Donald L Koch

List of Publications by Year
in descending order

143 papers	7,504 citations	61984 43 h-index	58581 82 g-index
143 all docs	143 docs citations	143 times ranked	4745 citing authors

#	Article	IF	Citations
1	Electroconvection near an ion-selective surface with Butlerâ€"Volmer kinetics. Journal of Fluid Mechanics, 2022, 930, .	3.4	10
2	Collision rate of bidisperse, hydrodynamically interacting spheres settling in a turbulent flow. Journal of Fluid Mechanics, 2021, 912, .	3.4	11
3	Suppression of electroconvective and morphological instabilities by an imposed cross flow of the electrolyte. Physical Review Fluids, 2021, 6, .	2.5	8
4	Discrete fracture network model analysis of the effects of fluid transport on the morphology of a cluster of activated fractures. Physical Review E, 2021, 103, 053112.	2.1	0
5	Non-continuum tangential lubrication gas flow between two spheres. Journal of Fluid Mechanics, 2021, 920, .	3.4	6
6	Collision rate of bidisperse spheres settling in a compressional non-continuum gas flow. Journal of Fluid Mechanics, 2021, 910, .	3.4	10
7	Electrophoresis in dilute polymer solutions. Journal of Fluid Mechanics, 2020, 884, .	3.4	17
8	Predictive Inverse Model for Advective Heat Transfer in a Shortâ€Circuited Fracture: Dimensional Analysis, Machine Learning, and Field Demonstration. Water Resources Research, 2020, 56, e2020WR027065.	4.2	13
9	Hydroshearing poorly connected preexisting fractures in the presence of stress anisotropy as a random percolation process. Physical Review Research, 2020, 2, .	3.6	0
10	The rapid distortion of two-way coupled particle-laden turbulence. Journal of Fluid Mechanics, 2019, 877, 82-104.	3.4	9
11	Inertial torques and a symmetry breaking orientational transition in the sedimentation of slender fibres. Journal of Fluid Mechanics, 2019, 875, 576-596.	3.4	21
12	The combined hydrodynamic and thermodynamic effects of immobilized proteinsÂon the diffusion of mobile transmembrane proteins. Journal of Fluid Mechanics, 2019, 877, 648-681.	3.4	4
13	Slender body theory for particles with non-circular cross-sections with application to particle dynamics in shear flows. Journal of Fluid Mechanics, 2019, 877, 1098-1133.	3.4	10
14	The hydrodynamic lift of a slender, neutrally buoyant fibre in a wall-bounded shear flow at small Reynolds number. Journal of Fluid Mechanics, 2019, 879, 121-146.	3.4	5
15	Clustering of rapidly settling, low-inertia particle pairs in isotropic turbulence. Part 1. Drift and diffusion flux closures. Journal of Fluid Mechanics, 2019, 871, 450-476.	3.4	8
16	Clustering of rapidly settling, low-inertia particle pairs in isotropic turbulence. Part 2. Comparison of theory and DNS. Journal of Fluid Mechanics, 2019, 871, 477-488.	3.4	8
17	Electroconvection in a Viscoelastic Electrolyte. Physical Review Letters, 2019, 122, 124501.	7.8	48
18	Equilibrium Modeling of the Mechanics and Structure of the Cancer Glycocalyx. Biophysical Journal, 2019, 116, 694-708.	0.5	27

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19	Clustering in Eulerâ€"Euler and Eulerâ€"Lagrange simulations of unbounded homogeneous particle-laden shear. Journal of Fluid Mechanics, 2019, 859, 174-203.	3.4	25
20	Modeling the dynamics of remobilized CO2 within the geologic subsurface. International Journal of Greenhouse Gas Control, 2018, 70, 128-145.	4.6	3
21	Controlling rotation and migration of rings in a simple shear flow through geometric modifications. Journal of Fluid Mechanics, 2018, 840, 379-407.	3.4	6
22	Heat/mass transfer from a neutrally buoyant sphere by mixed natural and forced convection in a simple shear flow. AICHE Journal, 2018, 64, 2816-2827.	3.6	4
23	Electroconvection and Morphological Instabilities in Potentiostatic Electrodeposition across Liquid Electrolytes with Polymer Additives. Journal of the Electrochemical Society, 2018, 165, A3697-A3713.	2.9	24
24	The effects of fluid transport on the creation of a dense cluster of activated fractures in a porous medium. Journal of Fluid Mechanics, 2018, 847, 286-328.	3.4	4
25	Stochastic theory and direct numerical simulations of the relative motion of high-inertia particle pairs in isotropic turbulence. Journal of Fluid Mechanics, 2017, 813, 205-249.	3.4	11
26	An algorithm for solving the Navierâ€"Stokes equations with shear-periodic boundary conditions and its application to homogeneouslyÂsheared turbulence. Journal of Fluid Mechanics, 2017, 833, 687-716.	3.4	16
27	Pseudo-turbulent heat flux and average gasâ€"phase conduction during gasâ€"solid heatÂtransfer: flow past random fixed particleÂassemblies. Journal of Fluid Mechanics, 2016, 798, 299-349.	3.4	45
28	Analysis of a time dependent injection strategy to accelerate the residual trapping of sequestered CO 2 in the geologic subsurface. International Journal of Greenhouse Gas Control, 2016, 44, 185-198.	4.6	8
29	An analytical thermohydraulic model for discretely fractured geothermal reservoirs. Water Resources Research, 2016, 52, 6792-6817.	4.2	16
30	Stabilizing electrodeposition in elastic solid electrolytes containing immobilized anions. Science Advances, 2016, 2, e1600320.	10.3	228
31	Multiscale Simulation and Modeling of Multilayer Heteroepitactic Growth of C₆₀ on Pentacene. Langmuir, 2016, 32, 3045-3056.	3.5	13
32	Stress in a dilute suspension of spheres in a dilute polymer solution subject to simple shear flow at finite Deborah numbers. Physical Review Fluids, 2016, 1, .	2.5	22
33	Slender-body theory for transient heat conduction: theoretical basis, numerical implementation and case studies. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2015, 471, 20150494.	2.1	3
34	The average stress in a suspension of cube-shaped magnetic particles subject to shear and magnetic fields. Physics of Fluids, 2015, 27, .	4.0	4
35	Brownian Dynamics of a Suspension of Particles with Constrained Voronoi Cell Volumes. Langmuir, 2015, 31, 6829-6841.	3.5	8
36	Emergence of Upstream Swimming via a Hydrodynamic Transition. Physical Review Letters, 2015, 114, 108102.	7.8	91

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37	The effect of shear flow on the rotational diffusion of a single axisymmetric particle. Journal of Fluid Mechanics, 2015, 772, 42-79.	3.4	21
38	Preferential concentration driven instability of sheared gasâ€"solid suspensions. Journal of Fluid Mechanics, 2015, 770, 85-123.	3.4	13
39	Hyperdiffusive Dynamics in Newtonian Nanoparticle Fluids. ACS Macro Letters, 2015, 4, 1149-1153.	4.8	27
40	Rotational motion of a thin axisymmetric disk in a low Reynolds number linear flow. Physics of Fluids, 2014, 26, .	4.0	15
41	Bacterial collective motion near the contact line of an evaporating sessile drop. Physics of Fluids, 2014, 26, .	4.0	22
42	A stochastic model for the relative motion of high Stokes number particles in isotropic turbulence. Journal of Fluid Mechanics, 2014, 756, 870-902.	3.4	22
43	Stability Analysis of Electrodeposition across a Structured Electrolyte with Immobilized Anions. Journal of the Electrochemical Society, 2014, 161, A847-A855.	2.9	198
44	Hydrodynamic tracer diffusion in suspensions of swimming bacteria. Physics of Fluids, 2014, 26, .	4.0	96
45	Structure factor of blends of solvent-free nanoparticleâ€"organic hybrid materials: density-functional theory and small angle X-ray scattering. Soft Matter, 2014, 10, 9120-9135.	2.7	28
46	Instability of an inhomogeneous bacterial suspension subjected to a chemo-attractant gradient. Journal of Fluid Mechanics, 2014, 741, 619-657.	3.4	13
47	Intrinsic viscosity of a suspension of cubes. Physical Review E, 2013, 88, 052302.	2.1	12
48	Rigid ring-shaped particles that align in simple shear flow. Journal of Fluid Mechanics, 2013, 722, 121-158.	3.4	17
49	Predicting the Disorderâ€"Order Transition of Solvent-Free Nanoparticleâ€"Organic Hybrid Materials. Langmuir, 2013, 29, 8197-8202.	3.5	12
50	Dynamics of solvent-free grafted nanoparticles. Journal of Chemical Physics, 2012, 136, 044902.	3.0	49
51	Flow of power-law fluids in fixed beds of cylinders or spheres. Journal of Fluid Mechanics, 2012, 713, 491-527.	3.4	8
52	Collective Hydrodynamics of Swimming Microorganisms: Living Fluids. Annual Review of Fluid Mechanics, 2011, 43, 637-659.	25.0	336
53	Structure of solvent-free grafted nanoparticles: Molecular dynamics and density-functional theory. Journal of Chemical Physics, 2011, 135, 114901.	3.0	49
54	The influence of the inertially dominated outer region on the rheology of a dilute dispersion of low-Reynolds-number drops or rigid particles. Journal of Fluid Mechanics, 2011, 674, 307-358.	3.4	25

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55	Mass/heat transfer from a neutrally buoyant sphere in simple shear flow at finite Reynolds and Peclet numbers. AICHE Journal, 2011, 57, 1419-1433.	3.6	21
56	Noncontinuum drag force on a nanowire vibrating normal to a wall: Simulations and theory. Physics of Fluids, 2010, 22, 103101.	4.0	16
57	Structure of Solvent-Free Nanoparticleâ˜Organic Hybrid Materials. Langmuir, 2010, 26, 16801-16811.	3.5	68
58	An efficient direct simulation Monte Carlo method for low Mach number noncontinuum gas flows based on the Bhatnagarâ€“Grossâ€“Krook model. Physics of Fluids, 2009, 21, 033103.	4.0	15
59	Structure and dynamics of dilute suspensions of finite-Reynolds-number settling fibers. Physics of Fluids, 2009, 21, .	4.0	27
60	Hydrodynamic diffusion and mass transfer across a sheared suspension of neutrally buoyant spheres. Physics of Fluids, 2009, 21, .	4.0	18
61	Dense, bounded shear flows of agitated solid spheres in a gas at intermediate Stokes and finite Reynolds numbers. Journal of Fluid Mechanics, 2009, 618, 181-208.	3.4	5
62	Clusters of sedimenting high-Reynolds-number particles. Journal of Fluid Mechanics, 2009, 625, 371-385.	3.4	21
63	Velocity fluctuations and hydrodynamic diffusion in finite-Reynolds-number sedimenting suspensions. Physics of Fluids, 2008, 20, .	4.0	36
64	Evolution of clusters of sedimenting low-Reynolds-number particles with Oseen interactions. Journal of Fluid Mechanics, 2008, 603, 63-100.	3.4	44
65	A kinetic theory for particulate systems with bimodal and anisotropic velocity fluctuations. Physics of Fluids, 2008, 20, 123303.	4.0	6
66	The lift force on a bubble in a sheared suspension in a slightly inclined channel. Journal of Fluid Mechanics, 2008, 615, 27-51.	3.4	3
67	Inertial effects on the transfer of heat or mass from neutrally buoyant spheres in a steady linear velocity field. Physics of Fluids, 2006, 18, 073302.	4.0	58
68	The stress in a dilute suspension of spheres suspended in a second-order fluid subject to a linear velocity field. Journal of Non-Newtonian Fluid Mechanics, 2006, 138, 87-97.	2.4	57
69	A pseudospectral method to evaluate the fluid velocity produced by an array of translating slender fibers. Physics of Fluids, 2006, 18, 063301.	4.0	17
70	Rheology of particle suspensions with low to moderate fluid inertia at finite particle inertia. Physics of Fluids, 2006, 18, 083303.	4.0	28
71	Rotational and translational dispersion of fibres in isotropic turbulent flows. Journal of Fluid Mechanics, 2005, 540, 143.	3.4	95
72	Clustering of aerosol particles in isotropic turbulence. Journal of Fluid Mechanics, 2005, 536, 219-251.	3.4	227

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73	Inertial effects on fibre motion in simple shear flow. Journal of Fluid Mechanics, 2005, 535, 383-414.	3.4	108
74	Bubble-size dependence of the critical electrolyte concentration for inhibition of coalescence. Journal of Colloid and Interface Science, 2004, 275, 290-297.	9.4	81
75	Coalescence and bouncing of small aerosol droplets. Journal of Fluid Mechanics, 2004, 518, 157-185.	3.4	55
76	Shear flow of a suspension of bubbles rising in an inclined channel. Journal of Fluid Mechanics, 2004, 515, 261-292.	3.4	11
77	Rheology of suspensions with high particle inertia and moderate fluid inertia. Journal of Fluid Mechanics, 2003, 480, 95-118.	3.4	127
78	Coagulation-induced particle-concentration fluctuations in homogeneous, isotropic turbulence. Physics of Fluids, 2002, 14, 2447.	4.0	15
79	The transition from steady to weakly turbulent flow in a close-packed ordered array of spheres. Journal of Fluid Mechanics, 2002, 465, 59-97.	3.4	48
80	Finite-Weber-number motion of bubbles through a nearly inviscid liquid. Journal of Fluid Mechanics, 2002, 460, 241-280.	3.4	44
81	Collision and rebound of small droplets in an incompressible continuum gas. Journal of Fluid Mechanics, 2002, 454, 145-201.	3.4	45
82	Moderate-Reynolds-number flow in a wall-bounded porous medium. Journal of Fluid Mechanics, 2002, 453, 315-344.	3.4	28
83	The first effects of fluid inertia on flows in ordered and random arrays of spheres. Journal of Fluid Mechanics, 2001, 448, 213-241.	3.4	352
84	Moderate-Reynolds-number flows in ordered and random arrays of spheres. Journal of Fluid Mechanics, 2001, 448, 243-278.	3.4	419
85	Rheology of non-Brownian rigid fiber suspensions with adhesive contacts. Journal of Rheology, 2001, 45, 369-382.	2.6	99
86	Measurements of the average properties of a suspension of bubbles rising in a vertical channel. Journal of Fluid Mechanics, 2001, 429, 307-342.	3.4	125
87	Dynamics of droplet rebound from a weakly deformable gasâ€"liquid interface. Physics of Fluids, 2001, 13, 3526-3532.	4.0	17
88	INERTIAL EFFECTS IN SUSPENSION AND POROUS-MEDIA FLOWS. Annual Review of Fluid Mechanics, 2001, 33, 619-647.	25.0	314
89	Particle clustering due to hydrodynamic interactions. Physics of Fluids, 2000, 12, 964-970.	4.0	69
90	Particle pressure and marginal stability limits for a homogeneous monodisperse gas-fluidized bed: kinetic theory and numerical simulations. Journal of Fluid Mechanics, 1999, 400, 229-263.	3.4	214

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91	Hydrodynamic interactions between two equal spheres in a highly rarefied gas. Physics of Fluids, 1999, 11, 2772-2787.	4.0	12
92	Numerical simulations of a sphere settling through a suspension of neutrally buoyant fibres. Journal of Fluid Mechanics, 1999, 388, 355-388.	3.4	52
93	Electrical conductivity of isotropic fibre suspensions. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 1999, 455, 1923-1930.	2.1	5
94	Interfacial Tension at the Boundary Between Nematic and Isotropic Phases of a Hard Rod Solution. Macromolecules, 1999, 32, 219-226.	4.8	43
95	The inhomogeneous structure of a bidisperse sedimenting gasâ€"solid suspension. Physics of Fluids, 1999, 11, 3283-3305.	4.0	16
96	Hydrodynamic and boundary-layer dispersion in bidisperse porous media. Journal of Fluid Mechanics, 1999, 385, 359-379.	3.4	22
97	Interactions between contacting fibers. Physics of Fluids, 1998, 10, 2111-2113.	4.0	37
98	Turbulent coagulation of colloidal particles. Journal of Fluid Mechanics, 1998, 364, 81-113.	3.4	76
99	Observations of coagulation in isotropic turbulence. Journal of Fluid Mechanics, 1998, 371, 81-107.	3.4	33
100	Rheology of dense bubble suspensions. Physics of Fluids, 1997, 9, 1540-1561.	4.0	41
101	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. Physics of Fluids, 1997, 9, 3550-3565.	4.0	8
102	Lubrication flows between spherical particles colliding in a compressible non-continuum gas. Journal of Fluid Mechanics, 1997, 344, 245-269.	3.4	25
103	Observations of high Reynolds number bubbles interacting with a rigid wall. Physics of Fluids, 1997, 9, 44-56.	4.0	135
104	Moderate Reynolds number flows through periodic and random arrays of aligned cylinders. Journal of Fluid Mechanics, 1997, 349, 31-66.	3.4	237
105	Instability of Sedimenting Bidisperse Particle Gas Suspensions. Flow, Turbulence and Combustion, 1997, 58, 275-303.	0.2	6
106	Hydrodynamic diffusion near solid boundaries with applications to heat and mass transport into sheared suspensions and fixed-fibre beds. Journal of Fluid Mechanics, 1996, 318, 31.	3.4	13
107	Non-continuum lubrication flows between particles colliding in a gas. Journal of Fluid Mechanics, 1996, 313, 283-308.	3.4	61
108	Simple shear flows of dense gas-solid suspensions at finite Stokes numbers. Journal of Fluid Mechanics, 1996, 313, 309-341.	3.4	121

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109	Rheology of dilute suspensions of charged fibers. Physics of Fluids, 1996, 8, 2792-2807.	4.0	34
110	Isotropicâ€"nematic phase transitions in aqueous solutions of weakly charged, rodlike polyelectrolytes. Journal of Chemical Physics, 1996, 104, 359-374.	3.0	21
111	The effect of hydrodynamic interactions on the orientation distribution in a fiber suspension subject to simple shear flow. Physics of Fluids, 1995, 7, 487-506.	4.0	117
112	A model for orientational diffusion in fiber suspensions. Physics of Fluids, 1995, 7, 2086-2088.	4.0	95
113	Simple shear flows of dilute gasâ€"solid suspensions. Journal of Fluid Mechanics, 1995, 296, 211-245.	3.4	71
114	Numerical simulations of the effect of hydrodynamic interactions on diffusivities of integral membrane proteins. Journal of Fluid Mechanics, 1995, 293, 147-180.	3.4	70
115	Numerical and theoretical solutions for a drop spreading below a free fluid surface. Journal of Fluid Mechanics, 1995, 287, 251-278.	3.4	38
116	Kinetic theory for a mobile adsorbed gas. Journal of Chemical Physics, 1994, 101, 4391-4406.	3.0	4
117	The extensional viscosity and effective thermal conductivity of a dispersion of aligned disks. Physics of Fluids, 1994, 6, 1955-1962.	4.0	6
118	Hydrodynamic diffusion in a suspension of sedimenting point particles with periodic boundary conditions. Physics of Fluids, 1994, 6, 2894-2900.	4.0	46
119	Collisions of slightly deformable, high Reynolds number bubbles with shortâ€range repulsive forces. Physics of Fluids, 1994, 6, 2591-2605.	4.0	47
120	The effect of hydrodynamic interactions on the tracer and gradient diffusion of integral membrane proteins in lipid bilayers. Journal of Fluid Mechanics, 1994, 258, 167-190.	3.4	31
121	Simple shear flow of a suspension of fibres in a dilute polymer solution at high Deborah number. Journal of Fluid Mechanics, 1993, 252, 187-207.	3.4	41
122	Properties of a bidisperse particleâ€"gas suspension Part 1. Collision time small compared with viscous relaxation time. Journal of Fluid Mechanics, 1993, 247, 623-641.	3.4	20
123	Hydrodynamic diffusion in dilute sedimenting suspensions at moderate Reynolds numbers. Physics of Fluids A, Fluid Dynamics, 1993, 5, 1141-1155.	1.6	42
124	Hydrodynamic, translational diffusion in fiber suspensions subject to simple shear flow. Physics of Fluids A, Fluid Dynamics, 1993, 5, 849-862.	1.6	34
125	The rate of coalescence in a suspension of high Reynolds number, low Weber number bubbles. Physics of Fluids A, Fluid Dynamics, 1993, 5, 1135-1140.	1.6	19
126	The effect of hydrodynamic interactions on the average properties of a bidisperse suspension of high Reynolds number, low Weber number bubbles. Physics of Fluids A, Fluid Dynamics, 1993, 5, 1123-1134.	1.6	27

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127	Extensional flow of a suspension of fibers in a dilute polymer solution. Physics of Fluids A, Fluid Dynamics, 1992, 4, 1070-1073.	1.6	6
128	Averagedâ€equation and diagrammatic approximations to the average concentration of a tracer dispersed by a Gaussian random velocity field. Physics of Fluids A, Fluid Dynamics, 1992, 4, 887-894.	1.6	20
129	Anomalous diffusion of momentum in a dilute gasâ€"solid suspension. Physics of Fluids A, Fluid Dynamics, 1992, 4, 1337-1346.	1.6	7
130	Polymer stretch in dilute fixed beds of fibres or spheres. Journal of Fluid Mechanics, 1992, 244, 17.	3.4	20
131	The resistivity and mobility functions for a model system of two equal-sized proteins in a lipid bilayer. Journal of Fluid Mechanics, 1992, 243, 679.	3.4	27
132	Observations of fibre orientation in simple shear flow of semi-dilute suspensions. Journal of Fluid Mechanics, 1992, 238, 277-296.	3.4	179
133	Screening in sedimenting suspensions. Journal of Fluid Mechanics, 1991, 224, 275-303.	3.4	142
134	Observations of axisymmetric tracer particle orientation during flow through a dilute fixed bed of fibers. Physics of Fluids A, Fluid Dynamics, 1991, 3, 2516-2528.	1.6	12
135	The AC Electrical Impedance of a Fractal Boundary to an Electrolytic Solution. Journal of the Electrochemical Society, 1991, 138, 475-484.	2.9	14
136	Orientational dispersion of fibers in extensional flows. Physics of Fluids A, Fluid Dynamics, 1990, 2, 1077-1093.	1.6	44
137	Kinetic theory for a monodisperse gasâ€"solid suspension. Physics of Fluids A, Fluid Dynamics, 1990, 2, 1711-1723.	1.6	193
138	The average rotation rate of a fiber in the linear flow of a semidilute suspension. Physics of Fluids A, Fluid Dynamics, 1990, 2, 2093-2102.	1.6	41
139	On hydrodynamic diffusion and drift in sheared suspensions. Physics of Fluids A, Fluid Dynamics, 1989, 1, 1742-1745.	1.6	20
140	The instability of a dispersion of sedimenting spheroids. Journal of Fluid Mechanics, 1989, 209, 521-542.	3.4	134
141	The effect of order on dispersion in porous media. Journal of Fluid Mechanics, 1989, 200, 173-188.	3.4	128
142	The combined effects of hydrodynamic interactions and Brownian motion on the orientation of particles flowing through fixed beds. Physics of Fluids, 1988, 31, 2769.	1.4	13
143	A non-local description of advection-diffusion with application to dispersion in porous media. Journal of Fluid Mechanics, 1987, 180, 387.	3.4	156