

Donald L Koch

List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

139
papers

6,268
citations

41
h-index

76
g-index

143
ext. papers

6,901
ext. citations

4.3
avg, IF

6.07
L-index

#	Paper	IF	Citations
139	Electroconvection near an ion-selective surface with Butler-Volmer kinetics. <i>Journal of Fluid Mechanics</i> , 2022 , 930,	3.7	2
138	Suppression of electroconvective and morphological instabilities by an imposed cross flow of the electrolyte. <i>Physical Review Fluids</i> , 2021 , 6,	2.8	3
137	Discrete fracture network model analysis of the effects of fluid transport on the morphology of a cluster of activated fractures. <i>Physical Review E</i> , 2021 , 103, 053112	2.4	
136	Electrophoresis in dilute polymer solutions. <i>Journal of Fluid Mechanics</i> , 2020 , 884,	3.7	7
135	Predictive Inverse Model for Advective Heat Transfer in a Short-Circuited Fracture: Dimensional Analysis, Machine Learning, and Field Demonstration. <i>Water Resources Research</i> , 2020 , 56, e2020WR027065	5.4	4
134	The combined hydrodynamic and thermodynamic effects of immobilized proteins on the diffusion of mobile transmembrane proteins. <i>Journal of Fluid Mechanics</i> , 2019 , 877, 648-681	3.7	3
133	Slender body theory for particles with non-circular cross-sections with application to particle dynamics in shear flows. <i>Journal of Fluid Mechanics</i> , 2019 , 877, 1098-1133	3.7	7
132	The hydrodynamic lift of a slender, neutrally buoyant fibre in a wall-bounded shear flow at small Reynolds number. <i>Journal of Fluid Mechanics</i> , 2019 , 879, 121-146	3.7	2
131	Clustering of rapidly settling, low-inertia particle pairs in isotropic turbulence. Part 1. Drift and diffusion flux closures. <i>Journal of Fluid Mechanics</i> , 2019 , 871, 450-476	3.7	4
130	Clustering of rapidly settling, low-inertia particle pairs in isotropic turbulence. Part 2. Comparison of theory and DNS. <i>Journal of Fluid Mechanics</i> , 2019 , 871, 477-488	3.7	3
129	Electroconvection in a Viscoelastic Electrolyte. <i>Physical Review Letters</i> , 2019 , 122, 124501	7.4	29
128	Equilibrium Modeling of the Mechanics and Structure of the Cancer Glycocalyx. <i>Biophysical Journal</i> , 2019 , 116, 694-708	2.9	15
127	The rapid distortion of two-way coupled particle-laden turbulence. <i>Journal of Fluid Mechanics</i> , 2019 , 877, 82-104	3.7	3
126	Inertial torques and a symmetry breaking orientational transition in the sedimentation of slender fibres. <i>Journal of Fluid Mechanics</i> , 2019 , 875, 576-596	3.7	9
125	Clustering in Euler-Euler and Euler-Lagrange simulations of unbounded homogeneous particle-laden shear. <i>Journal of Fluid Mechanics</i> , 2019 , 859, 174-203	3.7	14
124	Modeling the dynamics of remobilized CO ₂ within the geologic subsurface. <i>International Journal of Greenhouse Gas Control</i> , 2018 , 70, 128-145	4.2	2
123	Controlling rotation and migration of rings in a simple shear flow through geometric modifications. <i>Journal of Fluid Mechanics</i> , 2018 , 840, 379-407	3.7	5

122	Heat/mass transfer from a neutrally buoyant sphere by mixed natural and forced convection in a simple shear flow. <i>AIChE Journal</i> , 2018 , 64, 2816-2827	3.6	4
121	Electroconvection and Morphological Instabilities in Potentiostatic Electrodeposition across Liquid Electrolytes with Polymer Additives. <i>Journal of the Electrochemical Society</i> , 2018 , 165, A3697-A3713	3.9	17
120	The effects of fluid transport on the creation of a dense cluster of activated fractures in a porous medium. <i>Journal of Fluid Mechanics</i> , 2018 , 847, 286-328	3.7	2
119	Stochastic theory and direct numerical simulations of the relative motion of high-inertia particle pairs in isotropic turbulence. <i>Journal of Fluid Mechanics</i> , 2017 , 813, 205-249	3.7	8
118	An algorithm for solving the Navier-Stokes equations with shear-periodic boundary conditions and its application to homogeneously sheared turbulence. <i>Journal of Fluid Mechanics</i> , 2017 , 833, 687-716	3.7	9
117	An analytical thermohydraulic model for discretely fractured geothermal reservoirs. <i>Water Resources Research</i> , 2016 , 52, 6792-6817	5.4	11
116	Stabilizing electrodeposition in elastic solid electrolytes containing immobilized anions. <i>Science Advances</i> , 2016 , 2, e1600320	14.3	183
115	Multiscale Simulation and Modeling of Multilayer Heteroepitaxial Growth of C60 on Pentacene. <i>Langmuir</i> , 2016 , 32, 3045-56	4	11
114	Stress in a dilute suspension of spheres in a dilute polymer solution subject to simple shear flow at finite Deborah numbers. <i>Physical Review Fluids</i> , 2016 , 1,	2.8	16
113	Pseudo-turbulent heat flux and average gas-phase conduction during gas-solid heat transfer: flow past random fixed particle assemblies. <i>Journal of Fluid Mechanics</i> , 2016 , 798, 299-349	3.7	31
112	Analysis of a time dependent injection strategy to accelerate the residual trapping of sequestered CO ₂ in the geologic subsurface. <i>International Journal of Greenhouse Gas Control</i> , 2016 , 44, 185-198	4.2	6
111	Brownian Dynamics of a Suspension of Particles with Constrained Voronoi Cell Volumes. <i>Langmuir</i> , 2015 , 31, 6829-41	4	5
110	Emergence of upstream swimming via a hydrodynamic transition. <i>Physical Review Letters</i> , 2015 , 114, 108102	7.4	65
109	The effect of shear flow on the rotational diffusion of a single axisymmetric particle. <i>Journal of Fluid Mechanics</i> , 2015 , 772, 42-79	3.7	20
108	Preferential concentration driven instability of sheared gas-solid suspensions. <i>Journal of Fluid Mechanics</i> , 2015 , 770, 85-123	3.7	6
107	Hyperdiffusive Dynamics in Newtonian Nanoparticle Fluids. <i>ACS Macro Letters</i> , 2015 , 4, 1149-1153	6.6	23
106	Slender-body theory for transient heat conduction: theoretical basis, numerical implementation and case studies. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 2015 , 471, 20150494	2.4	1
105	The average stress in a suspension of cube-shaped magnetic particles subject to shear and magnetic fields. <i>Physics of Fluids</i> , 2015 , 27, 093101	4.4	3

104	Hydrodynamic tracer diffusion in suspensions of swimming bacteria. <i>Physics of Fluids</i> , 2014 , 26, 081901	4.4	78
103	Structure factor of blends of solvent-free nanoparticle-organic hybrid materials: density-functional theory and small angle X-ray scattering. <i>Soft Matter</i> , 2014 , 10, 9120-35	3.6	27
102	Instability of an inhomogeneous bacterial suspension subjected to a chemo-attractant gradient. <i>Journal of Fluid Mechanics</i> , 2014 , 741, 619-657	3.7	9
101	Rotational motion of a thin axisymmetric disk in a low Reynolds number linear flow. <i>Physics of Fluids</i> , 2014 , 26, 033303	4.4	13
100	Bacterial collective motion near the contact line of an evaporating sessile drop. <i>Physics of Fluids</i> , 2014 , 26, 111703	4.4	14
99	A stochastic model for the relative motion of high Stokes number particles in isotropic turbulence. <i>Journal of Fluid Mechanics</i> , 2014 , 756, 870-902	3.7	19
98	Stability Analysis of Electrodeposition across a Structured Electrolyte with Immobilized Anions. <i>Journal of the Electrochemical Society</i> , 2014 , 161, A847-A855	3.9	159
97	Intrinsic viscosity of a suspension of cubes. <i>Physical Review E</i> , 2013 , 88, 052302	2.4	10
96	Rigid ring-shaped particles that align in simple shear flow. <i>Journal of Fluid Mechanics</i> , 2013 , 722, 121-158	3.7	12
95	Predicting the disorder-order transition of solvent-free nanoparticle-organic hybrid materials. <i>Langmuir</i> , 2013 , 29, 8197-202	4	12
94	Flow of power-law fluids in fixed beds of cylinders or spheres. <i>Journal of Fluid Mechanics</i> , 2012 , 713, 491-527	3.7	5
93	Dynamics of solvent-free grafted nanoparticles. <i>Journal of Chemical Physics</i> , 2012 , 136, 044902	3.9	43
92	Collective Hydrodynamics of Swimming Microorganisms: Living Fluids. <i>Annual Review of Fluid Mechanics</i> , 2011 , 43, 637-659	22	279
91	Structure of solvent-free grafted nanoparticles: molecular dynamics and density-functional theory. <i>Journal of Chemical Physics</i> , 2011 , 135, 114901	3.9	48
90	The influence of the inertially dominated outer region on the rheology of a dilute dispersion of low-Reynolds-number drops or rigid particles. <i>Journal of Fluid Mechanics</i> , 2011 , 674, 307-358	3.7	23
89	Mass/heat transfer from a neutrally buoyant sphere in simple shear flow at finite Reynolds and Peclet numbers. <i>AIChE Journal</i> , 2011 , 57, 1419-1433	3.6	19
88	Noncontinuum drag force on a nanowire vibrating normal to a wall: Simulations and theory. <i>Physics of Fluids</i> , 2010 , 22, 103101	4.4	14
87	Structure of solvent-free nanoparticle-organic hybrid materials. <i>Langmuir</i> , 2010 , 26, 16801-11	4	62

86	An efficient direct simulation Monte Carlo method for low Mach number noncontinuum gas flows based on the Bhatnagar-Gross-Krook model. <i>Physics of Fluids</i> , 2009 , 21, 033103	4.4	14
85	Structure and dynamics of dilute suspensions of finite-Reynolds-number settling fibers. <i>Physics of Fluids</i> , 2009 , 21, 123304	4.4	23
84	Hydrodynamic diffusion and mass transfer across a sheared suspension of neutrally buoyant spheres. <i>Physics of Fluids</i> , 2009 , 21, 033303	4.4	17
83	Dense, bounded shear flows of agitated solid spheres in a gas at intermediate Stokes and finite Reynolds numbers. <i>Journal of Fluid Mechanics</i> , 2009 , 618, 181-208	3.7	5
82	Clusters of sedimenting high-Reynolds-number particles. <i>Journal of Fluid Mechanics</i> , 2009 , 625, 371-385	3.7	11
81	Velocity fluctuations and hydrodynamic diffusion in finite-Reynolds-number sedimenting suspensions. <i>Physics of Fluids</i> , 2008 , 20, 043305	4.4	30
80	Evolution of clusters of sedimenting low-Reynolds-number particles with Oseen interactions. <i>Journal of Fluid Mechanics</i> , 2008 , 603, 63-100	3.7	33
79	A kinetic theory for particulate systems with bimodal and anisotropic velocity fluctuations. <i>Physics of Fluids</i> , 2008 , 20, 123303	4.4	6
78	The lift force on a bubble in a sheared suspension in a slightly inclined channel. <i>Journal of Fluid Mechanics</i> , 2008 , 615, 27-51	3.7	3
77	A pseudospectral method to evaluate the fluid velocity produced by an array of translating slender fibers. <i>Physics of Fluids</i> , 2006 , 18, 063301	4.4	13
76	Rheology of particle suspensions with low to moderate fluid inertia at finite particle inertia. <i>Physics of Fluids</i> , 2006 , 18, 083303	4.4	26
75	Inertial effects on the transfer of heat or mass from neutrally buoyant spheres in a steady linear velocity field. <i>Physics of Fluids</i> , 2006 , 18, 073302	4.4	54
74	The stress in a dilute suspension of spheres suspended in a second-order fluid subject to a linear velocity field. <i>Journal of Non-Newtonian Fluid Mechanics</i> , 2006 , 138, 87-97	2.7	49
73	Rotational and translational dispersion of fibres in isotropic turbulent flows. <i>Journal of Fluid Mechanics</i> , 2005 , 540, 143	3.7	81
72	Clustering of aerosol particles in isotropic turbulence. <i>Journal of Fluid Mechanics</i> , 2005 , 536, 219-251	3.7	193
71	Inertial effects on fibre motion in simple shear flow. <i>Journal of Fluid Mechanics</i> , 2005 , 535, 383-414	3.7	86
70	Bubble-size dependence of the critical electrolyte concentration for inhibition of coalescence. <i>Journal of Colloid and Interface Science</i> , 2004 , 275, 290-7	9.3	68
69	Coalescence and bouncing of small aerosol droplets. <i>Journal of Fluid Mechanics</i> , 2004 , 518, 157-185	3.7	47

68	Shear flow of a suspension of bubbles rising in an inclined channel. <i>Journal of Fluid Mechanics</i> , 2004 , 515, 261-292	3-7	9
67	Rheology of suspensions with high particle inertia and moderate fluid inertia. <i>Journal of Fluid Mechanics</i> , 2003 , 480, 95-118	3-7	111
66	Coagulation-induced particle-concentration fluctuations in homogeneous, isotropic turbulence. <i>Physics of Fluids</i> , 2002 , 14, 2447	4-4	12
65	The transition from steady to weakly turbulent flow in a close-packed ordered array of spheres. <i>Journal of Fluid Mechanics</i> , 2002 , 465, 59-97	3-7	41
64	Finite-Weber-number motion of bubbles through a nearly inviscid liquid. <i>Journal of Fluid Mechanics</i> , 2002 , 460, 241-280	3-7	39
63	Collision and rebound of small droplets in an incompressible continuum gas. <i>Journal of Fluid Mechanics</i> , 2002 , 454, 145-201	3-7	34
62	Moderate-Reynolds-number flow in a wall-bounded porous medium. <i>Journal of Fluid Mechanics</i> , 2002 , 453, 315-344	3-7	22
61	Dynamics of droplet rebound from a weakly deformable gas-liquid interface. <i>Physics of Fluids</i> , 2001 , 13, 3526-3532	4-4	12
60	INERTIAL EFFECTS IN SUSPENSION AND POROUS-MEDIA FLOWS. <i>Annual Review of Fluid Mechanics</i> , 2001 , 33, 619-647	22	246
59	The first effects of fluid inertia on flows in ordered and random arrays of spheres. <i>Journal of Fluid Mechanics</i> , 2001 , 448, 213-241	3-7	296
58	Moderate-Reynolds-number flows in ordered and random arrays of spheres. <i>Journal of Fluid Mechanics</i> , 2001 , 448, 243-278	3-7	354
57	Rheology of non-Brownian rigid fiber suspensions with adhesive contacts. <i>Journal of Rheology</i> , 2001 , 45, 369-382	4-1	90
56	Measurements of the average properties of a suspension of bubbles rising in a vertical channel. <i>Journal of Fluid Mechanics</i> , 2001 , 429, 307-342	3-7	106
55	Particle clustering due to hydrodynamic interactions. <i>Physics of Fluids</i> , 2000 , 12, 964-970	4-4	61
54	Particle pressure and marginal stability limits for a homogeneous monodisperse gas-fluidized bed: kinetic theory and numerical simulations. <i>Journal of Fluid Mechanics</i> , 1999 , 400, 229-263	3-7	180
53	Hydrodynamic interactions between two equal spheres in a highly rarefied gas. <i>Physics of Fluids</i> , 1999 , 11, 2772-2787	4-4	11
52	Numerical simulations of a sphere settling through a suspension of neutrally buoyant fibres. <i>Journal of Fluid Mechanics</i> , 1999 , 388, 355-388	3-7	50
51	Electrical conductivity of isotropic fibre suspensions. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 1999 , 455, 1923-1930	2-4	4

50	Interfacial Tension at the Boundary Between Nematic and Isotropic Phases of a Hard Rod Solution. <i>Macromolecules</i> , 1999 , 32, 219-226	5.5	42
49	The inhomogeneous structure of a bidisperse sedimenting gas-solid suspension. <i>Physics of Fluids</i> , 1999 , 11, 3283-3305	4.4	14
48	Hydrodynamic and boundary-layer dispersion in bidisperse porous media. <i>Journal of Fluid Mechanics</i> , 1999 , 385, 359-379	3.7	19
47	Interactions between contacting fibers. <i>Physics of Fluids</i> , 1998 , 10, 2111-2113	4.4	30
46	Turbulent coagulation of colloidal particles. <i>Journal of Fluid Mechanics</i> , 1998 , 364, 81-113	3.7	63
45	Observations of coagulation in isotropic turbulence. <i>Journal of Fluid Mechanics</i> , 1998 , 371, 81-107	3.7	29
44	Rheology of dense bubble suspensions. <i>Physics of Fluids</i> , 1997 , 9, 1540-1561	4.4	37
43	A method for calculating hydrodynamic interactions between two bodies in low Mach number free-molecular flows with application to the resistivity functions for two aligned cylinders. <i>Physics of Fluids</i> , 1997 , 9, 3550-3565	4.4	8
42	Lubrication flows between spherical particles colliding in a compressible non-continuum gas. <i>Journal of Fluid Mechanics</i> , 1997 , 344, 245-269	3.7	14
41	Observations of high Reynolds number bubbles interacting with a rigid wall. <i>Physics of Fluids</i> , 1997 , 9, 44-56	4.4	117
40	Moderate Reynolds number flows through periodic and random arrays of aligned cylinders. <i>Journal of Fluid Mechanics</i> , 1997 , 349, 31-66	3.7	208
39	Instability of Sedimenting Bidisperse Particle Gas Suspensions. <i>Flow, Turbulence and Combustion</i> , 1997 , 58, 275-303		6
38	Hydrodynamic diffusion near solid boundaries with applications to heat and mass transport into sheared suspensions and fixed-fibre beds. <i>Journal of Fluid Mechanics</i> , 1996 , 318, 31	3.7	12
37	Non-continuum lubrication flows between particles colliding in a gas. <i>Journal of Fluid Mechanics</i> , 1996 , 313, 283-308	3.7	40
36	Simple shear flows of dense gas-solid suspensions at finite Stokes numbers. <i>Journal of Fluid Mechanics</i> , 1996 , 313, 309-341	3.7	102
35	Rheology of dilute suspensions of charged fibers. <i>Physics of Fluids</i> , 1996 , 8, 2792-2807	4.4	33
34	Isotropic-nematic phase transitions in aqueous solutions of weakly charged, rodlike polyelectrolytes. <i>Journal of Chemical Physics</i> , 1996 , 104, 359-374	3.9	20
33	The effect of hydrodynamic interactions on the orientation distribution in a fiber suspension subject to simple shear flow. <i>Physics of Fluids</i> , 1995 , 7, 487-506	4.4	109

32	A model for orientational diffusion in fiber suspensions. <i>Physics of Fluids</i> , 1995 , 7, 2086-2088	4.4	87
31	Simple shear flows of dilute gas-solid suspensions. <i>Journal of Fluid Mechanics</i> , 1995 , 296, 211-245	3.7	55
30	Numerical simulations of the effect of hydrodynamic interactions on diffusivities of integral membrane proteins. <i>Journal of Fluid Mechanics</i> , 1995 , 293, 147-180	3.7	69
29	Numerical and theoretical solutions for a drop spreading below a free fluid surface. <i>Journal of Fluid Mechanics</i> , 1995 , 287, 251-278	3.7	37
28	Kinetic theory for a mobile adsorbed gas. <i>Journal of Chemical Physics</i> , 1994 , 101, 4391-4406	3.9	4
27	The extensional viscosity and effective thermal conductivity of a dispersion of aligned disks. <i>Physics of Fluids</i> , 1994 , 6, 1955-1962	4.4	4
26	Hydrodynamic diffusion in a suspension of sedimenting point particles with periodic boundary conditions. <i>Physics of Fluids</i> , 1994 , 6, 2894-2900	4.4	42
25	Collisions of slightly deformable, high Reynolds number bubbles with short-range repulsive forces. <i>Physics of Fluids</i> , 1994 , 6, 2591-2605	4.4	42
24	The effect of hydrodynamic interactions on the tracer and gradient diffusion of integral membrane proteins in lipid bilayers. <i>Journal of Fluid Mechanics</i> , 1994 , 258, 167-190	3.7	31
23	Simple shear flow of a suspension of fibres in a dilute polymer solution at high Deborah number. <i>Journal of Fluid Mechanics</i> , 1993 , 252, 187-207	3.7	36
22	Properties of a bidisperse particle-gas suspension Part 1. Collision time small compared with viscous relaxation time. <i>Journal of Fluid Mechanics</i> , 1993 , 247, 623-641	3.7	16
21	Hydrodynamic diffusion in dilute sedimenting suspensions at moderate Reynolds numbers. <i>Physics of Fluids A, Fluid Dynamics</i> , 1993 , 5, 1141-1155		37
20	Hydrodynamic, translational diffusion in fiber suspensions subject to simple shear flow. <i>Physics of Fluids A, Fluid Dynamics</i> , 1993 , 5, 849-862		29
19	The rate of coalescence in a suspension of high Reynolds number, low Weber number bubbles. <i>Physics of Fluids A, Fluid Dynamics</i> , 1993 , 5, 1135-1140		17
18	The effect of hydrodynamic interactions on the average properties of a bidisperse suspension of high Reynolds number, low Weber number bubbles. <i>Physics of Fluids A, Fluid Dynamics</i> , 1993 , 5, 1123-1134		21
17	Extensional flow of a suspension of fibers in a dilute polymer solution. <i>Physics of Fluids A, Fluid Dynamics</i> , 1992 , 4, 1070-1073		5
16	Averaged-equation and diagrammatic approximations to the average concentration of a tracer dispersed by a Gaussian random velocity field. <i>Physics of Fluids A, Fluid Dynamics</i> , 1992 , 4, 887-894		19
15	Anomalous diffusion of momentum in a dilute gas-solid suspension. <i>Physics of Fluids A, Fluid Dynamics</i> , 1992 , 4, 1337-1346		7

14	Polymer stretch in dilute fixed beds of fibres or spheres. <i>Journal of Fluid Mechanics</i> , 1992 , 244, 17	3.7	17
13	The resistivity and mobility functions for a model system of two equal-sized proteins in a lipid bilayer. <i>Journal of Fluid Mechanics</i> , 1992 , 243, 679	3.7	25
12	Observations of fibre orientation in simple shear flow of semi-dilute suspensions. <i>Journal of Fluid Mechanics</i> , 1992 , 238, 277-296	3.7	164
11	Observations of axisymmetric tracer particle orientation during flow through a dilute fixed bed of fibers. <i>Physics of Fluids A, Fluid Dynamics</i> , 1991 , 3, 2516-2528		11
10	The AC Electrical Impedance of a Fractal Boundary to an Electrolytic Solution. <i>Journal of the Electrochemical Society</i> , 1991 , 138, 475-484	3.9	12
9	Screening in sedimenting suspensions. <i>Journal of Fluid Mechanics</i> , 1991 , 224, 275-303	3.7	129
8	Orientalional dispersion of fibers in extensional flows. <i>Physics of Fluids A, Fluid Dynamics</i> , 1990 , 2, 1077-1093		38
7	Kinetic theory for a monodisperse gas-solid suspension. <i>Physics of Fluids A, Fluid Dynamics</i> , 1990 , 2, 1711-1723		167
6	The average rotation rate of a fiber in the linear flow of a semidilute suspension. <i>Physics of Fluids A, Fluid Dynamics</i> , 1990 , 2, 2093-2102		39
5	On hydrodynamic diffusion and drift in sheared suspensions. <i>Physics of Fluids A, Fluid Dynamics</i> , 1989 , 1, 1742-1745		19
4	The instability of a dispersion of sedimenting spheroids. <i>Journal of Fluid Mechanics</i> , 1989 , 209, 521-542	3.7	106
3	The effect of order on dispersion in porous media. <i>Journal of Fluid Mechanics</i> , 1989 , 200, 173-188	3.7	107
2	The combined effects of hydrodynamic interactions and Brownian motion on the orientation of particles flowing through fixed beds. <i>Physics of Fluids</i> , 1988 , 31, 2769		12
1	A non-local description of advection-diffusion with application to dispersion in porous media. <i>Journal of Fluid Mechanics</i> , 1987 , 180, 387	3.7	142