

Curriculum Vitae

Dr Alice Thorneywork

Cavendish Laboratory, JJ Thomson Ave, Cambridge, CB3 0HE
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Academic and Educational History:

- Oct 2018 onwards** **Oppenheimer Research Fellow**
Cavendish Laboratory, University of Cambridge
- May 2016-Oct 2018** **Postdoctoral Research Associate**
Cavendish Laboratory, University of Cambridge
Supervisor: Prof Ulrich Keyser
- June 2015-Apr 2016** **Postdoctoral Research Associate**
Physical and Theoretical Chemistry Laboratory, University of Oxford
Supervisor: Prof Roel Dullens
- 2011-2015** **DPhil ‘Structure and dynamics of two-dimensional colloidal hard spheres’**
Physical and Theoretical Chemistry Laboratory, University of Oxford
Supervisor: Prof Roel Dullens
- 2007- 2011** **MChem in Chemistry (1st Class)**
Christ Church, University of Oxford, Rank: 14/179
4th year research project: ‘Draining transitions in capillaries: the interplay between wetting, gravity and geometry’ (Thesis Prize)
Supervisor: Prof Dirk Aarts

Research Interests:

My central research interest is the use of model systems at the micro- and nanoscale to study a variety of problems with origins ranging from condensed matter physics to biology. These include:

- Structure, dynamics and melting of two-dimensional colloidal model hard sphere systems
- The role of hydrodynamic interactions in confined colloidal suspensions
- The structure, dynamics and glass-forming behaviour of bidisperse colloidal systems
- First passage processes in one-dimensional colloidal systems and DNA origami channels

Awards and Distinctions:

- 2018: Oppenheimer Research Fellowship, University of Cambridge
- 2018: Raymond and Beverly Sackler Research By-Fellowship, Churchill College, University of Cambridge
- 2011: Master of Chemistry (4th year) Thesis Prize, University of Oxford
- 2007-2011: Undergraduate College Scholarships, Christ Church, University of Oxford
- 2007-2010: Two prizes for performance in college exams, Christ Church, University of Oxford
- 2007- James Becken school cup, awarded annually for best student in Science and Maths

List of Publications:

1. [Alice L. Thorneywork](#), Yizhou Tan, Jannes Gladrow, Anatoly B. Kolomeisky and Ulrich F. Keyser, ‘Distributions of first passage times reveal underlying free-energy landscapes’, In preparation
2. [Alice L. Thorneywork](#), Simon K. Schnyder, Dirk G. A. L. Aarts, Jürgen Horbach, Roland Roth and Roel P. A. Dullens, ‘Structure Factors in a two-dimensional binary colloidal hard sphere system’, Mol. Phys. (2018), <https://doi.org/10.1080/00268976.2018.1492745>
3. Daniel Stopper, [Alice L. Thorneywork](#), Roel P. A. Dullens and Roland Roth, ‘Bulk dynamics of colloidal hard disks: Dynamical density functional theory versus experimental results’, J. Chem. Phys., 148, 104501, (2018)
4. [Alice L. Thorneywork](#), Joshua L. Abbott, Dirk G. A. L. Aarts, Peter Keim and Roel P. A. Dullens, ‘Bond-orientational correlation time and Frank’s constant in two-dimensional colloidal hard spheres’, in

- press, *J. Phys.: Condens. Matter* (2018)
5. [Alice L. Thorneywork](#), Joshua L. Abbott, Dirk G. A. L. Aarts and Roel P. A. Dullens, ‘*Two dimensional melting of colloidal hard spheres*’, *Phys. Rev. Lett.*, 118, 158001, (2017)
 6. Simon K. Schnyder, Thomas O. E. Skinner, [Alice L. Thorneywork](#), Dirk G. A. L. Aarts, Jürgen Horbach and Roel P. A. Dullens, ‘*Particle dynamics of 2D randomly confined colloidal fluids*’, *Phys. Rev. E*, (2017)
 7. [Alice L. Thorneywork](#), Dirk G. A. L. Aarts, Jürgen Horbach and Roel P. A. Dullens, ‘*Self-diffusion in two-dimensional binary colloidal hard-sphere fluids*’, *Phys. Rev. E*, 95, 012614 (2017)
 8. [Alice L. Thorneywork](#), Dirk G. A. L. Aarts, Jürgen Horbach and Roel P. A. Dullens, ‘*On the Gaussian approximation in colloidal hard sphere fluids*’, *Soft Matter*, 12, 4129, (2016)
 9. [Alice L. Thorneywork](#), Roberto E. Rozas, Roel P.A. Dullens, Jürgen Horbach, “Effect of hydrodynamic interactions on the self-diffusion of quasi-two-dimensional colloidal hard spheres”, *Phys. Rev. Lett.*, 115, 268301, (2015)
 10. [Alice L. Thorneywork](#), Roland Roth, Dirk G. A. L. Aarts and Roel P. A. Dullens, ‘*Radial distribution functions in a two-dimensional binary colloidal hard sphere system*’, *J. Chem. Phys.* 140, 161106, (2014)

Teaching Experience:

- 2011-2014: Annual teaching of classes for first year undergraduate ‘Maths for Chemistry’ course, Exeter college, University of Oxford
- 2013-2015: Supervision of final year undergraduate research students, Masters students and summer project students
- 2018- Present: Teaching of classes for third year undergraduate ‘Soft Condensed Matter’ course, Department of Physics, University of Cambridge

Computer and Technical skills:

- Experience programming in IDL, Mathematica, Matlab and Python for data analysis, Labview for data acquisition and Origin and MS Excel for data manipulation
- Use of bright field optical microscopy systems and holographic optical tweezers
- Manipulation of systems of magnetic particles
- Fabrication of microfluidic systems

Other Relevant Experience:

- Peer-reviewer for international scientific journals including *Phys. Rev. E*, *Phys. Rev. Lett.*, *Phys. Rev. Fluids*, *Europhys. Lett.* and *J. Chem. Phys.*
- Oct 2016-Present: Convenor of internal departmental seminars, Cavendish Laboratory, University of Cambridge
- Talks and Seminars:
 - ‘*Experimentally modelling transport at the micro and nanoscale*’, LMU Munich, Germany, September 2018
 - ‘*Experimentally testing models of transport*’, TSRC Nuclear Pore Complex and Smart Polymers workshop, Telluride, Colorado, July 2018
 - ‘*Experimentally modelling transport at the micro and nanoscale*’, Physics of Nanosystems seminar, Cavendish Laboratory, Cambridge, UK, July 2018
 - ‘*Phase behaviour of two-dimensional colloidal hard spheres*’, Heinrich Heine-Universität, Düsseldorf, Germany, Feb 2016
 - ‘*Phase behaviour of two-dimensional colloidal hard spheres*’, Cavendish Laboratory, University of Cambridge, Cambridge, UK, Dec 2015
- Poster Presentations:
 - ‘*Counting binding sites in a colloidal model membrane channel*’, 10th Liquid Matter Conference, Ljubljana, Slovenia, 2017
 - ‘*Equation of State of a 2D binary colloidal glass former*’, 4th International Soft Matter Conference, Grenoble, France, 2016
 - ‘*Hydrodynamic interactions do not affect long-time self-diffusion of quasi-2D colloidal hard spheres*’, Dynamics of Viscous Liquids Workshop, Montpellier, France, 2015
 - ‘*Structure and dynamics of two-dimensional binary colloidal hard sphere fluid*’, 9th Liquid Matter Conference, Lisbon, Portugal, 2014
 - ‘*Dynamics in 2D Binary Colloidal Fluids*’, Jülich Soft Matter Days, Germany, 2012

Other Roles and Interests:

September 2018

- 2012- 2013 Elected as President of the Graduate Common Room, Christ Church, Oxford
 - Role within the Common Room involved overall responsibility for a budget of £27,000, chairing committees and OGMs, and establishing a bursary for future graduate students. Also, I commissioned and raised funds for a portrait of the founder of the Common Room.
 - Wider role within College, involving sitting on College committees and Governing Body
- 2011-present Various outreach activities including visits to schools in Worcestershire, talks at Jersey college for girls 'Aspiring women' day and Trinity College, University of Cambridge, women in STEM day

References:

Prof Roel Dullens- DPhil Supervisor, (roel.dullens@chem.ox.ac.uk)

Physical and Theoretical Chemistry Laboratory, University of Oxford, Oxford, OX1 3QZ, 01865 275478

Prof Ulrich Keyser- Postdoctoral Supervisor, (ufk20@cam.ac.uk)

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