

Liquid crystals in varying sinusoidal gratings created using photolithography

The aim of this creation, by cohort 2 student Pete Wyatt, is to control the alignment of titled smectic phase in a homeotropic liquid crystal alignment. The images depict the application of an electric field to the gratings in the Smectic A phase, between crossed polarizers.







SOFI CDT NEWSLETTER

EPSRC Centre for Doctoral Training in Soft Matter and Functional Interfaces

SOFI STUDENT SPOTLIGHT

Natasha Boulding

May 2017







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News from the management board

SOFI has recently been awarded the best possible grade in the EPSRC CDT mid-term reviews!

Outreach activities in Durham

Cohort 3 have now completed their tour of the three SOFI cities and chosen their PhD projects but before starting their research still managed to organise and deliver a fantastic days outreach event for a group of 13 and 14 year olds from Durham. The theme was 'Surprising Science' and was all about displaying the amazing science that we take for granted around us in our day to day lives. Mundane everyday items such as washing detergent and corn flour were transformed into fascinating learning tools that were not only intriguing, but educational. The day's activities were divided up among the cohort and included experiments with sugar rainbows, surface racers, oobleck oddities and colours in nature. An introductory talk with a demonstration of "surprising science" lead to James and Dale being dubbed "the Chuckle Brothers of science"

by one attendee. The positive feedback from all the students who attended showed that they all thoroughly enjoyed the day and learned a lot about the science all around us in our everyday lives, not locked away in a lab.



Cohort 2 get enterprising



Cohort 2 and a few students from cohort 1 attended the Durham Enterprise school in Collingwood College in March. This was an action packed two day course where the participants were encouraged to reflect on the skills they are developing in academia and how they can utilise these in a business context. There was also a strong team building element to the course involving some questionable sheepherding, shelter building and tennis ball bouncing as well as some very efficient problem solving. In the usual fashion of cohort 2, every challenge was met with enthusiasm and plenty of competitive spirit!

Hi! I'm Tasha, a cohort 2 student. I graduated from The University of Warwick with a MChem degree in 2015. I knew after my masters that I was passionate about tackling real industrial challenges, so being part of SOFI was a great

fit for me! One of my favourite parts of SOFI is its multidisciplinary nature. Having friends with different expertise can open your eyes to options you may have never thought of. After the case studies during the first 6 months, I chose to work with Prof. Lian Hutchings in Durham on a PhD project part funded by Croda. Using a range of polymerisation techniques including free radical, controlled radical and possibly anionic polymerisation in the future, we aim to synthesise more effective polymeric surfactants for solid dispersions. If I'm not in the lab, or updating SOFI social media, you will probably find me squatting and deadlifting more than Phil (cohort2) in the gym.

Hugh Barlow

Hiya! My name is Hugh Barlow and I did my bachelors in Physics and Applied Mathematics at the National University of Ireland, Cork, where I graduated in 2015. After that, I joined SOFI CDT as a cohort 2 student. I really enjoyed the scope of challenges presented in the case studies and learning about the wide variety of topics that fall into soft matter science. I am now pursuing my PhD in Durham on computational rheology under the supervision of Professor Suzanne Fielding. My project currently focusses on the behaviour of shear thinning fluids in pressure driven channel flows. I primarily focus on the flow instabilities and unusual dynamics that are seen in these everyday substances. When I'm not staring at a

computer you'll find me most often up a mountain either here or abroad. I've long had a massive travel bug which combined with hiking means hope to see and scale as much of the world as I can!









Award winning talks from SOFI students!

SOFI students have been travelling far and wide once again, attending lecture competitions and winning prizes! Jon Millican took part in the three minute thesis competition, winning the "audience favourite" vote in the science category and gualifying for the Durham University final. Meanwhile Will Foster won both the local and regional heats of the Young Person's Lecture Competition and as a result travelled to London in April to present his work on water-alcohol monolayers to senior members of the Institute of Materials and Mining at the Armourer's Hall. Congratulations to Jon and Will!



SOFI out and about

As ever usual numerous events have been attended, posters presented and networking connections made. Ben presented a poster at the Annual European Rheology Conference in Copenhagen in April. Jess attended the Durham training school in X-ray structure analysis and also visited Astra Zeneca for their annual PhD review day, presenting her recent work on designer gelators for controlled crystallisation of pharmaceuticals. Rebecca attended the ISIS practical neutron training course where she won the poster competition! Back in January Pete and Vanessa attended the British Liquid Crystal Society (BLCS) winter workshop in Hull (even managing to fit in a visit to the sharks at the Deep). Pete also attended the joint BLCS and German Liquid Crystal society meeting in Würzburg in April and has more recently been working to make the science of liquid crystals accessible to the public at the Leeds Pint of Science event "LCDelicious". The IOP annual "Solutions in the Spring" workshop took place in Durham in April. SOFI was thoroughly represented as the event was organised by Dr Margarita Staykova, attended by students from all three cohorts and the opening talk was delivered by Prof Tom McLeish! Jack (cohort 2) tells us about his time at the MolSim school, held in Amsterdam each January, saying "MolSim must be among the best ways to get acquainted with molecular simulations. I joined a few dozen students from around Europe and the world to be lectured by giants of the field Daan Frenkel and

Berend Smit, and solve practical exercises on topics ranging from the basic to the cutting edge. In our ample free time, we headed out in packs to discover some of what the city had to offer (plenty of live music, food and crafty pubs, it turns out). As with all these things, a large part of the experience was the enforced exposure to a bunch of fellow young scientists. If you're a SOFI student, you know the drill!



Keep up with all the SOFI news online at https://www.dur.ac.uk/soft.matter/soficdt/news or find us on Facebook or Twitter at https://www.facebook.com/softmattercdt/ and https://twitter.com/sofi_cdt.

A date for the diary: The UK Soft Matter Showcase is taking place this year in Durham, 5-6th July. This will be followed on 7th July by the annual SOFI industry Network Event, also to be held in Durham.

May 2017

SOFI Staff: Michael Rappolt



Michael Rappolt is a professor of Lipid Biophysics, School of Food Science and Nutrition, University of Leeds. Michael received his Ph.D. (1995) in Physics from the University of Hamburg, Germany. Before joining the School of Food Science and Nutrition in April 2013, he worked as Assistant Professor at the Graz University of Technology, Austria and as Senior Researcher at the Synchrotron Trieste Outstation (Italy) of the Institute of Biophysics and Nanosystems Research (Austrian Academy of Science). Since 2015 he is editor of the Elsevier book series Advances in Biomembrane and Lipid Self-Assembly. Michael is a leading authority on the use of small angle X-ray scattering on investigating the structure and dynamics of lipid self-assemblies. Recent activities have been concentrated on the nanostructure of food such as in cocoa butter crystallisation and on the study of nutraceuticals/membrane interactions with applications to drug delivery.

Engineering and Physical Sciences Research Council

Feedback and submissions for future issues welcome! Please contact vanessa.j.woodhouse@dur.ac.uk