Christopher Patrick (Paddy) Royall

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Employment

2018-	University of Bristol, UK	**Professor of Chemical Physics**.
2016-7	Kyoto University, Japan	Sabbatical
2015-		Reader (Associate Professor).
2009-		Permanent appointment to Lecturer at URF end
2007-2015		**Royal Society University Research Fellow (URF)** 8 year career acceleration award (most prestigious in UK)
2004-2006	The University of Tokyo, Japan	**Japan Society for the Promotion of Science fellow**, with Prof Hajime Tanaka.
2002-2004	University of Utrecht, Netherlands	**Postdoctoral fellow**, with Prof Alfons van Blaaderen. Phase behaviour of colloids.
2001-2	UBS Warburg, London	Investment Banking**. Marketing/development.**

Education

1997-2001	University of Cambridge, (St Catharine's College)	**PhD in Physics,** with Prof Athene Donald, Polymers and Colloids Group. Graduated 12th May 2001.
1996-7	Gap Year	Long-distance sailing trip, England to the Caribbean.
1992-6	University of Edinburgh	**BSc in Physics,** 1st class hons, Graduated 10th July 1996.

Publications. 101 publications, h-index 33. 4867 citations (Google Scholar). *Highlights:*

"*Complex Plasmas and Colloidal Dispersions: Particle-resolved Studies of Classical Liquids and Solids*", Ivlev A, Loewen, H, Morfill G and Royall CP. World Scientific. (2012).

Ferreiro-Córdova C, Royall CP, van Duijneveldt JS, "Anisotropic viscoelastic phase separation in polydisperse hard rods: non-sticky gelation", in press. *Proc. Nat. Acad. Sci.*, *ArXiV* 1806.06279.

Hallett JE, Turci F and Royall CP, "Local structure in deeply supercooled liquids exhibits growing lengthscales and dynamical correlations", *Nature Comms,* **9** 3272 (2018).

Taffs J and Royall CP "The role of fivefold symmetry in suppressing crystallisation"*, Nature Comms* **7** 13225 (2016).

Williams I, Oguz EC, Speck T, Bartlett P, Loewen H and Royall CP "Transmission of torque at the nanoscale", *Nature Physics* **12** 98–103 (2016).

Williams I, Oguz EC, Bartlett P, Loewen H and Royall CP "Direct measurement of osmotic pressure via adaptive confinement of quasi hard disc colloids", *Nature Comms.* **4** 2555 (2013).

Royall CP, Williams SR, Ohtsuka, T and Tanaka H, 'Direct observation of a local structural mechanism for dynamic arrest', *Nature Materials* **7**, 556-561, (2008).

Royall CP, Aarts DGAL, and Tanaka H 'Bridging length scales in colloidal liquids and interfaces from near-critical divergence to single particles', *Nature Physics* **3**, 636-640, (2007).

Leunissen ME, Christova CG, Hyninnen A-P, Royall CP, Campbell AI, Imhof A, Dijkstra M, van Roij R and van Blaaderen A, 'Ionic colloidal crystals of oppositely charged particles', *Nature* **437**, 235 (2005).

Teaching

- Fellow of the Higher Education Academy (2015), (Masters equivalent qualification).
- Lecturing 4th year undergraduate *Soft Matter and Active Matter* course (Physics).
- Lecturing 4th year undergraduate *Soft Matter* course (Chemistry).
- Lecturing 3rd year undergraduate *NanoPhysics* course (Physics).
- Lecturing 2nd year course in *Statistical Mechanics* (Chemistry).
- Lecturing complexity science graduate school in *Liquid State Theory and Glass Transition* (2009-12).
- Lecturing and lab module for functional nanomaterials graduate school *Computational Methods for Nanomaterials*.
- Tutorials: first year undergraduate student groups, problem solving a pastoral care.
- Supervising PhD (14 submitted or graduated), Masters' and final year undergraduate students' research projects (23 graduated).

Organisation of conferences, workshops and symposia

- "Unifying Concepts in Glass Physics VII". Bristol, UK. June 2018. Lead organiser. 120 Participants.
- Centre Européen de Calcul Atomique et Moléculaire (CECAM) flagship meeting "The role of local structure in dynamical arrest", 50 Participants. Jul 2015, Mainz, Germany.
- "Arrested gels: structure and dynamics", 100 participants. March 2015. Cambridge.
- "Physics of Structural and Dynamical Hierarchy in Soft Matter", March 2015. International organizer. 200 participants. Tokyo.
- CECAM international meeting "The role of interfaces in crystallisation", May 2013, 50 Participants. Lausanne, Switzerland.
- CECAM international meeting entitled 'Crystallisation: from colloids to pharmaceuticals'. 50 participants. July 2010.
- I have initiated a 2-day annual Soft Matter workshop with workers across the field from Physics and Chemistry in Bristol, with contributions from Bath and international speakers from across Europe and the US. www.chm.bris.ac.uk/pt/paddy/workshop.html.

Promotion of Soft Matter Research

- Total: 145 talks, of which 121 international and 114 invited, including two public lectures.
- Press: "Is glass a true solid?" www.bristol.ac.uk/news/2015/january/glass-a-true-solid.html
  "Squeezing in the microdomain" www.bristol.ac.uk/news/2013/9822.html
  "A new way of making glass" www.bris.ac.uk/news/2012/8866.html
  "A breakthrough in glass" www.bristol.ac.uk/news/2008/212017945385.html

Partnerships with Industry

- Funding for 3 PhD students from Bayer Cropscience. Publication in *Soft Matter* in 2013, 2017, 2018, 2019, *J. Chem. Phys.* 2018.
- Collaboration with Kodak UK in Cambridge, developing principles underlying novel display technologies, resulting in publication in *J. Chem. Phys*. in 2009.
- Latex imaging with ICI-Crosfield Group, Warrington, UK, 1997-2001.

Selected Talks

"Assembly of Novel Biomaterials: Decorated Protein Networks", Invited Talk, GSNP Invited Symposium, APS March meeting, Denver CO, Mar 2020.

"Towards an Understanding of the Glass Transition? Insights from Experiment and Simulation" Invited Keynote Talk, International Soft Matter Conference, Edinburgh, UK, Jun 3rd-7th 2019.

"The Glass Transition: Can new data shed light on which Interpretation we should believe?" Invited Talk, American Chemical Society Spring Meeting, Orlando, FA, Mar 31st-Apr 4th 2019.

"Amoeba-like Living Crystallites in Active Colloids", MRSEC Colloquium, Brandeis University US 24th May 2018.

"Fivefold Symmetry and the Fate of Liquids", Invited Keynote Talk, "Liquid Matter Conference", Ljubljana, Slovenia, 17th-21st Jul 2017.

"Direct Imaging of Deeply Supercooled Liquids: A Means to Test Descriptions of the Glass Transition", Invited Talk, Recent Advances on the Glass and Jamming Transitions, CECAM, Lausanne, Switzerland. 9th-11th Jan 2017.

"Non-Equilibrium Phase Transition to an Ideal Glass", Invited Talk, 2nd International Workshop on Matter Out of Equilibrium, Guanajuato, México. 22nd-26th Aug 2016.

"The role of local structure in the tortured crystallisation of glassformers", Invited Talk, "Viscous liquids and the glass transition. XIV" Søminestationen, Holbæk, 16th-18th June, 2016.

"A structural mechanism for the glass transition: beyond the lengthscale conundrum", Invited Talk, Unifying Concepts in Glass Physics, Aspen Centre, CO, Feb 2nd-6th 2015.

"Challenges with charged colloids", Invited Speaker, Strongly Coupled Coulomb Systems Santa Fe, New Mexico (USA) 27th Jul-1st Aug 2014.

"Structure in Liquids out of Equilibrium", Invited Speaker, 6th International Discussion Meeting on Relaxation in Complex Systems, Barcelona, 21st-26th July 2013.

"Driven colloidal dispersions", Invited Speaker, Wetting and Capillarity in Complex Systems, Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany, 19th-23rd Feb 2013.

"Particle-resolved studies of colloids under gravity", Invited Speaker, "Colloidal dispersions in external fields III", Bonn, Germany, 20th-23rd Mar 2012.

"The glass transition is continuous but gelation is discontinuous in sticky spheres", Invited Speaker, German Physical Society Meeting, Berlin, Germany, 26th-30th Mar 2012.

"Local structure in nucleation of 'hard spheres' in experiments and simulation", Invited Speaker, Nucleation and Aggregation, JNCASR, Bangalore, India, 26th-30th July, 2010.

"Locally Preferred Structures and Dynamic Arrest", Invited Speaker, American Physical Society, Portland, Oregon, 18th Mar 2010.

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Publication list

Preprints

Rios de Anda I, Coutable-Pennarun A, Brasnett C, Whitelam S, Seddon A, Russo J, Anderson JLR and Royall, C. P, "Decorated Protein Networks: Functional Nanomaterials with Tunable Domain Size" *ArXiV* 1911.05857 (2019).

Mauleon-Amieva A, Mosayebi M, Hallett JE, Turci F, Liverpool TB, van Duijneveldt JS and Royall CP, "Competing Active and Passive Interactions Drive Amoeba-like Living Crystallites and Ordered Bands", *ArXiV* 1907.11257 (2019).

Authored Book

"*Complex Plasmas and Colloidal Dispersions: Particle-resolved Studies of Classical Liquids and Solids*", Ivlev A, Loewen, H, Morfill G and Royall CP. World Scientific. (2012).

Review Articles (refereed)

[101] Royall CP, Turci F, Russo J, Tatsumi S and Robinson JFE, "The race to the bottom: approaching the ideal glass?", *Topical Review* (invited), *J. Phys.: Condens. Matter* **30** 363001 (2018).

[100] Royall CP, "Hunting Mermaids in Real Space: Known Knowns, Known Unknowns and Unknown Unknowns", *Soft Matter* **14** 4020 (2018).

[99] Royall CP and Williams SR "The role of structure in dynamical arrest", *Phys. Rep.* **560** 1-75 (2015).

[98] Royall CP, Poon WCK, and Weeks ER, "In search of colloidal hard spheres", *Soft Matter* **9** 17 - 27 (2013).

[97] Poon WCKP, Weeks ER and Royall CP, "On measuring colloidal volume fractions", *Soft Matter* **8** 21-30 (2012).

[96] Donald AM, He CB, Royall CP, Sferrazza M, Stelmashenko NA and Thiel BL, "Applications of environmental scanning electron microscopy to colloidal aggregation and film formation", *Colloid Surface A* **174** (1-2): 37-53 (2000).

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Chapters in Edited Books

[95] Meissner MF, Seddon AM and Royall CP, "Colloidal Microfluidics", in "Frontiers of Nanoscience", Elsevier 2019.

[94] Royall CP, Malins A, Dunleavy AJ, Pinney R "Geometric frustration is strong in model fragile glassformers", in "Fragility of Glassforming Liquids", Eds : Greer AL, Kelton KF and Sastry S. Hindustan Book Agency, New Delhi, India 2014.

Academic Journal Papers

[93] Ferreiro-Córdova C, Royall CP, van Duijneveldt JS, "Anisotropic viscoelastic phase separation in polydisperse hard rods: non-sticky gelation", accepted by *Proc. Nat. Acad. Sci.* (2019), *ArXiV* 1806.06279.

[92] Hallett JE, Turci F and Royall CP, "The Devil is in the Details: Pentagonal Bipyramids and Dynamic Arrest", *accepted by J. Stat. Mech.: Theory and Experiment* (2019); *ArXiV* 1911.00802

[91] Fussell SL, Bayliss K, Coops C, Matthews L, Li W, Briscoe WH, Faers MA, Royall CP, and van Duijneveldt, "Reversible temperature-controlled gelation in mixtures of pNIPAM microgels and non-ionic polymer surfactant", *Soft Matter* **15** 8578-8588 (2019).

[90] Robinson JF, Turci F, Roth R and Royall CP "Many-body correlations from integral geometry", *Phys. Rev. E* **100** 062126 (2019).

[89] Ingebrigtsen TS, Dyre JC, Schrøder TB and Royall CP "Crystallisation Instability in Glassforming Mixtures", *Phys. Rev. X* **9** 031016 (2019).

[88] Robinson JF, Turci F, Roth R and Royall CP "Morphometric approach to many-body correlations in hard spheres", *Phys. Rev. Lett.* **122** 068004 (2019). Editor's selection.

[87] Gregson FKA, Robinson JF, Miles REH, Royall CP and Reid JP "Drying Kinetics of Salt Solution Droplets: Water Evaporation Rates and Crystallization", *J. Phys. Chem. B* **123** 266-276 (2018).

[86] Wood N, Russo J, Turci F and Royall CP "Coupling of sedimentation and liquid structure: influence on hard sphere nucleation", *J. Chem. Phys.* **149** 204506 (2018).

[85] Dong J, Meissner M, Faers MA, Eggers J, Seddon AM and Royall CP "Opposed flow focusing: evidence of a second order jetting transition", *Soft Matter* **14** 8344 (2018).

[84] Hallett JE, Turci F and Royall CP, "Local structure in deeply supercooled liquids exhibits growing lengthscales and dynamical correlations", ***Nature Communications*** **9** 3272 (2018).

[83] Richard D, Speck T and Royall CP, "Is directed percolation in colloid-polymer mixtures linked to dynamic arrest?", *J. Chem. Phys.* **148** 241101(2018). Editor's pick.

Academic Journal Papers (continued)

[82] Royall CP "Kinetic Crystallisation Instability in Liquids with Short-Ranged Attractions", *Mol. Phys.* (Special Edition in Honour of Daan Frenkel) **116** 3076-3084 (2018).

[81] Richard D, Hallett JE, Speck T and Royall CP, "Coupling between criticality and gelation in "sticky" spheres: A structural analysis", *Soft Matter*, **14** 5554-5564 (2018).

[80] Carter BMGD, Turci F, Ronceray P and Royall CP, "Structural Covariance in the Hard Sphere Fluid" *J. Chem. Phys.* **148** 204511 (2018).

[79] Turci F, Speck T and Royall CP, "Structural-dynamical transition in the Wahnström mixture" *Eur. Phys. J. E.* **41** 54 (2018).

[78] Zhang I, Pinchaipat R, Wilding NB, Faers MA, Bartlett P, Evans R, Royall CP, "Composition inversion in mixtures of binary colloids and polymer",*J. Chem. Phys.* **148** 184902 (2018).

[77] Pinney RK, Liverpool TB and Royall CP "Yielding of a model glass former: An interpretation with an effective system of icosahedra", *Phys. Rev. E* **97** 032609 (2018).

[76] Williams I, Turci F, Hallett JE, Crowther P, Cammarota C, Biroli G and Royall CP, "Experimental determination of configurational entropy in a two-dimensional liquid under random pinning", *J. Phys.: Condens. Matter* **30** 094003 (2018).

[75] Royall CP, Williams SR and Tanaka H, "Vitrification and gelation in sticky spheres", *J. Chem. Phys.* **148** 044501 (2018).

[74] Rios de Anda, I, Turci F, Sear R, Royall CP, "Long-Lived Non-Equilibrium Interstitial-Solid-Solutions in Binary Mixtures", *J. Chem. Phys.*, **147** 124504. (2017).

[73] Pinchaipat R, Campo M, Turci F, Hallet JE, Speck T, and Royall CP, "Experimental Evidence for a Structural-Dynamical Transition in Trajectory Space" ***Phys. Rev. Lett.*** **119** 028004 (2017).

[72] Turci F, Royall CP and Speck T "Non-Equilibrium Phase Transition in an Atomistic Glassformer: the Connection to Thermodynamics", ***Phys. Rev. X*** **7** 031028 (2017).

[71] Razali A, Fullerton CJ, Turci F, Hallet JE, Jack RL and Royall CP "Effects of vertical confinement on gelation and sedimentation of colloids", *Soft Matter* **13** 3230-3239 (2017).

[70] Turci F. Tarjus G, and Royall CP "From glass formation to icosahedral ordering by curving three-dimensional space" ***Phys. Rev. Lett.*** **118** 215501 (2017).

[69] Meissner M, Dong J, Eggers J, Seddon AM, and Royall CP, "Oil-in-water microfluidics on the colloidal scale: new routes to self-assembly and glassy packings", *Soft Matter* **13** 788-794 (2017).

Academic Journal Papers (continued)

[68] Jenkinson, T, Crowther P, Turci F and Royall CP, "Weak temperature-dependence of ageing of structural properties in atomistic model glassformers", *J. Chem. Phys.* **147** 054501 (2017).

[67] Griffiths S, Turci F and Royall CP "Local structure of percolating gels at very low volume fractions", *J. Chem. Phys.* **146** 014905 (2017).

[66] Royall CP and Kob W. "Locally favoured structures and dynamic length scales in a simple glass-former" *J. Stat. Mech: Theory and Experiment* 024001 (2017).

[65] Pinney R, Liverpool, TB and Royall CP, "Structure in Sheared Supercooled Liquids: Dynamical Rearrangements of an Effective System of Icosahedra", *J. Chem. Phys.* **143** 244507 (2016).

[64] Taffs J and Royall CP "The role of fivefold symmetry in suppressing crystallisation", ***Nature Communications.*** **7** 13225 (2016).

[63] Dougan N, Crowther P, Royall CP and Turci F "Controlling local order of athermal self-propelled particles" *J. Stat. Mech: Theory and Experiment* 124001 (2016).

[62] Turci F and Royall CP, "Crystallisation driven by sedimentation: a particle resolved study" *J. Stat. Mech: Theory and Experiment* **8** 084004 (2016).

[61] Statt A, Pinchaipat R, Turci F, Evans R, and Royall CP "Direct observation in 3d of structural crossover in binary hard sphere mixtures" *J. Chem. Phys.* **144** 144506 (2016).

[60] Bzdek BR, Power RM, Simpson SH, Reid JP and Royall CP "Precise, contactless measurements of the surface tension of picolitre aerosol droplets" *Chem. Sci.* **7** 274 (2016).

[59] Williams I, Oguz EC, Speck T, Bartlett P, Loewen H and Royall CP "Transmission of torque at the nanoscale", ***Nature Physics***. **12** 98–103 (2016).

[58] Pinney R, Liverpool TB and Royall CP "Recasting a model atomic glassformer as a system of Icosahedra", *J. Chem. Phys.* **143** 244507 (2015).

[57] Royall CP, Eggers J, Furukawa A and Tanaka H, "Probing Colloidal Gels at Multiple Length Scales: The Role of Hydrodynamics" ***Phys. Rev. Lett.*** **114** 258302 (2015).

[56] Dunleavy AJ, Wiesner K, Yamamoto R and Royall CP "Mutual information reveals multiple structural relaxation mechanisms in a model glassformer", ***Nature Communications***, **6** 6089 (2015).

[55] Crowther P, Turci F and Royall CP "The nature of geometric frustration in the Kob-Andersen mixture", *J. Chem. Phys.* **143** 044503 (2015).

Academic Journal Papers (continued)

[54] Gray AT, Mould E, Royall CP and Williams I "Structural characterisation of polycrystalline colloidal monolayers in the presence of aspherical impurities", *J. Phys.: Condens. Matter* **27** 194108 (2015).

[53] Tamborini E, Royall CP and Cicuta P "Correlation between crystalline order and vitrification in colloidal monolayers", *J. Phys.: Condens. Matter* **27** 194124 (2015).

[52] Rios de Anda I, Statt A, Turci F and Royall CP "Low-density crystals in charged colloids : Comparison with Yukawa theory", *Contributions to Plasma Physics,* **55** 172-179 (2015)

[51] Williams I, Oguz EC, Bartlett P, Loewen H and Royall CP "Flexible confinement leads to multiple relaxation regimes in glassy colloidal liquids", *J. Chem. Phys.* **142** 024505 (2015).

[50] Royall CP, Malins A, Dunleavy AJ, Pinney R "Strong geometric frustration in model glassformers", *J. Non-Cryst. Solids*, **407** 34–43 (2015).

[49] Jack RL, Dunleavy AJ and Royall CP "Information-theoretic measurements of coupling between structure and dynamics in glass formers", ***Phys. Rev. Lett.*** **113** 095703 (2014).

[48] Williams I, Oguz EC, Jack RL, Bartlett P, Loewen H and Royall CP "The effect of boundary adaptivity on hexagonal ordering and bistability in circularly confined quasi hard discs", *J. Chem. Phys.* **140** 104907 (2014).

[47] Williams I, Oguz EC, Bartlett P, Loewen H and Royall CP "Direct measurement of osmotic pressure via adaptive confinement of quasi hard disc colloids", ***Nature Communications*** **4** 2555 (2013).

[46] Malins A, Williams SR, Eggers J and Royall CP "Identification of Structure in Condensed Matter with the Topological Cluster Classification", *J. Chem. Phys.* **139** 234506 (2013).

[45] Malins A, Eggers J and Royall CP "Investigating Isomorphs with the Topological Cluster Classification", *J. Chem. Phys.* **139** 234505 (2013).

[44] Malins A, Eggers J, Tanaka H and Royall CP "Lifetimes and Lengthscales of Structural Motifs in a Model Glassformer", *Faraday Discussions* **167** 405-423 (2013).

[43] Klix CL, Murata K, Tanaka H, Williams SR, Malins A and Royall CP "Novel kinetic trapping in charged colloidal clusters due to self-induced surface charge organization" *Scientific Reports* **3** 2072 (2013).

[42] Taffs J, Williams SW, Tanaka H and Royall CP, "Structure and kinetics in the freezing of nearly hard spheres", *Soft Matter* **9** 297 - 305 (2013).

[41] Zhang I, Royall CP, Faers MA and Bartlett P, "Phase separation dynamics in colloid-polymer mixtures: the effect of interaction range", *Soft Matter* **9** 2076-2084 (2013).

Academic Journal Papers (continued)

[40] Malins A, Eggers J, Royall CP, Williams SR and Tanaka H, "Identification of long-lived clusters and their link to slow dynamics in a model glass former", *J. Chem. Phys.* **138** 12A535 (2013).

[39] Dunleavy A, Wiesner K and Royall CP, "Using mutual information to measure order in model glass-formers", *Phys. Rev. E* **86** 041505 (2012).

[38] Speck T, Malins A and Royall CP "First-Order Phase Transition in a Model Glass Former: Coupling of Local Structure and Dynamics", ***Phys. Rev. Lett.*** **109** 195703 (2012).

[37] Taylor SE, Evans, R and Royall CP, "Temperature as an external field for colloid-polymer mixtures : "quenching" by heating and "melting" by cooling", *J. Phys: Condens. Matter* **24** 464128 (2012).

[36] Royall CP and Malins A "The role of quench rate in colloidal gels" *Faraday Discussions,* **158** 301-311 (2012).

[35] Yoshizawa, K, Wakabayashi, N, Yonese M, Yamanaka J and Royall CP, "Phase separation in binary colloids with charge asymmetry" *Soft Matter* **8** 11732 (2012).

[34] Rice R, Roth R and Royall CP, 'Polyhedral colloidal 'rocks': low-dimensional networks', *Soft Matter* **8** 1163-1167 (2012).

[33] Vissers T, Rex M, Imhof, A, Loewen H, Royall CP and van Blaaderen A, 'Lane Formation in Driven Colloidal Mixtures', *Soft Matter* **7** 2352-2356 (2011).

[32] Malins A, Williams SR, Eggers J, Tanaka H and Royall CP 'The effect of inter-cluster interactions on the structure of colloidal clusters', *J. Non-crystalline solids*. **375** 760-766 (2011).

[31] Royall CP and Williams SR "C-60 : the first one-component gel?" *J. Phys. Chem. B* special issue on clusters in complex liquids **115** 7288-7293 (2011).

[30] Godogna M, Malins A, Williams SR and Royall CP 'Local Structure of Liquid-Vapour Interfaces', invited submission to *Mol. Phys.* special issue in honour of Prof. R Evans' 65th Birthday, **109** 1393-1402 (2011).

[29] Taffs J, Malins A, Williams SR and Royall CP 'The effect of attractions on the local structure of liquids and colloidal fluids', *J. Chem. Phys.* **133** 244901 (2010).

[28] Klix CL, Royall CP and Tanaka H "Structural and dynamical features of multiple metastable glassy states in a colloidal system with competing interactions", ***Phys. Rev. Lett.*** **104** 165702 (2010).

Academic Journal Papers (continued)

[27] Leocmach, M. and Royall CP and Tanaka H "Novel zone formation due to interplay between sedimentation and phase ordering", *EuroPhysics Lett*. **89** 38006 (2010).

[26] Taffs J, Malins, A, Williams SR and Royall CP "A structural comparison of models of colloid-polymer mixtures", *J. Phys:Condens. Matter* **22** 104119 (2010).

[25] Wysocki A, Royall CP, Winkler R, Gompper G, Tanaka H, van Blaaderen A and Loewen H, "Multi-particle collision dynamics simulations of sedimenting colloidal dispersions in confinement", *Faraday Discussions* **144** 245-252 (2010).

[24] Malins A, Williams SR, Eggers J and Tanaka, H and Royall CP "Geometric frustration in small colloidal clusters", *J. Phys: Condens. Matter*. **21** 425103 (2009).

[23] Elsner N, Snoswell, DRE, Royall CP and Vincent, BV, "Simple models for two-dimensional tunable colloidal crystals in rotating ac electric fields" *J. Chem. Phys*. **130** 154901 (2009).

[22] Wysocki A, Royall CP, Winkler R, Gompper G, Tanaka H, van Blaaderen A and Loewen H, "Direct observation of hydrodynamic instabilities in driven non-uniform colloidal dispersions", *Soft Matter* **5** 1340-1344 (2009).

[21] Ohtsuka T, Royall CP and Tanaka H, "Local structure and dynamics in colloidal fluids and gels", *Europhys. Lett*. **84** 46002 (2008).

[20] Schmidt M, Royall CP, van Blaaderen, A. and Dzubiella J, "Non-equilibrium sedimentation of colloids: Confocal microscopy and Brownian dynamics simulations", *J. Phys:Cond. Matter* **20** 494222 (2008).

[19] Royall CP, Vermolen, ECM, van Blaaderen, A. and Tanaka H, "Controlling competition between crystallisation and glass formation in binary colloids with an external field", *J. Phys:Cond. Matter* **20** 404225 (2008).

[18] Royall CP, Williams SR, Ohtsuka, T and Tanaka H, "Direct observation of a local structural mechanism for dynamic arrest", ***Nature Materials*** **7**, 556-561, (2008).

[17] Williams SR, Royall CP, and Bryant G, "Crystallisation of Dense Binary Hard-Sphere Mixtures with Marginal Size Ratio", ***Phys. Rev. Lett*** **100** 225502 (2008).

[16] Royall CP, Louis, AA and Tanaka H, "Measuring colloidal interactions with confocal microscopy", *J. Chem. Phys*. **127** 044507 (2007).

[15] Royall CP, Aarts DGAL, and Tanaka H "Bridging length scales in colloidal liquids and interfaces from near-critical divergence to single particles", ***Nature Physics*** **3** 636-640 (2007).

[14] Royall CP, Dzubiella J, Schmidt M and van Blaaderen A, "Nonequilibrium Sedimentation of Colloids on the Particle Scale", ***Phys. Rev. Lett.*** **98** 188304 (2007).

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[13] Royall CP, Leunissen ME, Hyninnen A-P, Dijkstra M and van Blaaderen A "Re-entrant melting and freezing in a model system of charged colloids", *J. Chem. Phys.* **124** 244706 (2006).

[12] Leunissen ME, Christova CG, Hyninnen A-P, Royall CP, Campbell AI, Imhof A, Dijkstra M, van Roij R and van Blaaderen A, "Ionic colloidal crystals of oppositely charged particles", ***Nature*** **437** 235 (2005).

[11] Royall CP, Aarts DGAL, Tanaka H, "Fluid structure in colloid-polymer mixtures: the competition between electrostatics and depletion", *J. Phys. Cond. Matter.* **17** S3401 (2005).

[10] Royall CP, van Roij RHJ, van Blaaderen A, "Extended sedimentation profiles in charged colloids: the gravitational length, entropy and electrostatics", *J. Phys. Condens:.Matter.* **17** 2315-2326 (2005).

[9] Royall CP, Leunissen ME, van Blaaderen A, "A new colloidal model system to study long range interactions quantitatively in real space", *J. Phys Condens. Matter*, **15** S3581-S3596 (2003).

[8] Royall CP, Donald AM, "Surface properties and structural collapse of silica in matte water based lacquers", *Langmuir*, **18** (24) 9519-9526 (2002).

[7] Royall CP, Donald AM, "Structure of silica in matt water-based lacquer", *Phys. Rev. E.* **66** 021406 (2002).

[6] Royall CP, Donald AM, "Optimisation of environmental SEM for observation of drying in matt water based lacquers", *Scanning*, **24** (6): 301-313 (2002).

[5] Royall CP, Thiel BL and Donald AM, "Radiation damage of water in environmental scanning electron microscopy", *J Microscopy-Oxford* **204**: 185-195 Part 3 (2001).

Conference Contributions (refereed)

[4] Loewen H, Royall CP Ivlev, A and Morfill GE, "Charged colloidal dispersions and their link to complex plasmas", *American Institute of Physics Conference Proceedings* **1397** 201 (2011).

[3] Royall CP, Williams SR, Ohtsuka, T and Tanaka H, "Direct observation of low-energy clusters in a colloidal gel", *American Institute of Physics Conference Proceedings*, **982** 97 (2008).

[2] Royall CP, Donald AM "Confocal laser scanning microscopy and environmental SEM applied to matting water-based lacquers" *Abstr Pap Am Chem S 218: 17-PMSE Part 2* (1999) and ACS symposium series 790 Chapter 11 (2001).

PhD thesis

[1] Royall CP, "The behaviour of silica in matt water-based lacquers", Phd thesis, University of Cambridge (2000).