Viswanathan Kumaran

List of Publications by Year
in descending order

107 papers	2,075 citations	186265 28 h-index	302126 39 g-index
108 all docs	108 docs citations	108 times ranked	1077 citing authors

#	Article	IF	Citations
1	Spontaneous Growth of Fluctuations in the Viscous Flow of a Fluid past a Soft Interface. Physical Review Letters, 2000, 84, 3310-3313.	7.8	77
2	Flow induced instability of the interface between a fluid and a gel at low Reynolds number. Journal De Physique II, 1994, 4, 893-911.	0.9	74
3	Stability of the viscous flow of a fluid through a flexible tube. Journal of Fluid Mechanics, 1995, 294, 259-281.	3.4	71
4	The constitutive relation for the granular flow of rough particles, and its application to the flow down an inclined plane. Journal of Fluid Mechanics, 2006, 561, 1.	3.4	59
5	Structure and rheology of the defect-gel states of pure and particle-dispersed lyotropic lamellar phases. European Physical Journal B, 1999, 12, 269-276.	1.5	55
6	Dense granular flow down an inclined plane: from kinetic theory to granular dynamics. Journal of Fluid Mechanics, 2008, 599, 121-168.	3.4	51
7	Experimental study of the instability of the viscous flow past a flexible surface. Physics of Fluids, 2002, 14, 775-780.	4.0	50
8	A multifold reduction in the transition Reynolds number, and ultra-fast mixing, in a micro-channel due to a dynamical instability induced by a soft wall. Journal of Fluid Mechanics, 2013, 727, 407-455.	3.4	50
9	Stability of wall modes in fluid flow past a flexible surface. Physics of Fluids, 2002, 14, 2324.	4.0	49
10	Constitutive relations and linear stability of a sheared granular flow. Journal of Fluid Mechanics, 2004, 506, 1-43.	3.4	48
11	A dynamical instability due to fluidâ€“wall coupling lowers the transition Reynolds number in the flow through a flexible tube. Journal of Fluid Mechanics, 2012, 705, 322-347.	3.4	48
12	Stability of the flow of a fluid through a flexible tube at intermediate Reynolds number. Journal of Fluid Mechanics, 1998, 357, 123-140.	3.4	42
13	Magnetorheological fluids containing rod-shaped lithiumâ€“zinc ferrite particles: the steady-state shear response. Soft Matter, 2018, 14, 5407-5419.	2.7	41
14	Stability of non-parabolic flow in a flexible tube. Journal of Fluid Mechanics, 1999, 395, 211-236.	3.4	40
15	Synthesis and Characterization of Au@Pt Nanoparticles with Ultrathin Platinum Overlayers. Journal of Physical Chemistry C, 2015, 119, 5982-5987.	3.1	40
16	Stability of fluid flow in a flexible tube to non-axisymmetric disturbances. Journal of Fluid Mechanics, 2000, 407, 291-314.	3.4	39
17	Stability of inviscid flow in a flexible tube. Journal of Fluid Mechanics, 1996, 320, 1.	3.4	36
18	Stability of wall modes in a flexible tube. Journal of Fluid Mechanics, 1998, 362, 1-15.	3.4	36

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19	Kinetic theory for a vibro-fluidized bed. Journal of Fluid Mechanics, 1998, 364, 163-185.	3.4	35
20	Dynamics of dense sheared granular flows. Part 1. Structure and diffusion. Journal of Fluid Mechanics, 2009, 632, 109-144.	3.4	33
21	Neurogenesis-on-Chip: Electric field modulated transdifferentiation of human mesenchymal stem cell and mouse muscle precursor cell coculture. Biomaterials, 2020, 226, 119522.	11.4	32
22	Stability of the flow of a fluid through a flexible tube at high Reynolds number. Journal of Fluid Mechanics, 1995, 302, 117-139.	3.4	31
23	Instabilities due to Charge-Density-Curvature Coupling in Charged Membranes. Physical Review Letters, 2000, 85, 4996-4999.	7.8	31
24	Weakly nonlinear stability of viscous flow past a flexible surface. Journal of Fluid Mechanics, 2001, 434, 337-354.	3.4	30
25	Dynamics of dense sheared granular flows. Part II. The relative velocity distributions. Journal of Fluid Mechanics, 2009, 632, 145-198.	3.4	29
26	The generalized Onsager model for the secondary flow in a high-speed rotating cylinder. Journal of Fluid Mechanics, 2011, 686, 109-159.	3.4	28
27	Transition due to base roughness in a dense granular flow down an inclined plane. Physics of Fluids, 2012, 24, .	4.0	28
28	Ultra-fast microfluidic mixing by soft-wall turbulence. Chemical Engineering Science, 2016, 149, 156-168.	3.8	28
29	Effect of viscoelasticity on the soft-wall transition and turbulence in a microchannel. Journal of Fluid Mechanics, 2017, 812, 1076-1118.	3.4	28
30	Asymptotic analysis of wall modes in a flexible tube revisited. European Physical Journal B, 2001, 19, 607-622.	1.5	27
31	Velocity Autocorrelations and Viscosity Renormalization in Sheared Granular Flows. Physical Review Letters, 2006, 96, 258002.	7.8	27
32	Weakly nonlinear analysis of viscous instability in flow past a neo-Hookean surface. Physical Review E, 2008, 77, 056303.	2.1	27
33	The effect of base roughness on the development of a dense granular flow down an inclined plane. Physics of Fluids, 2013, 25, .	4.0	26
34	Effect of magnetic dipolar interactions and size dispersity on the origin of steady state magnetomechanical response in bidisperse Mnâ€"Zn ferrite spherical particle based magnetorheological fluids. New Journal of Chemistry, 2019, 43, 9969-9979.	2.8	25
35	Synthesis of highly magnetic Mn-Zn ferrite (Mn0.7Zn0.3Fe2O4) ceramic powder and its use in smart magnetorheological fluid. Rheologica Acta, 2019, 58, 273-280.	2.4	25
36	Verifying scalings for bending rigidity of bilayer membranes using mesoscale models. Soft Matter, 2011, 7, 3963.	2.7	24

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37	Dense granular flow down an inclined plane: A comparison between the hard particle model and soft particle simulations. Physics of Fluids, 2010, 22, .	4.0	23
38	Fast decay of the velocity autocorrelation function in dense shear flow of inelastic hard spheres. Europhysics Letters, 2008, 84, 64003.	2.0	20
39	Particle dynamics in a turbulent particleâ€"gas suspension at high Stokes number. Part 1. Velocity and acceleration distributions. Journal of Fluid Mechanics, 2010, 646, 59-90.	3.4	20
40	A cartridge based Point-of-Care device for complete blood count. Scientific Reports, 2019, 9, 18583.	3.3	18
41	Effect of surface charges on the curvature moduli of a membrane. Physical Review E, 2001, 64, 051922.	2.1	17
42	Dynamics of a dilute sheared inelastic fluid. I. Hydrodynamic modes and velocity correlation functions. Physical Review E, 2009, 79, 011301.	2.1	17
43	Stability of the plane shear flow of dilute polymeric solutions. Physics of Fluids, 2009, 21, .	4.0	17
44	Disruption of turbulence due to particle loading in a dilute gasâ€"particle suspension. Journal of Fluid Mechanics, 2020, 889, .	3.4	17
45	Weakly nonlinear stability analysis of a flow past a neo-Hookean solid at arbitrary Reynolds numbers. Physics of Fluids, 2008, 20, .	4.0	16
46	Velocity distribution function for a dilute granular material in shear flow. Journal of Fluid Mechanics, 1997, 340, 319-341.	3.4	15
47	Electrohydrodynamic instability of a charged membrane. Physical Review E, 2001, 64, 011911.	2.1	15
48	Stability of the flow of a viscoelastic fluid past a deformable surface in the low Reynolds number limit. Physics of Fluids, 2007, 19, .	4.0	15
49	Particle dynamics in a turbulent particleâ€"gas suspension at high Stokes number. Part 2. The fluctuating-force model. Journal of Fluid Mechanics, 2010, 646, 91-125.	3.4	15
50	The generalized Onsager model for a binary gas mixture. Journal of Fluid Mechanics, 2014, 753, 307-359.	3.4	15
51	Stability of the flow in a soft tube deformed due to an applied pressure gradient. Physical Review E, 2015, 91, 043001.	2.1	15
52	Experimental studies on the flow through soft tubes and channels. Sadhana - Academy Proceedings in Engineering Sciences, 2015, 40, 911-923.	1.3	15
53	Biophysical implications of Maxwell stress in electric field stimulated cellular microenvironment on biomaterial substrates. Biomaterials, 2019, 209, 54-66.	11.4	15
54	Kinetic Model for Sheared Granular Flows in the High Knudsen Number Limit. Physical Review Letters, 2005, 95, 108001.	7.8	14

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55	Dynamics of a dilute sheared inelastic fluid. II. The effect of correlations. Physical Review E, 2009, 79, 011302.	2.1	14
56	Dynamics of sheared inelastic dumbbells. Journal of Fluid Mechanics, 2010, 660, 475-498.	3.4	14
57	Particle dynamics in the channel flow of a turbulent particleâ€"gas suspension at high Stokes number. Part 1. DNS and fluctuating force model. Journal of Fluid Mechanics, 2011, 687, 1-40.	3.4	14
58	After transition in a soft-walled microchannel. Journal of Fluid Mechanics, 2015, 780, 649-686.	3.4	14
59	Stability of fluid flow past a membrane. Journal of Fluid Mechanics, 2002, 472, 29-50.	3.4	13
60	Granular flow of rough particles in the high-Knudsen-number limit. Journal of Fluid Mechanics, 2006, 561, 43.	3.4	12
61	Multiscale modeling of lamellar mesophases. Journal of Chemical Physics, 2009, 130, 114907.	3.0	12
62	Dense shallow granular flows. Journal of Fluid Mechanics, 2014, 756, 555-599.	3.4	12
63	Controlled Shear Flow Directs Osteogenesis on UHMWPE-Based Hybrid Nanobiocomposites in a Custom-Designed PMMA Microfluidic Device. ACS Applied Bio Materials, 2018, 1, 414-435.	4.6	12
64	Droplet interaction in the spinodal decomposition of a fluid. Journal of Chemical Physics, 1998, 109, 7644-7648.	3.0	11
65	Reprogramming the Stem Cell Behavior by Shear Stress and Electric Field Stimulation: Lab-on-a-Chip Based Biomicrofluidics in Regenerative Medicine. Regenerative Engineering and Translational Medicine, 2019, 5, 99-127.	2.9	11
66	Stability and the transition to turbulence in the flow through conduits with compliant walls. Journal of Fluid Mechanics, 2021, 924, .	3.4	11
67	Effect of tangential interface motion on the viscous instability in fluid flow past flexible surfaces. European Physical Journal B, 2001, 23, 533-550.	1.5	10
68	Stability of a sheared particle suspension. Physics of Fluids, 2003, 15, 3625-3637.	4.0	10
69	Particle dynamics in the channel flow of a turbulent particleâ€"gas suspension at high Stokes number. Part 2. Comparison of fluctuating force simulations and experiments. Journal of Fluid Mechanics, 2011, 687, 41-71.	3.4	10
70	Hydrodynamic Stability of Flow Through Compliant Channels and Tubes. Fluid Mechanics and Its Applications, 2003, , 95-118.	0.2	10
71	Hydrodynamic modes of a sheared granular flow from the Boltzmann and Navierâ€"Stokes equations. Physics of Fluids, 2001, 13, 2258-2268.	4.0	9
72	A novel approach to computing the orientation moments of spheroids in simple shear flow at arbitrary PÃ©clet number. Physics of Fluids, 2002, 14, 75-84.	4.0	9

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73	Mesoscale description of an asymmetric lamellar phase. Journal of Chemical Physics, 2009, 130, 224905.	3.0	9
74	Shear alignment of a disordered lamellar mesophase. Physical Review E, 2011, 83, 031501.	2.1	9
75	Effect of base dissipation on the granular flow down an inclined plane. Granular Matter, 2012, 14, 209-213.	2.2	8
76	Effect of particle stiffness on contact dynamics and rheology in a dense granular flow. Physical Review E, 2018, 97, 012902.	2.1	8
77	Asymptotic analysis of wall modes in a flexible tube. European Physical Journal B, 1998, 4, 519-527.	1.5	7
78	Coarsening of random interfaces in the spinodal decomposition of a binary fluid. Journal of Chemical Physics, 1998, 108, 3038-3044.	3.0	7
79	Stability of the viscous flow of a polymeric fluid past a flexible surface. Physics of Fluids, 2007, 19, 034102.	4.0	7
80	Wall-mode instability in plane shear flow of viscoelastic fluid over a deformable solid. Physical Review E, 2015, 91, 023007.	2.1	7
81	Structure-rheology relationship in a sheared lamellar fluid. Physical Review E, 2016, 93, 032609.	2.1	7
82	Effect of convective transport on droplet spinodal decomposition in fluids. Journal of Chemical Physics, 1998, 109, 2437-2441.	3.0	6
83	Spontaneous motion of droplets during the demixing transition in binary fluids. Journal of Chemical Physics, 2000, 112, 10984-10991.	3.0	6
84	Effect of ultra-fast mixing in a microchannel due to a soft wall on the room temperature synthesis of gold nanoparticles. Sadhana - Academy Proceedings in Engineering Sciences, 2015, 40, 973-983.	1.3	6
85	Effect of base topography on dynamics and transition in a dense granular flow. Journal of Fluid Mechanics, 2017, 832, 600-640.	3.4	6
86	Comparison of the compressible class of models and non-local models with the discrete element method for steady fully developed flow of cohesionless granular materials through a vertical channel. Journal of Fluid Mechanics, 2022, 937, .	3.4	6
87	Dynamics of edge dislocations in a sheared lamellar mesophase. Journal of Chemical Physics, 2013, 139, 134907.	3.0	5
88	Transitions to different kinds of turbulence in a channel with soft walls. Journal of Fluid Mechanics, 2017, 822, 267-306.	3.4	5
89	Rheology of a suspension of conducting particles in a magnetic field. Journal of Fluid Mechanics, 2019, 871, 139-185.	3.4	5
90	Stability of fluid flow past a membrane. European Physical Journal B, 1998, 2, 259-266.	1.5	4

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91	A suspension of conducting particles in a magnetic field â€“ the particle stress. Journal of Fluid Mechanics, 2020, 901, .	3.4	4
92	Bifurcations in the dynamics of a dipolar spheroid in a shear flow subjected to an external field. Physical Review Fluids, 2020, 5, .	2.5	4
93	Effect of fluid flow on the fluctuations at the surface of an elastic medium. Journal of Chemical Physics, 1995, 102, 3452-3460.	3.0	3
94	Effect of dynamical asymmetry on the viscosity of a random copolymer melt. Journal of Chemical Physics, 1996, 104, 3120-3133.	3.0	3
95	Fluctuation-dissipation relation for nonlinear Langevin equations. Physical Review E, 2011, 83, 041126.	2.1	3
96	System size dependence of the structure and rheology in a sheared lamellar liquid crystalline medium. Journal of Chemical Physics, 2016, 145, 244901.	3.0	3
97	Stability of oscillatory flows past compliant surfaces. European Physical Journal B, 2004, 41, 135-145.	1.5	2
98	Dynamics of polarizable spheroid in a shear flow subjected to a parallel magnetic field. Physical Review Fluids, 2021, 6, .	2.5	2
99	Moving efficiently through a crowd: A nature-inspired traffic rule. Physical Review E, 2021, 104, 054609.	2.1	2
100	Microscopic analysis of the coarsening of an interface in the spinodal decomposition of a binary fluid. Journal of Chemical Physics, 1998, 109, 3240-3244.	3.0	1
101	Josiah Willard Gibbs. Resonance, 2007, 12, 4-11.	0.3	1
102	Steady and rotating states of a polarizable spheroid subjected to a magnetic field and a shear flow. Physical Review Fluids, 2021, 6, .	2.5	1
103	Cessation of a dense granular flow down an inclined plane. Physical Review Fluids, 2019, 4, .	2.5	1
104	Effect of Convection on Domain Growth During Demixing Transitions in Fluids. Phase Transitions, 2002, 75, 339-352.	1.3	0
105	Rheology of Dense Sheared Granular Flows. AIP Conference Proceedings, 2008, , .	0.4	0
106	The hard-particle model for a dense granular flow down an inclined plane. , 2010, , .		0
107	The effect of inter-particle hydrodynamic and magnetic interactions in a magnetorheological fluid. Journal of Fluid Mechanics, 2022, 944, .	3.4	0