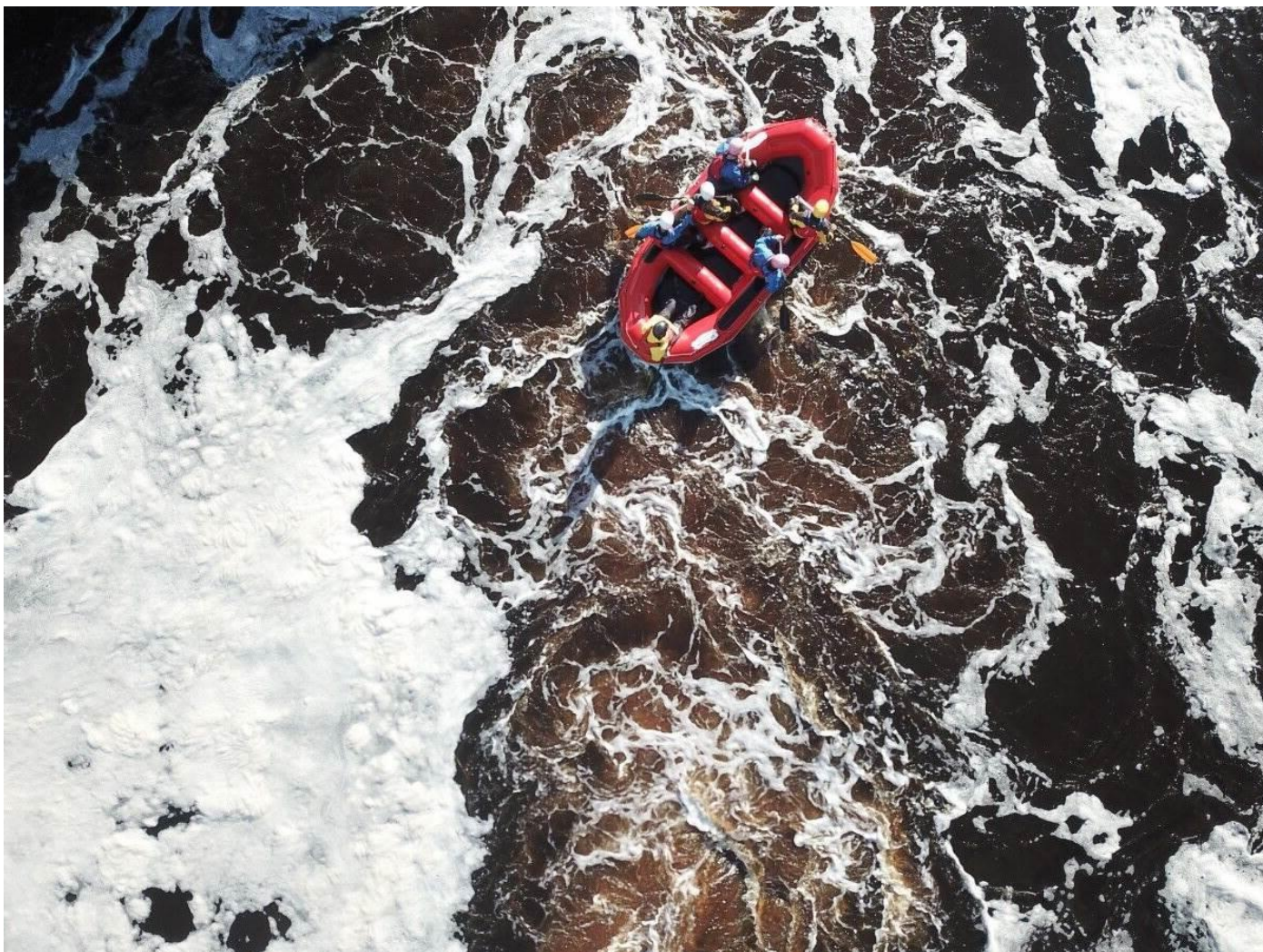




# SOFI CDT NEWSLETTER

EPSRC Centre for Doctoral Training in  
Soft Matter and Functional Interfaces

October 2018



## Turbulent Water

Above is an image from a drone of some of cohort 5 doing white water rafting. This picture was kindly supplied by Piero Vielli (Island 41 Ltd.).

**News from the Management Board:**  
**The final announcement about renewal and SOFI<sup>2</sup> is expected soon in December.**

## Induction week

*Charlotte Pugsley*

Our induction into the SOFI CDT has been one incredibly busy week. We began bright and early on Monday morning with a welcome from Lian, a library induction, and an introduction to business by Dr David King. A lot of us didn't have a clue about the basics of starting up a business, and Dr King certainly helped us gain an insight into what it takes.

Tuesday and Wednesday then saw us undertaking a series of teambuilding exercises, expertly instructed by Piero. It's safe to say that if anybody requires a square formed from a piece of rope under the cover of night, you know who to call. Although, if you want some pieces of wood slotted together in record time – it's best not to ask Jordan if you still want your wood in one piece at the end. And of course, if you need a crack team of raft-builders at your service, definitely don't ask any of us. We learnt a great deal from teambuilding, about our own strengths and weaknesses, and about each other. We learnt that we need to be more careful and less careless, and we learnt that a great nickname for Adele is 'rolling in the deep' (ask her for more details). Wednesday night also included our 'challenge' of organising a social for Cohort 4 and ourselves, which involved a pub quiz at the Swan. We had a lot of fun and learnt a great deal about the case studies to come.

Finally, Thursday and Friday brought us a PhD in two days, where we had to write a mini-thesis and undergo a viva. The topics that we chose included nuclear warfare, space travel, and the Church. We learnt a lot about timings within a PhD and working to a deadline. We also learnt the importance of proof-reading!

Overall the induction week was a lot of fun, and I know that we all learnt a lot more about what to expect over the next 6 months, and over the course of our PhDs. Thank you to Piero for the teambuilding, Lian, Sam Nolan, David King, James Bisset, David Heading and everyone who helped us over our first week!



Above: Cohort 5 during the visit to the Wilton Centre.

## Meet Cohort 5!



So far so good. The members of Cohort 5 have been getting to know each other, so let's find out a bit more about them and their backgrounds:

- **Adele Parry** completed a Bachelor of Science and an integrated masters in at Leeds University in Physics.
- **Beth Beck** completed an integrated masters degree in Chemistry at Newcastle University.
- **Burhan Hussein** completed a degree in Chemistry and a Masters of Science in Molecular Science at Ryerson University (Toronto, Canada). He also worked as a research facilitator at Science Discovery Zone (Toronto, Canada).
- **Charlotte Pugsley** completed an integrated masters degree Chemistry at the University of Bristol, and a three month internship at Thermo Fisher Scientific.
- **Dominic Donkin** completed an integrated masters degree in Chemistry at Northumbria University.
- **Jack Hocking** completed an integrated masters degree in Physics at Heriot-Watt University.
- **James Cochran**, completed an integrated masters degree in Theoretical Physics at Durham University.
- **Jenny Maunder** completed an integrated masters degree in Chemistry at Durham University.
- **Jordan Hobbs**, completed an integrated masters degree in Physics and a summer placement at the university of Leeds.
- **Kalila Cook** completed a bachelor in Physics at the University of Leeds and a Master in Physics at King's College London.

Continues...

## SOFI Out and About

SOFI students have once again been travelling across the world presenting their research. Here are just a few conferences in which SOFI students have participated during the last few months. Click in the links for more information.

Jon (Cohort 1) and Rebecca (Cohort 2) presented their work at the [IUPAC World Polymer Congress \(Macro 2018\)](#) in July in Cairns, Australia.

In August, Holly Linford presented previous work at the [Bionano Summer School](#) in Hirschegg, Austria.

In September, Phil Buckley (Cohort 2) recently presented at the [European Colloid and Interface Society \(ECIS\)](#) in Ljubljana with a talk "Controlled crystallisation using microemulsions".

Will Foster (Cohort 2) has recently presented at the [RMS SPM Annual Meeting](#) in Leeds.

Matthew Litwinowicz (Cohort 4), Colin Gibson (Cohort 4), Rebecca Fong (Cohort 2) and Sophie Ayscough (Cohort 3) have just been to the [ILL & ESS European User Meeting](#) in Grenoble, with some presenting posters. Matthew also attended the presentations at the bimonthly meetings of the molecular migration consortium.

Also at the beginning of October, Lorenzo Metilli (Cohort 4), presented a poster at the [High-Resolution Ultrasonic Spectroscopy for analysis of biomolecular processes \(HRUS2018\)](#) conference that took place in Brno, Czech Republic.

Hugh Barlow (Cohort 2) and Ben Robertson (Cohort 1) went all the way to Houston, Texas for the [90th Annual Meeting of The Society of Rheology](#). Yujie Jiang (Cohort 3) was scheduled to give an oral presentation; unfortunately, he was unable to due to a visa issue so Prof. Wilson Poon, his supervisor, gave the talk instead.

Tom Ridley (Cohort 2) is currently doing a 12 week internship in IBM Research, based in Sci-Tech Daresbury. He is using DL\_MESO for DPD simulations.



Left: Matthew Litwinowicz (Cohort 4), Colin Gibson (Cohort 4), at the [ILL & ESS European User Meeting](#) in Grenoble.

Right: Cohort 5 about to do white water rafting during induction week.

Continuation...

- **Kate Lefroy** completed an integrated masters degree in Chemistry at the university of York with a year abroad in Grenoble for her masters.
- **Kelly Wood**, completed a bachelor in Science (Hons) in Forensic Science at University of Lincoln and a Master in Science in Polymers, Colorants & Fine Chemicals at University of Leeds .
- **Lloyd Shaw** completed an integrated masters degree in Chemistry at Durham University.
- **Lucas Le Nagard** completed a bachelor in Physics and Chemistry at ESPCI Paris (France) and a two year Master in Physics at McMaster University (Canada).
- **Marie Rapin** studied two years of Physics and Chemistry at Université Paris Sud (France) and 3 years of Physics and Chemistry and Biology at ESPCI Paris (France).
- **Merin Joseph**, completed a bachelors of Science in Physics from Mahatma Gandhi University, Kerala (India) and did Master of Science in National Institute of Technology Karnataka (India).
- **Ruth McTiernan** completed a bachelor in Natural Sciences and a Master in Science in Biophysics and Membrane Biology at Durham University.
- **Sam Brown** completed an integrated masters degree in Physics at Durham University.
- **Sam Meacham** completed an integrated masters in Chemistry at the University of York with a year in industry at Merck Chemicals Ltd.
- **Seth Price** completed an integrated masters in Theoretical Physics at Durham University.
- **Veronica McKinny** completed a Bachelor of Science in Physics and a Bachelor of Arts in Cognitive Science. at Lehigh University (USA).



## Preschool slime science outreach

*Rashmi Seneviratne*



Rashmi Seneviratne (SOFI Cohort 3), Marcos Arribas, Zexi Xu and Owen Thwaites from the University of Leeds helped out at the "Spooktacular" Family Funday at a pre-school in Menston. The event included a Slime Science activity organised by Dr. Lorna Dougan from the University of Leeds, which aimed to show 3 to 6 year-olds how things can change from liquid to solid, giving the children a chance to make slime themselves and then take them home in "monster pots" to experiment with further. For older children and adults the concepts of polymer chains and cross-linking was introduced. Over 3 hours, over 100 slimes were made with the children and their families, with follow up reading and materials provided by Dr. Dougan afterwards to consolidate what the children learned.

The activity was part of a family fun day in Menston, Bradford, which aims to engage with pre-school aged children and their families. The event attracted over 100 families and children had the opportunity to learn about the properties of liquids and solids as well as polymers, cross-linking and hydrogel networks.

The activity was supported by funding from an EPSRC Fellowship To Dr Lorna Dougan, University of Leeds 'Exploiting Engineered Polyproteins in the Modular Design of Robust, Tuneable and Biofunctional Hydrogels' (EP/P02288X/1) which aims to gain a cross-lengthscale understanding of the structure and mechanics of folded proteins and the cross-linked networks that they form.



## Zachary Gradwell



Hi, I'm Zach and I'm in Cohort 4. I did my undergraduate in Leeds studying Physics with Nanotechnology focussing on liquid crystals in my final year for my master's project.

I chose to do the SOFI program as it gave a lot of options of what to do next and where to do it. I've been enjoying it a lot so far and having been able to try out the different universities and lifestyles they offer was one my favourite parts. I'm now currently working on bistable liquid crystal lenses supervised by Cliff Jones with Merck as an industrial partner in Leeds. It's an interesting problem and finding solutions requires a lot of creativity. I spend most of my free time gaming or playing the piano.

## Holly Linford



Hi, I'm Holly, part of Cohort 4 and my undergraduate degree was in chemistry at Durham University. I'm now based in Leeds,

working with Simon Connell, Caroline Orfila and Johan Mattsson. I'm looking at the mechanical properties of the plant cell wall, and how those properties on the nanoscale might affect the macroscale behaviour.

I like to keep myself busy, so when I'm not running between chemistry and physics, I can be found climbing, rowing, baking or life drawing.

## SOFI Staff Profile: Simon Titmuss

I am a lecturer in the School of Physics & Astronomy at the University of Edinburgh. I have always worked at interfaces, although those interfaces have not always been soft. I stayed in Cambridge for my PhD, building an ultra-high vacuum system to do low energy electron diffraction at low beam current densities and liquid helium temperatures, under the supervision of Professor Sir David King.

I moved into the field of soft matter as a post-doc, setting up a surface forces lab in Oxford (more instrument building) for Professor Jacob Klein, following a brief stay at the Weizmann Institute in Israel. As a Royal Society University Research Fellow, I started to use neutrons and x-rays to do reflectivity and scattering experiments. These techniques provide a powerful way to probe the structure and dynamics of thin films, such as the lipid layers that make up the membranes of bacteria and our cells. I now have research interests that span bacteria, viruses and chocolate (or more generally the physics of food, now that the CASE project with Mars is concluding).

What attracted me to soft matter was the opportunity to do basic science on a wide variety of problems drawn from real-world systems. So I am happy to help to deliver the SOFI CDT, which shares this aspiration. Another positive aspect is that the SOFI CDT encourages collaborative projects. Cohort 3 student Sophie Ayscough's project on mechanosensitive ion channels in model bacterial membranes is jointly supervised with Max Skoda from ISIS Neutron & Muon source, as a Facility Development studentship project; the project on bacterial growth in microfluidic-produced emulsions that was started by Dan Taylor in cohort 1 and is being continued by Nia Verdon in cohort 4, is co-supervised with my colleague from Edinburgh, Rosalind Allen.

Outside of work, I enjoy hill running and my favourite race is Ben Nevis, for which I have a best time of 2 hours to get up and down from Fort William.



## SOFI Summer Business School

*Sophie Ayscough*

Cohorts 2 and 3 took part in a business school in Durham this July. They were given a project with the aim of creating a business to tackle the pressing issue of plastic waste building up in the oceans. All teams developed viable business ideas which included a plastic concrete, a recycling rewards app, a drink dispenser system for supermarkets and a sustainable choice shopping app. Ideas were developed by talking to industry specialists, canvassing public opinion and ensuring their business model and costs squared up nicely!

At the end the students presented in front of business specialists to get advice on how to move forwards with their business.



Above: Cohorts 2 and 3 during the Business School in Durham.

## Bye-bye Julie, you will be missed!

*Julie Mcloughlin*

Hi – I’m Julie and many of you know my face as the Durham administrator for the SOFI CDT. I’ve been in this role from March 2014 to the end of September 2018 – I’ve now moved to Research Innovation Services to take on the position of Project & Performance Manager on an ERDF grant – inevitably working with a number of North East Universities, lots of SMEs and PhD students! Prior to working with the SOFI CDT I was employed at Durham University Queen’s Campus – here I worked for the Director of the Wolfson Research Institute and then before that position I worked in the School of Medicine, Pharmacy & Health – so I’ve gained quite a bit of experience within Durham!

My career has also included various finance and audit roles within Whitbread (auditing pubs – I liked this job!), Royal Bank of Scotland, the Audit Commission and the National Audit Office. My first job after I completed my degree was at Newcastle University – so, I’ve completed a full circle from University to University.

But...back to SOFI.....what a whirlwind 4 years of experience I have gained in this role, incorporating the initial contact made from potential students in the application process, involvement in the timetable setting, website updates, finance (boo!!!) tasks and everything else that manages to get squeezed in between.

However, it’s been the dedicated ethos of all involved on the project that has made it so successful – starting with the academics’ time to provide an interesting and structured method of teaching, the input from our industry members in transferring theories into what actually happens in the real world of industry but especially from each Cohort of SOFI students. I don’t know how we achieved it but the students involved in all 5 Cohorts have been so dedicated but even better – they have been so much fun. The students have made the SOFI CDT what it is.

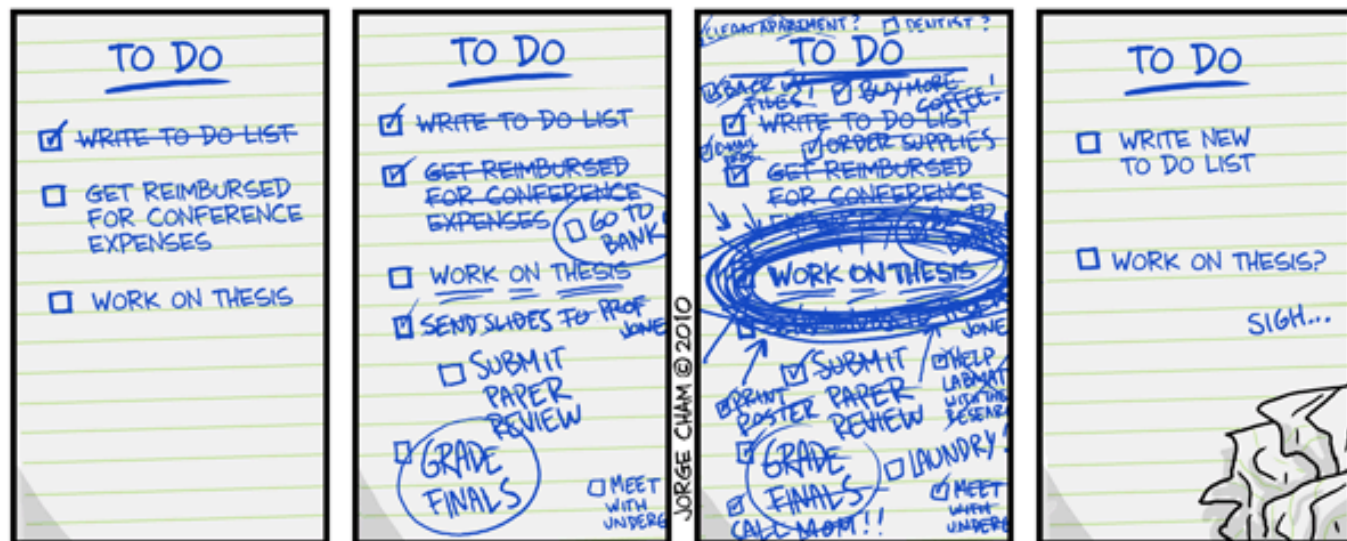
***I wish SOFI<sup>2</sup> the best of luck and long may it continue to Cohorts 6 and beyond!***



Julie with the SOFI flowers from her leaving party.

## PhD life comic

### YOUR "TO DO" LIST



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## Check us out

Take a look at some of the new papers our SOFI students have published in the last few months...

- [Dynamic Vorticity Banding in Discontinuously Shear Thickening Suspensions.](#) Chacko, RN; Mari, R; Cates, ME; Fielding, SM., *Physical Review Letters*, **121**, 10, 108003, (2018).
- [Nucleation of Quartz under Ambient Conditions.](#) Buckley, P.; Hargreaves, N.; Cooper, S., *Communications Chemistry*, **1**, 49, 2399-3669, (2018).
- [Morphology of Poly \(styrene-co-butadiene\) Random Copolymer Thin Films and Nanostructures on a Graphite Surface.](#) Mclements, J.; Shaver, M.P.; Sefiane, K.; Koutsos, V., *Langmuir*, **34**, 26, 7784-7796, (2018).
- [In Situ Molecular-Level Observation of Methanol Catalysis at the Water-Graphite Interface.](#) Foster, W; Aguilar, J. A.; Kusumaatmaja, H; Voutchovsky K., *ACS Appl. Mater. Interfaces*, **10**, 40, 34265-34271, (2018).

Keep up with all the SOFI news online, find us on:



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