

Curriculum Vitae of Johan Padding

Personal details

Name: Dr J.T. (Johan) Padding
Gender: Male
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Education

- 1993 – 1998 MSc Applied Physics at University of Twente, Netherlands. Graduated Summa Cum Laude in Sept. 1998 with the highest average grades since the foundation of Applied Physics at the UT in 1968.
- 1997 Four month internship at Ångström Laboratory, Uppsala Universitet, Sweden (quantum chemistry).
- 1998 – 2003 PhD research on *Viscoelasticity of polymer melts: coarse-grained simulations* in the Chemical Physics group at the University of Twente, Netherlands. PhD degree obtained Summa Cum Laude on January 24, 2003 (Promotor: Prof. W.J. Briels).

Academic Career

- 2003 – 2006 Three year fellowship at University of Cambridge, United Kingdom, developing *hydrodynamic and multi-particle collision models for colloidal suspensions* (0.4 fte).
- 2003 – 2006 Consultant at Schlumberger Cambridge Research, United Kingdom, focussing on *viscoelasticity of wormlike micellar solutions and asphaltene aggregation / deposition* (0.6 fte).
- 2006 – 2010 Postdoc on a personal VENI grant at University of Twente, The Netherlands, focussing on *hydrodynamics of fiber networks and solid-fluid drag on rod-particles near walls* (1.0 fte).
- 2010 – 2011 Postdoc (EU FP7 collaborative project ‘Modify’) at Université de Louvain, Belgium, on *multiscale modelling & experiments of the flow behaviour of pressure sensitive adhesives* (1.0 fte).
- 2011 – present Associate Professor at the Multiscale Modelling of Multiphase Flows group at Eindhoven University of Technology, The Netherlands. Leading PhD projects on *gas-solid flow drag, direct simulation monte carlo simulations of droplets and particles in turbulent flows, models for triboelectrification, dissipative granular flow (including DPM, particle image and tracking velocimetry, single particle collision experiments), non-Newtonian fluid flow through porous media, fluidized particle flow in cylindrical geometries (TFM) and development of a multiparticle collision model for fluidized flows of non-spherical granular particles* (1.0 fte).

University teaching profile

Bachelor courses

- Physical Transport Phenomena (TU/e Bachelor course, responsible teacher)
- Introduction to Modelling (TU/e Bachelor course, developer, co-teacher)
- Introduction to Chemical Engineering and Chemistry (TU/e Bachelor course, tutorials)

Master courses

- Thermodynamics and Statistical Physics (UT Master course, developer, responsible teacher)
- Soft Matter (UT Master course, developer, responsible teacher)
- Particle-based Simulations (TU/e Master course, developer, responsible teacher)
- Advanced Computational Fluid and Plasma Dynamics (TU/e Master course, co-teacher)

PhD/PdEng courses

- Theory of Polymer Dynamics (PhD course, developer, responsible teacher)
- Statistical Mechanics of Liquids (PhD course, developer, responsible teacher)
- Particle-based Modelling Techniques (JMBC PhD course, developer, co-teacher)
- Numerical Methods for Chemical Engineers (OSPT PhD course, co-teacher)
- Multiphase Computational Fluid Dynamics (OSPT PhD course, co-teacher)

Guided MSc projects

1. Leon van Heijkamp (UT), Molecular Dynamics simulations of the viscosity of n-alkanes.
2. Alex Wilber (U Cambridge), Sedimentation of aggregating solids in a fluid.
3. Ainsley Mayhew Seers (U Cambridge), Theoretical aspects of Stochastic Rotation Dynamics.
4. Merijn Buyst (TU/e), 3D-PTV of granular chute flow.
5. Niek Steendijk (TU/e), Theory for the effect of salinity on the rheology of polyelectrolyte solutions.
6. Geert Eikelboom (TU/e), GPU-optimized Stochastic Rotation Dynamics simulations.
7. Filip Henrikson (U Lund, visiting TU/e), High-speed camera expts. of particle-droplet collisions.
8. Pavithra Jayaprakash (TU/e), 3D-Magnetic Particle Tracking of non-spherical particle fluidization.
9. Leander Boersma (TU/e), Quasi-2D PIV/DIA of non-spherical particle fluidization.
10. Jan Willem Oortwijn (TU/e), Dynamics of a gas bubble in a viscoelastic fluid (expt. & theory).
11. Pradyumna Krishnan (TU/e), Viscoelastic flooding of oil from microfluidic pillared arrays

Guided PDEng projects

1. Maryam Shazad (Janssen Pharmaceutica, Beerse): crystallisation modelling and expts.
2. Iria Kaperoni (Shell Technology Center Amsterdam): classified project.
3. Yulyanna Carrasco Febres (Unilever, Vlaardingen): butter crystallisation modelling.
4. Alessandro Lopez Perez (Shell Technology Center Amsterdam): classified project.

(Co-)guided PhD projects

1. Jimaan Sane (U Cambridge), Taylor dispersion of colloidal particles in microchannel flow.
2. Peter Kindt (UT), Coarse-grained simulations of entangled polymer melts.
3. Albert van der Noort (UT, Unilever), Coarse-grained simulations of core-shell particles.
4. Yuguo Tao (UT), Dynamics of rigid rod suspensions.
5. Amol Thakre (UT), Fluid-fluid phase separation and hydrodynamic instabilities
6. Igor Santos de Oliveira (UT), Flow-induced ordering of hard particles in viscoelastic fluids.
7. Li Liu (UT), Coarse-graining complex polymer architectures.
8. Daniel Reid (RU Groningen), Collective effects in high-Reynoldsnumber swimming organisms.
9. Kristina Milinkovic (U Utrecht), Hydrodynamics of sedimenting bidisperse mixtures of spheres.
10. Vikrant Verma (TU/e), Two-Fluid Model in cylindrical coordinates for fluidized gas-solid flows.
11. Sushil Shirsath (TU/e, Tata Steel), segregation of granular particles in rotating chute flows.
12. Sandip Pawar (TU/e, TetraPak), expts. & Direct Simulation Monte Carlo modelling of spray drying.
13. Yupeng Xu (TU/e), dynamics of large intruders impacting granular beds.
14. Martin Korevaar (TU/e), triboelectric charging of particles in long narrow ducts for dry separation.
15. Luuk Seelen (TU/e), dynamics of granular systems of non-spherical particles.
16. Lei Yang (TU/e), kinetic theory of granular flow for rough frictional spheres.
17. Shauvik De (TU/e, Shell), viscoelastic flow through porous media for enhanced oil recovery.
18. Rohit Maitri (TU/e, Shell), sedimentation and resuspension in solid-liquid flows.
19. Sathish Sanjeevi (TU/e), hydrodynamic forces on non-spherical particles (Lattice Boltzmann).
20. Giulia Finotello (TU/e, TetraPak), modelling & expts. of droplet-droplet collisions for spray drying.
21. Maxim Masterov (TU/e), highly parallelizable CFD methods for dense bubbly flows.
22. Satish Kamath (TU/e), Direct Simulation Monte Carlo methods applied to dense bubbly flows.
23. Harshil Patel (TU/e, Shell), Lagrangian Voronoi-cell-based methods for CFD applications.
24. Vinay Mahajan (TU/e), Wall effects on the orientation dynamics of non-spherical fluidized particles.
25. Ivan Mema (TU/e), Effect of aspect ratio on the dynamics of non-spherical fluidized particles.
26. Aditya Sengar (TU/e), Advection-diffusion-reaction mechanisms near corrugated walls.
27. Giulia Fiorucci (U Utrecht), Effect of hydrodynamics on confined colloidal crystallization dynamics.

I am or have been co-promotor of all PhD students except 1, 4-9, and 27.

Funding ID

Project title	Applicants	My role in this proposal	Funding agency	Date of granting	Positions
Viscoelasticity of wormlike micellar solutions	<u>Padding</u>	Written full proposal	EPSRC (UK)	02/2003	1
Microrheology of cell membranes and the cytoskeleton (VENI)	<u>Padding</u>	Written full proposal, defended in interview	NWO (NL)	12/2005	1
Directed and Controlled Self-Assembly of nano-Colloids	6 universities / institutes	Written sections pertaining to UT	FP7 (EU)	02/2008	2 for UT
Dynamics of Architecturally Complex Polymers (Dynacop)	12 universities / companies	Written sections pertaining to UT, financial negotiations	FP7 (EU)	11/2008	1 for UT
Nanomechanical Characterization of supramolecular protein structures using AFM	Bennink / <u>Padding</u>	Written full proposal, defended in interview	FOM-DPI (NL)	05/2009	2
Manufacturing techniques of organic solar cells (Energy Research grant – Long term)	ECN Petten / UT / Fujifilm	Written sections pertaining to UT	Agentschap NL (NL)	07/2010	1 for UT
ESMI: European Facilities for Soft Matter Technologies	12 universities / institutions	Written sections pertaining to UT, financial negotiations	FP7 (EU)	01/2011	1 for UT
Viscoelastic flow simulations of polymer flooding	<u>Padding</u> / Peters	Written full proposal	FOM-Shell(NL)	12/2012	1
Simulation of proppant transport for shale gas production	Peters / <u>Padding</u>	Written full proposal	FOM-Shell(NL)	10/2013	1
Multiscale modelling of dense gas-fluidized flows of non-spherical particles	<u>Padding</u>	Written full proposal	ERC CoG (EU)	11/2013	7
Flow structure formation and evolution of GLS reactive flows	<u>Padding</u> / Kuipers / Lohse / Sun	Written full proposal	NWO	11/2014	1
Influence of wall corrugation on mass transfer in liquid catalytic reactors	<u>Padding</u> / Kuipers / Van Santen	Written full proposal	NWO	11/2014	1
Hydrodynamics and interaction of self-assembly in droplet environment	Dijkstra / Filion / <u>Padding</u>	Written sections pertaining to TU/e	NWO	11/2014	1
Interfacial dynamics in multiphase flow through porous rock	Peters / <u>Padding</u>	Written full proposal	FOM-Shell(NL)	12/2014	1
Toepassing pyrolyse olie in een gemodificeerde dieselmotor	3 companies and TU/e	Written sections pertaining to TU/e	EZ (TKI)	12/2015	1 for TU/e

Total funding obtained through external grants (counting local positions in collaborative projects): 6.0 M€

Research focus

I have a long-time research focus on development of novel simulation models for complex flow problems, including validating experiments, with emphasis on non-Newtonian fluids and non-trivial particles (non-spherical, charged, attractive, viscoelastic).

My research is multiscale, ranging from molecular to granular, and interdisciplinary, connecting areas of physics, biology, chemistry and chemical engineering.

The most important contributions include (acknowledging collaborators in parentheses):

1. Systematic coarse-graining of interactions in polymer melts and wormlike micelles. The innovative method and algorithm for topology (entanglement) conservation are well-cited: 164 and 104 times for the two main papers. The work has led to an invited review paper and invited presentations at the International Liquid Matter conference (The Netherlands and Sweden), International Soft Matter Days (Germany), and the International Congress on Rheology (USA). (Briels, Boek)
2. Reintroduction of memory effects (transient forces) in super-coarse-grained particles. Several papers appeared, one of which (2009) has been cited 30 times. In all cases the results are quantitatively validated against experimental results. Invited presentations at De Gennes Discussion Conference (France) and International Soft Matter Days (Germany). (Briels, Sprakel, Bailly)
3. Coarse-graining of hydrodynamic interactions in sedimenting and flowing suspensions of solid particles. I was the first to apply a stochastic multi-particle collision method. The main papers describing the methodology and results are well-cited: 194 and 97 times, respectively. Invited presentations at the Newton Institute (United Kingdom), Physics@FOM Conference (The Netherlands), Joint Soft Matter Conference (Germany) and Faraday Discussions (The Netherlands). (Louis, Moncho-Jordá, Dijkstra).
4. Aggregation and deposition of asphaltene particles in capillary flow. I have performed hydrodynamic simulations and micro-Particle Image Velocimetry experiments. Several papers appeared, one of which has been cited 31 times. Invited presentations among others at the International Soft Matter Days (Germany) and International Congress on Rheology (USA). (Boek)
5. Determination of drag forces and torques on particles near walls; fully resolved fluid flow. Experimental validation of reduced diffusion near walls. The main paper has been cited 20 times. Invited presentation at the Joint Soft Matter Conference (Germany). (Briels, Imperio)
6. Determination of high-Reynolds hydrodynamic flow and drag and lift forces on objects and swimmers. A paper on fully deforming bodies (insect wings and fish) has appeared in 2012. (Hemelrijk, Reid)
7. Development of an efficient accurate Direct Simulation Monte Carlo algorithm for systems containing millions to billions of particles and droplets. A full paper has appeared in 2013. (Pawar, Deen, Kuipers)
8. Experimental and simulation investigations into hydrodynamic instabilities appearing in low Reynoldsnumber flow of viscoelastic fluids through microchannels and porous media. Papers have recently been submitted (2015). (De, Peters, Kuipers)
9. A new kinetic theory of granular flow for rough frictional spheres, leading to equations for the rotational granular temperature and anti-symmetric contributions to the particle collisional stress tensor. Papers have recently been submitted (2016). (Yang, Kuipers)

Selection of invited presentations to conferences and international advanced schools

1. *Application of Direct Simulation Monte Carlo to particles and droplets in a spray drying device*, invited keynote lecture at Discrete Simulation of Fluid Dynamics Conference, Edinburgh, United Kingdom (2015).
2. *Hydrodynamic interactions in non-equilibrium computer simulations of colloidal systems*, invited lecture at European Summer School on Electrochemical Engineering, Leeuwarden, The Netherlands (2015).
3. *Cross-validation of 3D particle tracking in granular flows down rotating chutes*, presentation at Physics@FOM, Veldhoven, The Netherlands (2015).
4. *Particle-based simulations: what do we learn and why should you care?*, invited keynote lecture at NPS conference, Utrecht, The Netherlands (2014).
5. *From atoms to galaxies*, presentation at Jülich Soft Matter Days special session, Bad Honnef, Germany (2014).
6. *Modelling of granular flows through inclined rotating chutes using a discrete particle model*, presentation at Ninth International Conference on CFD in the Minerals and Process Industries, CSIRO, Melbourne, Australia (2012). (*Invited chairman* for the session on *particle collisions*.)
7. *Statistical Mechanics of Liquids*, invited lectures (5x2 hours) at Advanced School for Theoretical Chemistry and Spectroscopy, Han-sur-Lesse, Belgium (2010).
8. *Hydrodynamics of confined colloidal fluids in two dimensions*, invited lecture at the 144th Faraday Discussion, Groningen, The Netherlands (2009).
9. *Hydrodynamic interactions in polymer networks and embedded particles*, invited lecture at the Joint Soft Matter Conference, Forschungszentrum Jülich, Jülich, Germany (2009).
10. *Computer simulation of the rheology of concentrated star polymer suspensions*, lecture at De Gennes Discussion Conference “From Reptation to Glossy Materials – De Gennes Pioneering Work in Rheology and Recent Developments”, Chamonix, France (2009).
11. *Deposition of colloidal asphaltene in capillary flow: Experiments and mesoscopic simulations*, lecture at 8th International Conference on Petroleum Phase Behavior and Fouling, Pau, France (2008).
12. *Colloidal asphaltene deposition and aggregation in capillary flow: Experiments and mesoscopic simulation*, lecture at 15th International Congress on Rheology, Monterey, USA (2008).
13. *Simulations of the dynamics and rheology of wormlike micelles*, lecture at 15th International Congress on rheology, Monterey, USA (2008).
14. *Deposition of colloidal asphaltene in capillary flow: Experiments and mesoscopic simulation*, invited lecture at the International Soft Matter Days, Aachen, Germany (2007).
15. *Rheology of wormlike micellar fluids from Brownian and molecular dynamics simulations*, lecture at 6th Liquid Matter Conference, Utrecht, The Netherlands (2005).
16. *Brown vs Stokes: sedimentation of colloidal suspensions*, invited lecture at the Newton Institute, Cambridge, United Kingdom (2005).
17. *Theory of Polymer Dynamics*, invited lectures (4x2 hours) at Advanced School for Physical Chemistry, Han-sur-Lesse, Belgium (2005).

Individual (personal) grants

Three-year fellowship at University of Cambridge, United Kingdom (2003, £ 100.000).

Personal VENI grant in the Innovational-Research program of the Netherlands Organization for Scientific Research (NWO). I ranked 1st out of ~200 applicants in the council area ‘Physics’ (2005, €200.000).

ERC Consolidator Grant (2013, €2.000.000).

Other recognition of scientific contributions

- Invited lecturer at Advanced School for Physical Chemistry, Han-sur-Lesse, Belgium (2005), Advanced School for Theoretical Chemistry and Spectroscopy, Han-sur-Lesse, Belgium (2010), J.M. Burgerscentrum Advanced Course in Particle-based Modeling Techniques, Eindhoven, NL (2013), and European Summer School on Electrochemical Engineering, Leeuwarden, NL (2015).
- Co-organiser of the CECAM workshop “Structure and rheology of self-assembling and aggregating colloidal suspensions: theory, simulation and experiment”, Lyon, France (2005) (40 participants).
- Co-organiser of the Eindhoven Multischale Institute workshop “Porous Media”, Eindhoven, The Netherlands (2013) (70 participants).
- Collaborator (by invitation) with academic groups in London (UK), Oxford (UK), Harvard (USA), Patras (Greece), Düsseldorf (Germany), San Sebastian (Spain), Groningen, Utrecht, Wageningen and Twente (Netherlands), Leuven and Louvain (Belgium), Zürich (Switzerland) and Melbourne (Australia).
- External opponent at PhD-defences of Dr. D.A.P. Reid (Rijksuniversiteit Groningen, 2011), Dr. B. O’Conchúir (University of Cambridge, 2015) and Asfaneh Soleimani (University of Linz, 2016).
- Academic contact for Erasmus exchange students between TU/e and Lund University (Sweden).
- Invited reviewer for the Netherlands Organisation for Scientific Research (NWO) in 2011, 2012, 2014, and for the National Science Foundation (USA) 2006-2015.
- Member of educational committees of OSPT (Research school on process technology).
- Member of educational committee of MCEC (Netherlands Center for Multiscale Catalytic Energy Conversion).
- Member of educational committee of TU/e Chemical Engineering department (OC-ST).
- Invited reviewer (>30 annually) for Physical Review (A, E, Letters), Europhysics Letters, European Physics Journal, Journal of Chemical Physics, Physical Chemistry Chemical Physics, Macromolecules, Biomacromolecules, Soft Matter, Colloid and Interface Science, Rheologica Acta, Journal of Fluid Mechanics, Journal of Non-Newtonian Fluid Mechanics, Microfluidics and Nanofluidics, International Journal of Multiphase Flow, Energy & Fuels, AIChE Journal, Chemical Engineering Journal, Powder Technology, Chemical Engineering Science, Journal of Computational Physics, and Nature

Scientific Track Record (citation records retrieved from ISI Web of Science)

Number of publications in refereed journals: (24 lead author, 5 senior author, 1 single author)	71	<p>The figure is a scatter plot titled "new citations per year". The x-axis represents the year from 2000 to 2015, with major ticks every 5 years. The y-axis represents the number of citations, ranging from 0 to 200, with major ticks every 50 units. There are 15 blue diamond-shaped data points plotted, showing a clear upward trend. A solid red line represents a linear regression fit to these points, starting near the origin and extending towards the top right of the plot area.</p>
Number of publications in refereed proceedings:	17	
Number of publications without PhD supervisor:	42	
Total number of citations:	1353	
h-index:	20	
Number of chapters in published books:	3	
Supervised PhD theses (14 finished, 13 ongoing):	25	
Number of papers reviewed (for 23 journals):	~230	
Number of proposals reviewed:	10	
(7 for NSF, USA and 3 for NWO, NL)		

Publications in international (refereed) journals

2015

71. **J.T. Padding**, N.G. Deen, E.A.J.F. Peters and J.A.M. Kuipers, "Euler-Lagrange modelling of the hydrodynamics of dense multiphase flows", **Advances in Chemical Engineering** 46, 137 (2015).
70. M.W. Korevaar, **J.T. Padding**, N.G. Deen, J. Wang, M. de Wit, M.A.I. Schutyser and J.A.M. Kuipers, "Hybrid PIV/PTV measurements of velocity and position distributions of gas-conveyed particles in small, narrow channels", **AIChE J.** 61, 3616 (2015).
69. J. Sane, **J.T. Padding** and A.A. Louis, "Taylor dispersion of colloidal particles in narrow channels", **Mol. Phys.** 113, 2538 (2015).
68. S.K. Pawar, **J.T. Padding**, N.G. Deen, A. Jongsma, F. Innings and J.A.M. Kuipers, "Numerical and Experimental Investigation of Induced Flow and Droplet-Droplet Interactions in a Liquid Spray", **Chem. Eng. Sci.** 138, 17 (2015).
67. S.S. Shirsath, **J.T. Padding**, H.J.H. Clercx and J.A.M. Kuipers, "Simulation study of the effect of wall roughness on the dynamics of granular flows in rotating semi-cylindrical chutes", **AIChE J.** 61, 2117 (2015).
66. S.S. Shirsath, **J.T. Padding**, H.J.H. Clercx and J.A.M. Kuipers, "Cross-validation of 3D particle tracking velocimetry for the study of granular flows down rotating chutes", **Chem. Eng. Sci.** 134, 312 (2015).
65. S.S. Shirsath, **J.T. Padding**, H.J.H. Clercx and J.A.M. Kuipers, "Dynamics of granular flows down rotating semi-cylindrical chutes", **Procedia Engineering** 102, 731 (2015).
64. V. Verma, **J.T. Padding**, N.G. Deen and J.A.M. Kuipers, "Effect of bed size on hydrodynamics in 3D gas-solid fluidized beds", **AIChE Journal** 61, 1492 (2015).
63. C.K. Hemelrijk, D.A.P. Reid, H. Hildenbrandt, and **J.T. Padding**, "The increased efficiency of fish swimming in a school", **Fish and Fisheries** 16, 511 (2015). This paper was added as a research highlight in Nature (13 February 2014).
62. V. Sutkar, N.G. Deen, **J.T. Padding**, V. Salikov, B. Crueger, S. Antonyuk, S. Heinrich and J.A.M. Kuipers, "A novel approach to determine wet restitution coefficients through a unified correlation and energy analysis", **AIChE Journal** 61, 769 (2015).

2014

61. **J.T. Padding** and W.J. Briels, "Momentum conserving Brownian Dynamics propagator for complex soft matter fluids", **J. Chem. Phys.** 141, 244108 (2014).
60. Y. Xu, **J.T. Padding** and J.A.M. Kuipers, "Numerical investigation of the vertical plunging force of a spherical intruder into a prefluidized granular bed", **Phys. Rev. E** 90, 062203 (2014).
59. V. Verma, **J.T. Padding**, N.G. Deen and J.A.M. Kuipers, "Numerical Investigation on the Effect of Pressure on Fluidization in a 3-D Fluidized Bed", **Industrial & Engineering Chemistry Research** 53, 17487 (2014).
58. S.S. Shirsath, **J.T. Padding**, H.J.H. Clercx and J.A.M. Kuipers, "Numerical investigation of monodisperse granular flow through an inclined rotating chute", **AIChE Journal** 60, 3424 (2014).
57. Sandip Pawar, Ruud Abrahams, Niels Deen, **Johan Padding**, Gert-Jan van der Gulik, Alfred Jongsma, Fredrik Innings and Hans Kuipers, "An Experimental Study of Dynamic Jet Behavior in a Scaled Cold Flow Spray Dryer Model Using PIV", **Can. J. Chem. Eng.** 92, 2013 (2014).

56. N.G. Deen, E.A.J.F. Peters, **J.T. Padding** and J.A.M. Kuipers, “Review of Direct Numerical Simulation of Fluid-Particle Mass, Momentum and Heat Transfer in Dense Gas-Solid Flows”, **Chem. Eng. Sci.** 116, C710 (2014).

55. M. Korevaar, **J.T. Padding**, M.A. van der Hoef and J.A.M. Kuipers, “Integrated DEM-CFD modeling of the contact charging of pneumatically conveyed powders”, **Powder Technology** 258, 144 (2014).

54. V. Verma, **J.T. Padding**, N.G. Deen and J.A.M. Kuipers, “Bubble dynamics in a 3-D gas-solid fluidized bed using ultrafast electron beam X-ray tomography and two-fluid model”, **AIChE Journal** 60, 1632 (2014).

53. V. Verma, **J.T. Padding**, N.G. Deen and J.A.M. Kuipers, “Bubble formation at a central orifice in a gas-solid fluidized bed predicted by three-dimensional two-fluid model calculations”, **Chem. Eng. J.** 245, 217 (2014).

52. S.K. Pawar, **J.T. Padding**, N.G. Deen, A. Jongsma, F. Innings and J.A.M. Kuipers, “Lagrangian modelling of dilute granular flow—modified stochastic DSMC versus deterministic DPM”, **Chem. Eng. Sci.** 105, 132 (2014)

2013

51. Y. Xu, **J.T. Padding**, M.A. van der Hoef and J.A.M. Kuipers, “Detailed numerical simulation of an intruder moving through a granular bed using a hybrid Discrete Particle and Immersed Boundary (DP-IB) method”, **Chem. Eng. Sci.** 104, 201 (2013)

50. V. Verma, N.G. Deen, **J.T. Padding** and J.A.M. Kuipers, “Two-fluid modeling of three-dimensional cylindrical gas-solid fluidized beds using the kinetic theory of granular flow”, **Chem. Eng. Sci.** 102, 227 (2013)

49. L. Liu, W.K. den Otter, **J.T. Padding** and W.J. Briels, “Coarse-grained simulations of entangled star polyethylene melts”, **J. Chem. Phys.** 138, 244912 (2013)

48. S.S. Shirsath, **J.T. Padding**, N.G. Deen, H.J.H. Clercx, and J.A.M. Kuipers, “Experimental study of monodisperse granular flow through an inclined rotating chute”, **Powder Technol.** 246, 235 (2013)

2012

47. **J.T. Padding**, L.V. Mohite, D. Auhl, T. Schweizer, W. J. Briels and C. Bailly, “Quantitative mesoscale modeling of the oscillatory and transient shear rheology and the extensional rheology of pressure sensitive adhesives”, **Soft Matter** 8, 7967 (2012).

46. A. Moncho-Jorda, A.A. Louis and **J.T. Padding**, “How Peclet number affects microstructure and transient cluster aggregation in sedimenting colloidal suspensions”, **J. Chem. Phys.** 136, 064517 (2012)

45. D.A.P. Reid, H. Hildenbrandt, **J.T. Padding** and C.K. Hemelrijk, “Fluid dynamics of moving fish in a two-dimensional multiparticle collision dynamics model in 2D”, **Phys. Rev. E** 85, 021901 (2012)

2011

44. K. Milinković, **J.T. Padding** and M. Dijkstra, “Hydrodynamic Rayleigh-Taylor-like instabilities in sedimenting colloidal mixtures”, **Soft Matter** 7, 11177 (2011)

43. I.S. Santos de Oliveira, W.K. den Otter, **J.T. Padding** and W.J. Briels, “Alignment of particles in sheared viscoelastic fluids”, **J. Chem. Phys.** 135, 104902 (2011)

42. **J.T. Padding** and W.J. Briels, “Systematic coarse-graining of the dynamics of entangled polymer melts: the road from chemistry to rheology”, invited review article in **J. Phys.: Condens. Matter** 23, 233101 (2011)

41. **J.T. Padding**, L.V. Mohite, D. Auhl, W.J. Briels and C. Bailly, “Mesoscale modeling of the rheology of pressure sensitive adhesives through inclusion of transient forces”, **Soft Matter** **7**, 5036 (2011)

40. A. Imperio, **J.T. Padding** and W.J. Briels, “Diffusion of spherical particles in microcavities”, **J. Chem. Phys.** **134**, 154904 (2011)

39. A. Imperio, **J.T. Padding** and W.J. Briels, “Force calculation on walls and embedded particles in Multi-Particle Collision Dynamics simulations”, **Phys. Rev. E** **83**, 046704 (2011)

38. J. Sprakel, **J.T. Padding** and W.J. Briels, “Transient forces and non-equilibrium states in sheared polymer networks”, **Europhys. Lett.** **93**, 58003 (2011)

2010

37. A. Neild, **J.T. Padding**, L. Yu, B. Bhaduri, W.J. Briels and T.W. Ng, “Translational and Rotational coupling in Brownian rods near a solid surface”, **Phys. Rev. E** **82**, 041126 (2010)

36. A. Moncho-Jordá, A.A. Louis and **J.T. Padding**, “The effects of inter-particle attractions on colloidal sedimentation”, **Phys. Rev. Lett.** **104**, 068301 (2010)

35. **J.T. Padding** and W.J. Briels, “Translational and rotational friction on a colloidal rod near a wall”, **J. Chem. Phys.** **132**, 054511 (2010)

34. R. Perez-Aparicio, J. Colmenero, F. Alvarez, **J.T. Padding** and W.J. Briels, “Chain-dynamics of poly(ethylene-propylene) melts by molecular dynamics simulations. Bridging the gap between fully atomistic and coarse-grained models”, **J. Chem. Phys.** **132**, 024904 (2010)

33. E.S. Boek, A.D. Wilson, **J.T. Padding**, T. Headen and J. Crawshaw, “Multi-scale simulation and experimental studies of asphaltene aggregation and deposition in capillary flow”, accepted for publication in **Energy and Fuels** (2010)

32. **J.T. Padding**, E. van Ruymbeke, D. Vlassopoulos and W.J. Briels, “Computer simulation of the rheology of concentrated star polymer suspensions”, accepted for publication in **Rheol. Acta** (2010). DOI:10.1007/s00397-009-0406-4

31. E.S. Boek, T. Headen and **J.T. Padding**, “Multi-scale simulation of asphaltene aggregation and deposition in capillary flow”, **Faraday Discussions** **144**, 271 (2010)

30. J. Sane, **J.T. Padding** and A.A. Louis, “The crossover from single file to Fickian diffusion”, **Faraday Discussions** **144**, 285 (2010)

2009

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