4, .	1.0	10
114	An experimental investigation into spatiotemporal intermittencies in turbulent channel flow close to transition. Experiments in Fluids, 2019, 60, 1.	1.1	9
115	Pathologic mechanobiological interactions between red blood cells and endothelial cells directly induce vasculopathy in iron deficiency anemia. IScience, 2022, 25, 104606.	1.9	9
116	Turbulence spreads like wildfire. Nature, 2015, 526, 508-509.	13.7	8
117	Low- and High-Drag Intermittencies in Turbulent Channel Flows. Entropy, 2020, 22, 1126.	1.1	8
118	Discovering multiscale and self-similar structure with data-driven wavelets. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	8
119	Structure and mechanism of oscillatory convection in a cube of fluid-saturated porous material heated from below. Journal of Fluid Mechanics, 1991, 232, 591.	1.4	7
120	Dynamics of concentration patterns of the NO + CO reaction on Pt: Analysis with the Karhunen-LoÃ¨ve decomposition. Chaos, Solitons and Fractals, 1995, 5, 1817-1831.	2.5	7
121	Influence of Surface Tension-Driven Convection on Cyclic Voltammograms of Langmuir Films of Redox-Active Amphiphiles. Langmuir, 2002, 18, 9882-9887.	1.6	7
122	Comment on â€œConvective Nonlinearity in Non-Newtonian Fluidsâ€• Physical Review Letters, 2001, 86, 744-744.	2.9	6
123	Methods for Generation of Spatial Gradients in Concentration of Monomeric Surfactants and Micelles in Microfluidic Systems. Langmuir, 2007, 23, 9578-9585.	1.6	6
124	Shear-induced diffusion in dilute curved fiber suspensions in simple shear flow. Physics of Fluids, 2014, 26, .	1.6	6
125	Viscoelastic Nonlinear Traveling Waves and Drag Reduction in Plane Poiseuille Flow. , 2005, , 289-312.		6
126	Stability of viscoelastic shear flows subjected to parallel flow superposition. Physics of Fluids, 2000, 12, 2702.	1.6	5

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127	Cell Distribution and Segregation Phenomena During Blood Flow. Biological and Medical Physics Series, 2015, , 399-435.	0.3	5
128	Dynamics of Miura-patterned foldable sheets in shear flow. Soft Matter, 2017, 13, 2620-2633.	1.2	5
129	Pressure-driven flow of lignocellulosic biomass: A compressible Bingham fluid. Journal of Rheology, 2018, 62, 801-815.	1.3	5
130	Multiple free energy minima in systems of confined tethered polymersâ€"toward soft nanomechanical bistable elements. Soft Matter, 2009, 5, 3694.	1.2	4
131	Polymer turbulence with Reynolds and Riemann. Journal of Fluid Mechanics, 2018, 848, 1-4.	1.4	4
132	Stiff Erythrocyte Subpopulations Biomechanically Induce Endothelial Inflammation in Sickle Cell Disease. Blood, 2019, 134, 3560-3560.	0.6	4
133	Multiplicity of stable orbits for deformable prolate capsules in shear flow. Physical Review Fluids, 2020, 5, .	1.0	3
134	Wrinkling and multiplicity in the dynamics of deformable sheets in uniaxial extensional flow. Physical Review Fluids, 2022, 7, .	1.0	3
135	A TWO-FLUID MODEL FOR ELECTRO- AND MAGNETORHEOLOGICAL SUSPENSIONS. International Journal of Modern Physics B, 2002, 16, 2669-2675.	1.0	2
136	Streamwise Variations in Turbulence Statistics in Drag-Reducing Turbulent Boundary Layer of Viscoelastic Fluids. , 2011, , .		0
137	General Equations of Newtonian Fluid Dynamics. , 2016, , 3-1-3-18.		0
138	Kinematics, Balance Equations, and Principles of Stokes Flow. , 0, , 1-25.		0
139	Fundamental Solutions of the Stokes Equation and the Point-Particle Approximation. , 0, , 26-54.		0
140	Beyond Point Particles. , 0, , 55-89.		0
141	Fundamental Solutions for Bounded Geometries. , 0, , 90-103.		0
142	First Effects of Inertia. , 0, , 104-113.		0
143	Thermal Fluctuations and Brownian Motion. , 0, , 114-138.		0
144	Coarse-Grained Models of Polymers in Dilute Solution. , 0, , 170-200.		0

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145	Rheology and Viscoelastic Flow Phenomena. , 0, , 201-236.		0
146	Exciting Turbulence with Polymers. Physics Magazine, 0, 14, .	0.1	0