



PostGraduate Institute  
for measurement science

# GRADPOST

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## EDITOR'S LETTER

# The Research Must Go On.

*By Peter Hou and Keir Murphy*

Welcome to the Winter 2020 edition of GradPost. We are second year Strathclyde PhD PGI students and the current co-editors of GradPost. Little did we know that as soon as we volunteered to become PGI ambassadors, the whole world would go into lockdown and bring with it a set of new challenges and going online would be the norm. Having an extensive knowledge of various online platforms has been a great tool to enable us to network and stay connected with people.

It has been nearly nine months since the beginning of the pandemic and during this period we, the PGI ambassadors, have worked hard to adjust and deliver as many activities and information to our community, formal and informal, as possible. The PGI's 5<sup>th</sup> annual conference was delivered virtually and was our best conference yet. The conference gave us an insight into how researchers have adjusted and coped during these times and how the enthusiasm for research was still thriving with great work being produced and communicated.

This winter edition aims to give you an overview of some of the things our students have achieved in the past few months, the impact they are making on science and society and how research and society must go on.

Finally, we want to remind you that this publication is produced for the PGI community and so we would like to encourage you to engage with us. Tell us what you have been up to, share your successes and send us interesting articles. In the meantime, we hope you enjoy this issue and stay safe.

# PGI Annual Conference 2020

## A Note From The Chair

By David Connolly



Since joining the PGI last year, I became a member of the conference committee back in January, when initially the team were planning and organising the annual event which was to be held at Strathclyde. It goes without saying, that this was quickly revised to include an online backup, and then eventually converted to a fully online conference. This presented the team with several challenges throughout the year; with new software and new faces, and with all the other uncertainties of the year thrown in beside. Not long after, I got a phone call from Leah Chapman at the PGI asking if I would like to become the Chair of the conference committee. This was something I never expected to be offered as I was only newly recruited into the team, but of course, I jumped in feet first!

Part of my responsibilities included volunteering to edit the conference programme, which was a great deal of fun, coming from a design background, it allowed me to enjoy a little bit of graphic design and get creative. Additionally, it gave me a much better idea of the running order as Chair, in seeing what the priorities were in contacting and following up with students, keynote speakers, abstracts, and anything that may have gone under the radar.



Although the online nature of the conference may have been a hindrance to building connections and perhaps being more complicated to navigate, I saw many benefits to holding it online. It allowed for international participation and response from speakers, as well as created the most successful PGI conference by number of delegates.

I would like to thank the PGI Team; Leah, Linden, Richard, Lauren, and Debbie, for all these opportunities and their time over the year, as well as the other students in the committee for all their work in making the conference a great success.

## HIGHLIGHTS

- ★ 3 Keynote Speakers
- ★ 19 Student Presenters
- ★ 5 Student led sessions
- ★ 7 Professionals from diverse sectors discussed their careers

# A Year In The PGI

By the Director of the PGI,  
Dr Richard Burguete

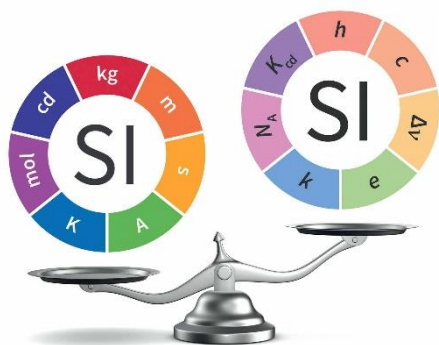


As we approach the close of another year, it prompted me to reflect on what I was thinking about twelve months ago, especially with regards to my expectations for the year ahead. We were looking forward to reporting on PGI progress to the Strategic Partnership in March and celebrating our 5<sup>th</sup> anniversary in October with some events that were to be held around the Annual Conference.

In November last year, the PGI had been gearing up to put together a substantial review the PGI's journey over the past five years and setting out to celebrate all the fantastic work that everyone has contributed to getting us to where we are today. One of the best parts of compiling this review, and what surprised many of us, was to see how much we have achieved; you can find out more in the [Five-year Review document](#).

Over the past few months, we have worked out how to adapt to some difficult challenges and possibly found out where our strengths and weaknesses lie, supporting others where we can or asking for help where we normally would not. One area where I believe our PGRs and the PGI team did this to great effect was with the annual conference. Having taken the decision early (at the beginning of February) to run things entirely online was a good choice and the effort that then went in to delivering the conference was repaid with it being highly successful, reaching more people than ever before. The excellent keynote sessions provided an outline to the talks and posters that were presented by our PGRs showing the far-reaching impact of measurement science. The logical and objective thinking set out in the conference is what, to a significant degree, enables us to overcome problems that we face, particularly the ones that affect humanity as a whole, doing a PhD and being able to affect your surroundings in the way that our PGRs are doing is, I hope meaningful to you.

In keeping with the seasons, and the festive period, there is a sense that after the winter will come renewal with the spring, this feeling has probably been brought into sharp relief by the optimism of a Covid vaccine and the possibility of the whole population being immunised by next summer. I hope that you stay healthy and enjoy the Christmas, in new and creative ways and please let us know if or when you have concerns so that the PGI can support you. If this pandemic has taught us anything, it is that we all do better when we work together.



## Highlights

- ★ Our first virtual conference had 180 individual interactions, a total of 335 attendances and of those who registered to attend, 60 % attended one of the days.
- ★ The PGI celebrated its 5<sup>th</sup> birthday in October

# Researcher Achievements

By Leah Chapman & Keir Murphy

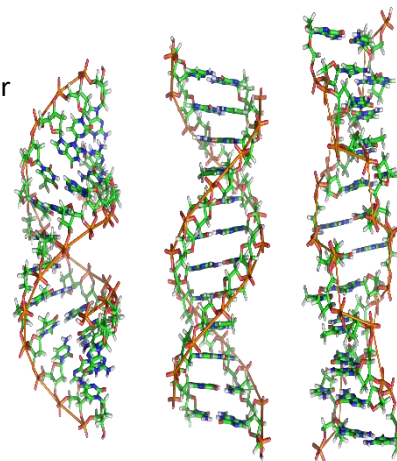
## A PGI student's research is included in a book published by NPL's Scientists

Methods in Molecular Biology is an authoritative book series providing contemporary research protocols, published as chapters, to study the molecular basis of biological activity. Each book is an invited contribution for a specialist topic and is designed to give step-by-step, detailed instructions for carrying out reproducible research.

The new book contribution, entitled *Polypeptide Materials: Methods and Protocols*, promotes the importance of measurements to progress the rapidly growing area of advanced materials and therapies based on proteins, peptides and their derivatives.

Perfected in biology, polypeptides have impacted on virtually any conceivable application to date prompting the need for diversified and harmonised production and characterisation methods across length scales. The book features protocols from academia, National labs and industry, and covers topics as different as therapeutic gene delivery and nanoprecise arrays for molecular electronics. This edition includes a chapter by **Kate Hammond**, a UCL/NPL student, on *Imaging the effects of peptide materials on phospholipid membranes by atomic force microscopy*.

The protocols put emphasis on good laboratory practice and give tips on troubleshooting and avoiding variability pitfalls. Often overlooked in the literature, such a focus meets the growing demand for improving reproducibility in biomedical research and helps better reflect the inter-disciplinary nature of molecular biology. Congratulations Kate for a great achievement and this important contribution to the research community.



## EngD student has won the Three Minute Thesis Competition

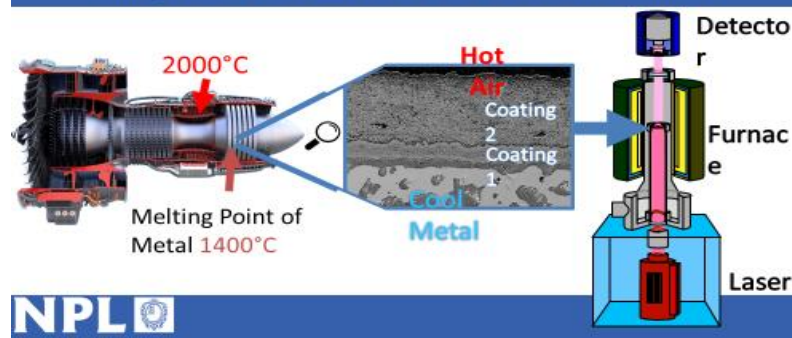
Congratulations to EngD student in MATCHAR Group, **Ateeb Farooqui**, who was the winner of the Centre for Doctoral Training Three Minute Thesis Competition at the University of Surrey. Ateeb demonstrated excellent communication and presentation skills in summarising his work in the EMPIR Hi-TRACE project to the science and engineering audience. A fantastic achievement.

## IOP Award

**Ilias Billas** has achieved [IOP trusted reviewer status](#) by Institute of Physics. IOP trusted reviewer status is designed to recognise the very best peer reviewers in the physical sciences scientific journals and it is anticipated that only the top 15 % of IOP reviewers will achieve this recognition! Well done Ilias!



### Using Lasers to Cut the Cost of Plane Tickets



Ateeb Farooqui's 3 minute thesis presentation



# PGI Updates

## New PGI discord



By David Connolly

Lockdown getting you down? No more. Students here at the PGI have set up a Discord channel for game and quiz nights, socials, meeting new people, and hanging out. Run by students, for students. Especially during these challenging times more social hubs are a must! The Discord is open to everyone, and to kick things off we hosted an Among Us game night in early December. For more info, check it out @ <https://discord.gg/MveGEssAa9>



## 5 Year review and video

By Leah Chapman

**Throughout its five years**, the PGI has helped to develop the next generation of world-class measurement scientists, with the number of students steadily increasing to over 200 researchers this year. Since the beginning, the institute has seen over 140 students graduate, 43 % of which have moved into industrial roles. Full details can be found in the link above.

Celebrating  
5 years of  
collaboration



We want to thank all of you for contributing to the success of the PGI and for making it widely known for its development of a pipeline of professional experts. The team together with Emma Braysher, University of Surrey PGR student and Lewis Hill, University of Strathclyde PGR student, have put together a short video (6 mins) telling the story of the PGI. We hope you enjoy it.

- ★ [Click here](#) to join the PGI Social Discord
- ★ [Watch](#) the PGI's 5<sup>th</sup> anniversary video
- ★ [Sign up](#) to the Mentoring Programme

## Reflections on mentoring and a PGI Mentoring Programme update

By Ben Webster

Since the PGI Mentoring Programme was established back in August 2020, I have been doing some reflecting on the topic of mentoring. What's the point? What's the benefit?

My main motivation behind getting involved with PGI mentoring was a desire to ensure that PGRs, like myself, can have support through the tougher times of their PhD journey. To counter imposter syndrome and the anxiety, and loneliness, that is so often experienced by PhD students. On reflection, and after chatting with others about it, I now realise that, yes welfare support is a big part of the purpose of mentoring, but there is so much more to it than just that! For those who engage in mentoring, it is an opportunity to grow and excel in what they do by having someone support, encourage and guide them along the way. It's about fostering their strengths and skills as well as being open to develop and discover new ones. At the risk of sounding clichéd, mentoring is an opportunity to reach for the stars!

Since August, we have had over 25 mentors sign up, including NPL scientists and PGI students (past and present), and have now paired five PGI students with mentors. We have also held two Mentor Training sessions in collaboration with the Doctoral College at the University of Surrey which went down well with our mentors – a big 'thank you' goes to Dr Neelam Wright for sharing her time and her expertise!

If you would like to help PGI students to get the most of their PhD experience, or to help them prepare for future careers, please consider signing up to become a PGI Mentor. If you are keen, fill in [this form](#) to sign up. We are particularly looking for early career researchers to become mentors, as mentees have expressed a desire to learn from the experiences of other PhD students who are further along in their studies. Similarly, if you are a PGI student and would like to draw on someone's experiences to help you to make the most of your time as a PGR, to help you develop a certain research skill, or to prepare yourself for a post-PhD career, sign up [here](#).

# Training and Events

## Training Update

Last month we reported that new PGI workshops were being introduced for students and we're pleased to follow up on this with details of how it all went. In what was a pilot exercise, we aimed to run these events for small groups to encourage interaction and discussion, not always easy in a virtual world. Four workshops were held once a month from August to November spanning topics from; *Risk Planning*, *Scientific Writing*, *Planning your Career* and *Building Resilience*. Limited in numbers (to encourage the knowledge sharing) the events did not disappoint, with students engaging in discussion in plenary as well as the chat. Delegates told us that the sessions helped them in coping with PhD life and allowed them to develop skills outside of their PhD. We will repeat these events in 2021. Watch this space for more details.

## Welcome to the 2020/21 cohort

October marks the start of the academic calendar as we all know, but for the PGI it's marked in our diaries as the most important time to establish contact with new PGI students across the UK. 'On boarding' to the PGI can be challenging, given the geographical spread of our University engagement, but this year we were able to contact students within days of them starting their PhD journey. This year we welcomed 31 new students to our PGI cohort, the majority of whom, attended our virtual PGI induction. An incredible number, considering the current circumstances. Students from Strathclyde, Lancaster, Manchester, Oxford, Surrey and others met each other, the PGI team and willing Ambassadors. The two-hour event included; breakout sessions, details about the training available, the Supervision Charter contract and the resources available to them through the PGI. Already we have two new PGI ambassadors as a result of the event and our training events are filling up fast. If you have missed out on your PGI induction, please contact [PGI@npl.co.uk](mailto:PGI@npl.co.uk).



## What training would you like? Have your say!

We are preparing our Training programme for 2021 and we need your help. All students and supervisors should have received a survey to complete. Please fill this in and share your views so that we can provide a programme designed for you: [PGI Annual Events and Training Survey 2020](#)

If you are a Supervisor (academic or NPL) and you have training materials and/or experiences you would like to share with our student cohort, please do get in touch. We are looking forward to delivering short talks from experienced scientists during next year's programme. Email [pgi@npl.co.uk](mailto:pgi@npl.co.uk)



# The PGI & Ambassador Team



**Danielle Cox-Pridmore**  
Surrey  
Electronic & Magnetic  
Materials



**Lewis Hill**  
Strathclyde  
Computational Nonlinear &  
Quantum Optics



**David Connolly**  
Strathclyde  
Materials Characterisation



**Dan Flintoft**  
Surrey  
Electronic & Magnetic  
Materials



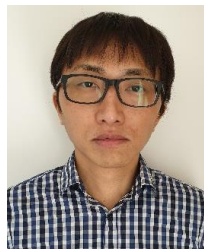
**Hannah Cook**  
UCL  
Medical Radiation Physics

## Welfare & Cohort Experience

## Training & Events

## VOLUNTEER

We are always looking for extra help, whether to organise our PGI annual conference or join our ambassador team. Email [pgi@npl.co.uk](mailto:pgi@npl.co.uk) if you would like to get involved.



**Peter Hou**  
Strathclyde  
Electronic & Magnetic  
Materials



**Keir Murphy**  
Strathclyde  
Electronic & Magnetic  
Materials

## Communications

## STOP PRESS

We are delighted to announce that 4 new PGI ambassadors have volunteered to join the Team – we will provide details in the Next Edition of GradPost

### Richard Burguete

*Director*

Richard is the Head of the PGI team. He is responsible for leading, developing and delivering the PGI Strategy in close partnership with NPL and its university partners. Richard also works with senior leadership colleagues at NPL to establish a coherent approach. He ensures that NPL's mission, strategy and plans are articulated and understood inside and outside the organisation.



### Leah Chapman

*University Liaison (South of England & Wales) and PGI Operations Manager*

Leah liaises with academic partners in the South of England and Wales, and works to build and maintain these collaborations. Leah is responsible for the PGI communications and marketing. She also leads on international relations to promote and grow the PGI.



### Linden Fradet

*University Liaison (North of England & Scotland) and PGI Operations Manager*

Linden liaises with academic partners in the North of England and Scotland, and works to build and maintain these collaborations. Linden is responsible for the PGI training programme and events schedule throughout the year. She also leads on developing industry partnerships to promote and grow the PGI.



### Lauren Livingstone

*Administrator*

Lauren provides the administration support to the PGI team. She manages the PGI email inbox, database and assists with the administrative side of the communications, training and events.

