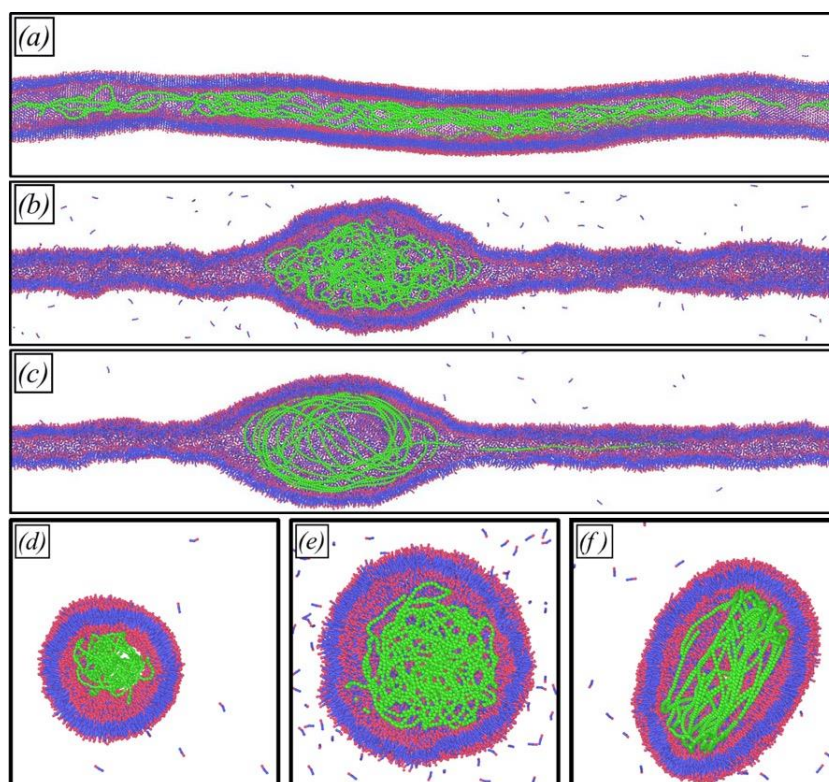


Issue no. 13



Equilibrium snapshots of axial and radial cross section of a semiflexible polymer (green beads) of size $N=2000\sigma$, confined in a bilayer lipid tubule with hydrophilic head groups (red beads) and hydrophobic tails (blue) obtained from CGMD simulations. For rigid tubules with bending modulus $\kappa = 24k_B T$ (a) & (d) a swollen chain is seen, while for softer $\kappa = 12k_B T$ tubules (b) & (e) a globular conformation is observed. A prolate ellipsoidal conformation is observed for persistence length $l_p = 13\sigma$, while for $l_p = 200\sigma$ a toroidal coil (c) & (f) is seen (<https://arxiv.org/pdf/2006.05943.pdf>)

For further details of the Liquids and Complex Fluids Group, see:
<https://www.iop.org/physics-community/special-interest-groups/liquids-complex-fluids-group#gref>

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Group News

Lorenzo di Michele (Secretary) and Martin Buzza (Newsletter), Liquids and Complex Fluids Group

2020 has been the year of Covid. Sadly, most of the group's planned meetings and events had to be cancelled or postponed and the pandemic has also caused major disruption to research. In this issue, we have invited two PhD students, one a theorist, the other an experimentalist, to share their experiences on what it has been like to do a PhD in the pandemic. Many thanks to Roger and Deems for sharing their stories!

In other group news, Dr Natasha Rhys and Prof. Serafim Kalliadasis joined the committee, Natasha as an ordinary member and Serafim as the new Chair, replacing Prof. Tanniemola Liverpool who completed his tenure. Prof. Paul Clegg completed his tenure as Treasurer and was replaced by former ordinary member Dr Sergey Lishchuk. Both Paul and Tanniemola will remain in the committee as ordinary members. Dr Valeria Garbin stepped down as committee member. We would like to thank Tannie, Paul and Valeria

for the sterling work they have done for the group.

We would also like to highlight to all members of the group that the group is able to organise meetings as well as provide sponsorship for meetings planned by external parties. Please get in touch if you have an idea for an event likely to be of interest to the community. Contact details of committee members can be found at the end of this Newsletter.

Chair's Address



Serafim Kalliadasis, Chair, Liquids and Complex Fluids Group

First, a few words to introduce myself. I'm Professor in Engineering Science & Applied Mathematics in the Department of Chemical

Engineering of Imperial College. I'm trained as both an engineer and a mathematician and my research is at the crossroads between Mathematics, Engineering and Complex Systems, covering both applications and fundamentals. Particular emphasis is given to fluid dynamics, soft matter and statistical mechanics of classical fluids. Hence, I have a broad appreciation of fluids.

I assumed my role as Chair of the Liquids and Complex Fluids Group (LCFG) on 01/10/2020. It has been a steep learning curve, but the outgoing chair, Tannie Liverpool, has been most helpful and I'm grateful for that. The time and effort Tannie put into the LCFG, as well as attention to detail and skills in handling complex issues, are evident in the group's current position which by all means is very strong.

There are several worthwhile goals to pursue and lines to follow: collaboration and cooperation within the group, e.g. via wide sharing of research practices and training; connecting more with other IoP groups, such as Soft Condensed Matter and Non-linear and Complex Physics; convene vital meetings, conferences and workshops; navigate research opportunities and initiatives; expand public appreciation of LCFG and its many contributions.

The COVID-19 pandemic has highlighted the important role that expert advice based on science can

play. The LCFG can play an even more important role, contributing to understanding the pandemic and mitigating its effects. Indeed, it is fluids that can help us understand how the virus is transmitted from one person to another – not as surprising to us, as by working on fluids, we know that they are everywhere. This puts the LCFG in a strong position to advocate research into fluids and, together with other IoP groups, play an important role in matters related to COVID and beyond: advice and raising awareness for fluids and Physics at all levels, public, government and funding bodies.

As we move forward, we face a time of major change. One of my top priorities over the next few months will be, in consultation with group members, to develop a future-oriented statement of LCFG mission and try to unify group activity toward a “planned” future.

My very best wishes for 2021.

Perspectives – doing a PhD in a pandemic

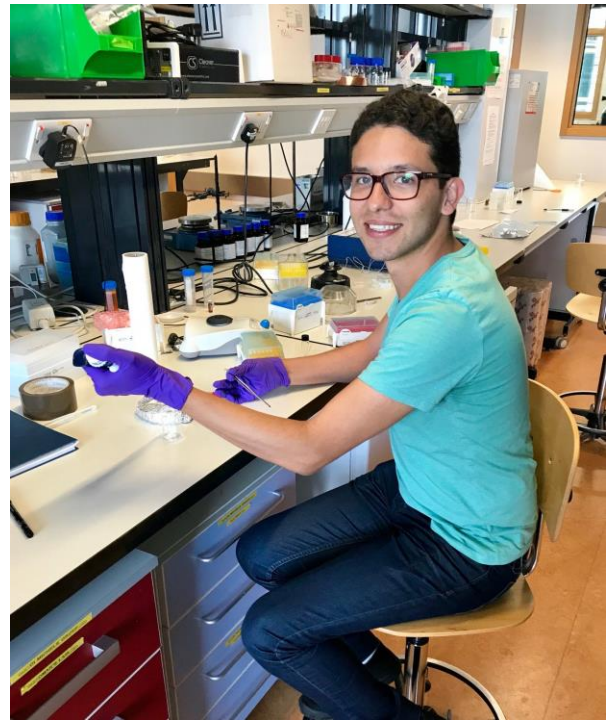
An experimentalists story

Undertaking a PhD is certainly not without difficulties, in a pathway that will test skills far beyond the academic. In light of the COVID-19 pandemic, the lockdowns have brought about not only a stop to a wide range of activities, but also an overwhelming mist of uncertainty that spans the academic to the

professional and personal. Aside from worrying about our well-being and that of loved ones, we are challenged with the need for progress in our research as well as notions on the coming job market crisis.

Indeed, this new world during COVID has required us within the doctoral community to adapt in more ways than anticipated. As an experimentalist who lacked access to lab facilities for a good part of 2020, I can say that my PhD pandemic experience has been uphill. The sharp transition to home-based activities entailed by the halt to experimental research required, at least in my case, adopting a number of strategies to continue furthering my project – from dedicating a space at home for remote work, to polishing or acquiring relevant skills such as coding, modelling, and scientific writing. This also served as an opportunity to take a step back and get some perspective to see the bigger picture in my PhD to carefully address, plan, and execute next steps.

In general, I can say that, in these trying times more than ever, I have been lucky enough to count with the unwavering support of my supervisor and colleagues, the long-ranged encouragement of my family, and also the increasing (virtual) presence of research groups and communities that have helped me navigate this unsettling season.



*by Roger Rubio Sanchez,
Cavendish Laboratory, Cambridge*

A theorists story

The nice thing about being a theorist is that I only need a pen, paper, and a computer to work. Despite the fact that I have not lost access to these essential resources, it has been challenging working at home. Aside from the period between August and December, where I was able to go into my shared office on some days of the week, I have been struggling with the concept of my bedroom as a full-time working environment. I miss the luxury of having an entirely separate space dedicated to work, I miss the spontaneous interactions that would happen throughout the day, often in the common room, and I miss the collaborative scribbling on the blackboards that are scattered around the department. Without the stimulation of a bustling campus, I

have found my motivation and productivity wearing thin.

One positive to come from this situation is the number of online conferences, workshops, and seminars that have emerged since March. I have seen an increased variety of talks because location is no longer an issue, and I find that they are a nice way to break up the day. Overall, while I have found it difficult to maintain motivation and productivity in the absence of spontaneous interactions and a clear separation between work and home, I have enjoyed the fact that so many talks and discussions are now freely available online.



*by Aondoyima Gerald Ioratim-Uba,
School of Mathematics, University
of Bristol*

Forthcoming Events

14th Advanced School in Soft Condensed Matter: “Solutions in the Summer” (5 – 9 July 2021, online event)

Organised by the IOP Liquids and Complex Fluids Group.

The aim of this School is to provide a comprehensive foundation for researchers in the field of soft matter, liquids and complex fluids. The lectures will introduce key topics of current interest together with the theoretical, experimental and computer simulation approaches used to address them.

The School is directed towards postgraduate students from a wide range of backgrounds including physics, chemistry, chemical engineering and biophysics.

Currently confirmed speakers include:

- Robert Evans (University of Bristol)
- Helen Gleeson (University of Leeds)
- Christos Likos (University of Vienna)
- Raffaele Mezzenga (ETH Zürich)
- Susan Perkin (University of Oxford)
- Roberto Piazza (University of Milan)
- Wilson Poon (University of Edinburgh)
- John Russo (Sapienza University of Rome)

- Nigel Wilding (University of Bristol)
- Julia Yeomans (University of Oxford).

School web page:

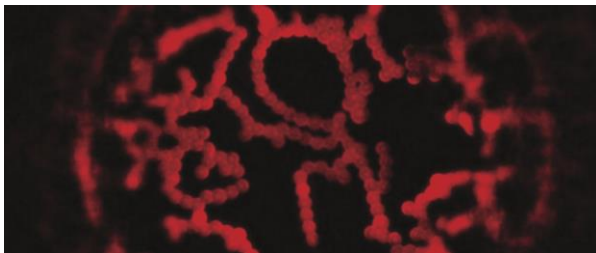
<http://ascm2021.iopconfs.org>

Key dates:

Abstract submission deadline: 28 May 2021

Registration deadline: 30 June 2021

Designed Assembly of Colloids at Interfaces: Fundamentals to Applications (14 – 16 June 2021, Online Event)



Supported by Liquids and Complex Fluids Group, RSC and SCI

Colloidal particles at liquid interfaces not only allow us to stabilise multi-phase systems such as emulsions and foams, but also to create dimensionally confined structures for functional nanomaterials, reconfigurable devices and biomimetic systems.

The aim of this conference is to bring together the diverse research communities interested in this area, from fundamental science to applied research in areas such as novel formulations, lab on a chip reactors, nanomaterials for energy,

biomaterials, encapsulation and controlled release etc., in order to cross-pollinate ideas and stimulate new research directions in these fascinating systems.

To submit an abstract, please go to:

<http://colloids2021.iopconfs.org/home>

Key dates:

Abstract submission deadline: 2 April 2021

Registration deadline: 9 June 2021

Invited Speakers:

- *Bernie Binks (University of Hull, UK)*
- *Nikolai Denkov (Sofia University, Bulgaria)*
- *Sepideh Razavi (Oklahoma University, USA)*
- *Tom Russell (University of Massachusetts at Amherst, USA)*
- *Simeon Stoyanov (Unilever R&D, Netherlands)*
- *Rene van Roij (Utrecht University, Netherlands)*

Organising committee:

Martin Buzza (University of Hull)

Olivier Cayre (University of Leeds)

Valeria Garbin (Technical University Delft)

Other Events

- **Physics of Emergence III: Origin of Life and Emergence of Multicellularity**
July 2021, Hybrid virtual, 2-day.
Organisers Chiu Fan Lee and Robert Endres

- **Single molecule bacteriology II**
13-16th September 2021
Expecting in-person, Milton Hill House near Oxford
Organiser Achilles Kapanidis
- **Physics meets Biology**
26-28th July 2021,
Oxford, hybrid virtual
Organiser Andrew Turberfield

Early Career Researchers Fund

Financial support is available for Early Career Researchers to attend international meetings and visit international facilities. Bursaries up to the value of £300 are available. Applications are considered on a quarterly basis. For information on eligibility and to apply, see:

<https://www.iop.org/research-student-conference-fund#gref>.

Group committee

Chair:

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Members of the committee welcome your suggestions and comments to help facilitate the running and development of the group at any time.

This newsletter is also available on the web and in larger print sizes

The contents of this newsletter do not necessarily represent the views or policies of the Institute of Physics, except where explicitly stated.

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