Berend van Wachem

List of Publications by Year
in descending order

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94 papers	3,253 citations	147801 31 h-index	161849 54 g-index
97 all docs	97 docs citations	97 times ranked	2667 citing authors

#	Article	IF	Citations
1	Comparative analysis of CFD models of dense gasâ€“solid systems. AICHE Journal, 2001, 47, 1035-1051.	3.6	432
2	Derivation of drag and lift force and torque coefficients for non-spherical particles in flows. International Journal of Multiphase Flow, 2012, 39, 227-239.	3.4	287
3	Volume of fluid methods for immiscible-fluid and free-surface flows. Chemical Engineering Journal, 2008, 141, 204-221.	12.7	232
4	Derivation and validation of a novel implicit second-order accurate immersed boundary method. Journal of Computational Physics, 2008, 227, 6660-6680.	3.8	108
5	CFD modeling of gas-fluidized beds with a bimodal particle mixture. AICHE Journal, 2001, 47, 1292-1302.	3.6	90
6	Fully-Coupled Balanced-Force VOF Framework for Arbitrary Meshes with Least-Squares Curvature Evaluation from Volume Fractions. Numerical Heat Transfer, Part B: Fundamentals, 2014, 65, 218-255.	0.9	84
7	Modeling the thermochemical degradation of biomass inside a fast pyrolysis fluidized bed reactor. AICHE Journal, 2012, 58, 3030-3042.	3.6	80
8	Modeling particle-laden flows: A research outlook. AICHE Journal, 2004, 50, 2638-2645.	3.6	79
9	Numerical time-step restrictions as a result of capillary waves. Journal of Computational Physics, 2015, 285, 24-40.	3.8	77
10	Large Eddy Simulations of turbulent particle-laden channel flow. International Journal of Multiphase Flow, 2013, 54, 65-75.	3.4	74
11	Modelling of gasâ€“solid turbulent channel flow with non-spherical particles with large Stokes numbers. International Journal of Multiphase Flow, 2015, 68, 80-92.	3.4	66
12	CFD simulation of the high shear mixing process using kinetic theory of granular flow and frictional stress models. Chemical Engineering Science, 2008, 63, 2188-2197.	3.8	56
13	Compressive VOF method with skewness correction to capture sharp interfaces on arbitrary meshes. Journal of Computational Physics, 2014, 279, 127-144.	3.8	55
14	Derivation, simulation and validation of a cohesive particle flow CFD model. AICHE Journal, 2008, 54, 9-19.	3.6	53
15	A novel Quaternion integration approach for describing the behaviour of non-spherical particles. Acta Mechanica, 2013, 224, 3091-3109.	2.1	53
16	Experimental validation of 3-D lagrangian VOF model: Bubble shape and rise velocity. AICHE Journal, 2002, 48, 2744-2753.	3.6	52
17	Optimal placement of probes for dynamic pressure measurements in large-scale fluidized beds. Powder Technology, 2004, 139, 264-276.	4.2	42
18	Four-way coupled simulations of small particles in turbulent channel flow: The effects of particle shape and Stokes number. Physics of Fluids, 2015, 27, .	4.0	42

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19	Residence time distributions of different size particles in the spray zone of a Wurster fluid bed studied using DEM-CFD. Powder Technology, 2015, 280, 124-134.	4.2	42
20	Fully-coupled pressure-based finite-volume framework for the simulation of fluid flows at all speeds in complex geometries. Journal of Computational Physics, 2017, 346, 91-130.	3.8	42
21	Comprehensive assessment of the accuracy of CFD-DEM simulations of bubbling fluidized beds. Powder Technology, 2019, 343, 145-158.	4.2	42
22	Computational validation of the scaling rules for fluidized beds. Powder Technology, 2006, 163, 32-40.	4.2	41
23	Conservative finite-volume framework and pressure-based algorithm for flows of incompressible, ideal-gas and real-gas fluids at all speeds. Journal of Computational Physics, 2020, 409, 109348.	3.8	39
24	Numerical simulation and validation of dilute turbulent gasâ€“particle flow with inelastic collisions and turbulence modulation. Powder Technology, 2008, 182, 294-306.	4.2	38
25	Simulation of dry powder inhalers: Combining microâ€scale, mesoâ€scale and macroâ€scale modeling. AICHE Journal, 2017, 63, 501-516.	3.6	38
26	Pressure-based algorithm for compressible interfacial flows with acoustically-conservative interface discretisation. Journal of Computational Physics, 2018, 367, 192-234.	3.8	38
27	Direct numerical simulation of ellipsoidal particles in turbulent channel flow. Acta Mechanica, 2013, 224, 2331-2358.	2.1	36
28	The influence of surface roughness and adhesion on particle rolling. Powder Technology, 2017, 312, 321-333.	4.2	36
29	An accurate forceâ€“displacement law for the modelling of elasticâ€–plastic contacts in discrete element simulations. Powder Technology, 2015, 282, 2-9.	4.2	35
30	Unified formulation of the momentum-weighted interpolation for collocated variable arrangements. Journal of Computational Physics, 2018, 375, 177-208.	3.8	35
31	Dual optical fibre measurements of the particle concentration in gas/solid flows. Experiments in Fluids, 2003, 35, 572-579.	2.4	33
32	Ethanol droplet evaporation: Effects of ambient temperature, pressure and fuel vapor concentration. International Journal of Heat and Mass Transfer, 2019, 143, 118472.	4.8	32
33	Eulerian-Eulerian prediction of dilute turbulent gas-particle flow in a backward-facing step. International Journal of Heat and Fluid Flow, 2009, 30, 452-461.	2.4	30
34	Comparative study of mass-conserving interface capturing frameworks for two-phase flows with surface tension. International Journal of Multiphase Flow, 2014, 61, 37-47.	3.4	29
35	TVD differencing on three-dimensional unstructured meshes with monotonicity-preserving correction of mesh skewness. Journal of Computational Physics, 2015, 298, 466-479.	3.8	29
36	Evaluation of Toxicity and Neural Uptake In Vitro and In Vivo of Superparamagnetic Iron Oxide Nanoparticles. International Journal of Molecular Sciences, 2018, 19, 2613.	4.1	29

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37	The Impact of Large Mobile Air Purifiers on Aerosol Concentration in Classrooms and the Reduction of Airborne Transmission of SARS-CoV-2. International Journal of Environmental Research and Public Health, 2021, 18, 11523.	2.6	29
38	A detailed characterization of BaMgAl10O17:Eu phosphor as a thermal history sensor for harsh environments. Sensors and Actuators A: Physical, 2015, 234, 339-345.	4.1	28
39	Artificial viscosity model to mitigate numerical artefacts at fluid interfaces with surface tension. Computers and Fluids, 2017, 143, 59-72.	2.5	26
40	Ability of a pore network model to predict fluid flow and drag in saturated granular materials. Computers and Geotechnics, 2019, 110, 344-366.	4.7	26
41	CFD modeling of the Wurster bed coater. AICHE Journal, 2009, 55, 2578-2590.	3.6	25
42	Estimation of curvature from volume fractions using parabolic reconstruction on two-dimensional unstructured meshes. Journal of Computational Physics, 2017, 351, 271-294.	3.8	23
43	Towards quantitative prediction of the performance of dry powder inhalers by multi-scale simulations and experiments. International Journal of Pharmaceutics, 2018, 547, 31-43.	5.2	23
44	New forcing scheme to sustain particle-laden homogeneous and isotropic turbulence. Physics of Fluids, 2013, 25, .	4.0	22
45	A numerical study exploring the effect of particle properties on the fluidization of adhesive particles. AICHE Journal, 2016, 62, 1467-1477.	3.6	22
46	An immersed boundary method for incompressible flows in complex domains. Journal of Computational Physics, 2019, 378, 770-795.	3.8	22
47	Lateral solid mixing in gas-fluidized beds: CFD and DEM studies. Chemical Engineering Research and Design, 2016, 114, 148-161.	5.6	21
48	Computing drag and interactions between fluid and polydisperse particles in saturated granular materials. Computers and Geotechnics, 2020, 117, 103210.	4.7	20
49	A multi-scale approach to simulate atomisation processes. International Journal of Multiphase Flow, 2019, 119, 194-216.	3.4	19
50	Analysis, modelling and simulation of the fragmentation of agglomerates. Chemical Engineering Science, 2020, 227, 115944.	3.8	19
51	Characterization of fluidized nanoparticle agglomerates by using adhesive CFD-DEM simulation. Powder Technology, 2016, 304, 198-207.	4.2	18
52	Gas flow distribution and solid dynamics in a thin rectangular pressurized fluidized bed using CFD-DEM simulation. Powder Technology, 2020, 373, 369-383.	4.2	17
53	Multiscale modeling and validation of the flow around Taylor bubbles surrounded with small dispersed bubbles using a coupled VOF-DBM approach. International Journal of Multiphase Flow, 2021, 141, 103673.	3.4	17
54	On the convolution of fluid properties and surface force for interface capturing methods. International Journal of Multiphase Flow, 2013, 54, 61-64.	3.4	15

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55	DISCRETE ELEMENT METHOD FOR MULTISCALE MODELING. Journal of Multiscale Modeling, 2010, 02, 147-162.	1.1	14
56	Two-fluid modeling of cratering in a particle bed by a subsonic turbulent jet. Powder Technology, 2017, 318, 68-82.	4.2	14
57	Dissipation and inter-scale transfer in fully coupled particle and fluid motions in homogeneous isotropic forced turbulence. International Journal of Heat and Fluid Flow, 2017, 67, 74-85.	2.4	14
58	Major effects on blood-retina barrier passage by minor alterations in design of polybutylcyanoacrylate nanoparticles. Journal of Drug Targeting, 2019, 27, 338-346.	4.4	14
59	Modeling Acoustic Cavitation Using a Pressure-Based Algorithm for Polytropic Fluids. Fluids, 2020, 5, 69.	1.7	14
60	Capillary waves with surface viscosity. Journal of Fluid Mechanics, 2018, 847, 644-663.	3.4	12
61	Design of an Industrial-Size Airlift Loop Redox Cycle (ALRC) Reactor for Catalytic Alcohol Oxidation and Catalyst Reactivation. Industrial & Engineering Chemistry Research, 2003, 42, 4174-4185.	3.7	10
62	An immersed boundary method for flows with dense particle suspensions. Acta Mechanica, 2019, 230, 485-515.	2.1	9
63	Gene therapy with caspase-3 small interfering RNA-nanoparticles is neuroprotective after optic nerve damage. Neural Regeneration Research, 2021, 16, 2534.	3.0	9
64	Modeling of interfacial mass transfer based on a single-field formulation and an algebraic VOF method considering non-isothermal systems and large volume changes. Chemical Engineering Science, 2022, 247, 116855.	3.8	9
65	Experimental and numerical investigation of particle transport in a horizontal pipe. AICHE Journal, 2005, 51, 3101-3108.	3.6	8
66	Effect of Drag Models on Residence Time Distributions of Particles in a Wurster Fluidized Bed: a DEM-CFD Study. KONA Powder and Particle Journal, 2016, 33, 264-277.	1.7	8
67	The Effect of the Presence of Very Cohesive Geldart C Ultra-Fine Particles on the Fluidization of Geldart A Fine Particle Beds. Processes, 2019, 7, 35.	2.8	8
68	Particle dynamics investigation by means of shadow imaging inside an air separator. Chemical Engineering Science, 2019, 195, 312-324.	3.8	8
69	Surface Reconstruction from Discrete Indicator Functions. IEEE Transactions on Visualization and Computer Graphics, 2019, 25, 1629-1635.	4.4	8
70	Numerical Investigation and Experimental Comparison of the Gas Dynamics in a Highly Underexpanded Confined Real Gas Jet. Flow, Turbulence and Combustion, 2019, 103, 141-173.	2.6	7
71	Euler-Lagrange modelling of dilute particle-laden flows with arbitrary particle-size to mesh-spacing ratio. Journal of Computational Physics: X, 2020, 8, 100078.	0.7	7
72	Transient structures in rupturing thin films: Marangoni-induced symmetry-breaking pattern formation in viscous fluids. Science Advances, 2020, 6, eabb0597.	10.3	7

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73	Quantifying the errors of the particle-source-in-cell Euler-Lagrange method. International Journal of Multiphase Flow, 2021, 135, 103535.	3.4	7
74	Characterizing Lagrangian particle dynamics in decaying homogeneous isotropic turbulence using proper orthogonal decomposition. Physics of Fluids, 2022, 34, .	4.0	7
75	Development of an optical thermal history coating sensor based on the oxidation of a divalent rare earth ion phosphor. Measurement Science and Technology, 2016, 27, 115103.	2.6	6
76	Impact of dominant elastic to elastic-plastic millimeter-sized metal spheres with glass plates. Powder Technology, 2019, 356, 208-221.	4.2	5
77	The Effect of Very Cohesive Ultra-Fine Particles in Mixtures on Compression, Consolidation, and Fluidization. Processes, 2019, 7, 439.	2.8	5
78	On the numerical modelling of Corium spreading using Volume-of-Fluid methods. Nuclear Engineering and Design, 2019, 345, 216-232.	1.7	5
79	Fully Correlated Stochastic Inter-Particle Collision Model for Eulerâ€“Lagrange Gasâ€“Solid Flows. Flow, Turbulence and Combustion, 2020, 105, 935-963.	2.6	5
80	Breaching the capillary time-step constraint using a coupled VOF method with implicit surface tension. Journal of Computational Physics, 2022, 459, 111128.	3.8	5
81	Simulation of the Flow of Cohesive Particles in a Model Inhaler Using a CFD/DEM Model. Procedia Engineering, 2015, 102, 1526-1530.	1.2	4
82	Predicting laserâ€induced cavitation near a solid substrate. Proceedings in Applied Mathematics and Mechanics, 2021, 20, e202000007.	0.2	4
83	Marangoni effect on small-amplitude capillary waves in viscous fluids. Physical Review E, 2017, 96, 053110.	2.1	3
84	Experimental investigation of the grade efficiency of a zigzag separator. Powder Technology, 2020, 369, 38-52.	4.2	3
85	Modeling interfacial mass transfer of highly non-ideal mixtures using an algebraic VOF method. Chemical Engineering Science, 2022, 251, 117458.	3.8	3
86	Explicit predictorâ€“corrector method for nonlinear acoustic waves excited by a moving wave emitting boundary. Journal of Sound and Vibration, 2022, 527, 116814.	3.9	3
87	Comparison of measurement systems for free fall tests and calculations of the coefficient of restitution. Measurement Science and Technology, 2018, 29, 105403.	2.6	2
88	Strong shear flows release gaseous nuclei from surface micro- and nanobubbles. Physical Review Fluids, 2021, 6, .	2.5	2
89	Sensitivity analysis of Immersed Boundary Method simulations of fluid flow in dense polydisperse random grain packings. EPJ Web of Conferences, 2017, 140, 15006.	0.3	1
90	Height-function curvature estimation with arbitrary order on non-uniform Cartesian grids. Journal of Computational Physics: X, 2020, 7, 100060.	0.7	1

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91	Before the bubble ruptures. Physical Review Fluids, 2017, 2, .	2.5	1
92	Reducing volume and shape errors in front tracking by divergence-preserving velocity interpolation and parabolic fit vertex positioning. Journal of Computational Physics, 2022, 457, 111072.	3.8	1
93	A Unified Algorithm for Interfacial Flows with Incompressible and Compressible Fluids. Forum for Interdisciplinary Mathematics, 2022, , 179-208.	1.6	1
94	Reversal and Inversion of Capillary Jet Breakup at Large Excitation Amplitudes. Flow, Turbulence and Combustion, 0, , 1.	2.6	0