



## PGI Conference 2019

**This year we are proud to have delivered our fourth Annual PGI conference. Held in Teddington, we drew in our biggest audience to date.**

PGI students from across the UK came together to present their research to fellow PGI students and supervisors, as well as to delegates from industry and academia. Student talks and posters clearly demonstrated the breadth and depth of measurement science and showcased the impact the PGI is having at an international level. Projects addressing global challenges, tackling industrial issues and highlighting the importance of confidence in measurement, impressed judges and delegates alike. Keynote talks from UCL's Prof Graeme Reid, Prof Chris France (Surrey) and NPL's Prof Josephine Bunch not only served to underline this message, but also inspired a future generation of researchers.

### Events in the New Year

- PGI lunchtime seminars  
*29 Jan onwards, Teddington - livestream available*
- ReproducibiliTEA  
*Apr onwards, Teddington*
- Instrumentation & sensors training  
*Mar & May, Teddington & Strathclyde*
- How to write a scientific paper  
*Spring, Teddington*
- Presentation skills course  
*Apr & Oct, Teddington & Strathclyde*
- Supervision Charter  
*Autumn, Teddington*

### On-line Training

*Available now*

- Introduction to measurement
- Introduction to measurement uncertainty

To register your interest in any of the above events, please email [pgi@npl.co.uk](mailto:pgi@npl.co.uk)

## GradPost Editors

**We are looking for a few people to help out with producing GradPost.**

From writing and editing articles to designing and proofreading, this is a great opportunity to get creative and aid communication within the PGI. If you are interested please contact [emma.braysheer@npl.co.uk](mailto:emma.braysheer@npl.co.uk)

### In this issue

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# Director's message

**Richard Burguete** *NPL*

This final issue of GradPost for 2019 gives me a great opportunity to reflect on the past 12 months and what we have achieved; a major highlight for me was of course the PGI conference. It was, in my view, the most impressive display of the talents and activities of our PGRs that I have seen in the four years that the PGI has been in existence. The quality and breadth of topics covered by the student talks and keynote speakers, along with the exceptional organisation, made it an inspiring and truly memorable event.

The work that has been going on to develop training modules for the EPSRC funded Centres for Doctoral Training are hopefully more useful and suited to your needs having listened to your feedback. In addition to this the PGI offers the chance to develop in ways that are broader than your PhD. Being a PGI Ambassador is something that I encourage you to consider, not just for the benefits that you will get in enhancing your CV, but for making your PhD journey more enriching. The success of the PGI this year is, to a significant degree, due to the creativity and effort of the organising committee and I would like to express my sincere thanks to all of them for this, in particular because their contributions give the PGI its special and unique character. You too can be a part of this, so please get in touch to find out how you can join this excellent group of PGRs.

I'm sure that it has been quite a year for you all as doing a PhD is a great challenge, so I expect that you are looking forward to the break to relax and enjoy the festive season with friends and family. I would like to take this opportunity to wish you all a very Merry Christmas and a Happy New Year and I look forward to seeing you all in 2020.

## PGI Winter Warmer

**Rhiann Canavan** *University of Surrey*

On 4<sup>th</sup> December the PGI headed to Bushy House to get ourselves in the Christmas spirit with our annual Winter Warmer event. We were welcomed into the beautifully decorated Globe Room with mountains of pizza, a roaring (projected) log fire, and some banging Christmas tunes.

We pulled Christmas crackers, donned our party hats, and continued the fun with a confusingly numerated Christmas quiz. A lot of laughter was had, and even though only one team could win the most important part was of course coming up with the best pun for your quiz team name (Noel-it-alls, Fab-yule-us)!

Next up was a Gingerbread house speed-decorating challenge; teams were given 10 minutes to build and decorate the best gingerbread house. Icing was slapped on, sweets were flying around and pieces of gingerbread were thrust together... but even with the time constraints the results were impressive! Some creations were more conventional than others, with one masterpiece containing a surprising amount of pizza!



Meanwhile our colleagues at Strathclyde University ran their own event, joining us in spirit if not in person. The event, although not intended as a competition, took on a North vs. South style, and it has to be said the engineering skills were certainly put to good use when producing the high quality gingerbread houses!

A wonderful time was had by all, and a big thanks goes to our excellent ambassadors Hannah and Dan, and University Liaison Manager Linden Fradet and PGI Recruitment Officer Debbie Meikle for putting it all together.

# PGI Conference 2019

More than 100 delegates, representing HEIs, industry, networks and government, took part over the two day event and actively contributed to each and every session. The achievements of this event were further highlighted though its partnership with the Institute of Physics (IOP) and SEPnet, which brought a careers focus to the second day. This gave students the platform to discuss their career aspirations and quiz employers on their recruitment process. It added another dimension to the conference and helped to highlight career options for postgraduate students and to encourage early career researchers to explore their potential and to investigate a wide-range of career paths. It was great to hear Prof Graeme Reid, Chair of the Science & Research Policy at UCL, telling delegates that "the PGI is an extraordinary achievement".

The strength of this conference was emphasised by the uptake of all the sponsorship places. The fifteen employers who contributed to the career workshop had the opportunity to discuss their recruitment vacancies and engage with students, providing vauble advice. We are grateful to all our sponsors and panellists for their involvement and support.

**"This event has showcased by far the best students' talks I have heard in a long time – you should be really proud of what you have developed!"**

Phil Marsden - *Unitive Design and Analysis*

**We are pleased to announce the winning talks:**

**1st place** – Geoff MA  
University of Cambridge  
*'Mobile Air Quality Sampling in London'*

**2nd place** – Michael WOODLEY  
Heriot-Watt University  
*'The Myriad Applications of Microresonators'*

**3rd place** – Danielle COX-PRIDMORE  
University of Surrey  
*'Implantable Ultra-Flexible Bioelectronic Mesh: Reinvention of the Cardiac Pace Maker'*

**The winning posters are:**

**1st place** – Gabrielle WISHART, University of Surrey  
*'Characterization of Hypoxic Organoid System for Radiation Response Studies of Pancreatic Ductal Adenocarcinoma'*

**2nd place** – Emily RUSSELL, Queen's University Belfast  
*'Investigating Biological Response of Combined Radiation and Magnetic Field Exposures with Nanoparticle Contrast Agents'*

**3rd place** – Sam FLYNN, University of Birmingham  
*'Proof of Concept Investigation for in-vivo Verification of Microbeam Radiotherapy using High Resolution Pixelated Detectors'*

# Fundamentally Speaking

**Linden Fradet** *University Liason Manager*

Most of you will know that last year University Centres for Doctoral Training (CDTs) entered a competitive process to secure funding for the next academic five-year cycle. The 2018 EPSRC funded CDT call paved the way for broader academic engagement and, thanks to a process of consolidation (managed by the PGI), NPL shortlisted and provided 40 Letters of Support to HEIs across the UK, and is now linked to 16 successful bids. Creating three levels of CDT support; Basic, Training and Strategic, has simplified the process and identified key outcomes. One of the main outcomes of the programme has been in ensuring that the suite of Fundamentals of Metrology training modules are completed and delivered to CDT partners. To achieve this, a cross disciplinary project team, comprising scientists, commercial, the PGI and NPL Training colleagues, has taken the Fundamentals of Metrology product through a business management process to ensure its delivery and targets for the next 5 years can be met.



Three Fundamentals of Metrology training modules (K, m and kg) were initially produced for the Ultra Precision CDT in 2013. The resulting four-day training course is one that not only served 60 students across the CDT over a five year period, but has now been delivered to staff and PGI students as part of its core Training Framework provision. Through this most recent CDT call, plans are now being developed to complete the series of seven SI modules and deliver different combinations to CDTs in University College London, Imperial College London and University of Edinburgh. With additional content and on-line recorded elements, the aim is to extend the reach of Fundamentals of Metrology and use this platform to engage students in metrology, highlighting the importance of good measurement practice regardless of research area. Watch this space for 2020 dates!

## Beyond the PhD: Life as a PGI ambassador

**Hannah Cook** *UCL*

Completing a PhD can be a stressful and exhilarating three or four years of your life. Throughout that time, you learn a variety of important scientific skills as well as more importantly realising how you can achieve anything you set your mind to! A PhD also enables the expansion and development of a variety of personal skills. Cultivating such skills can sometimes feel like a struggle and a challenge; for example being an introvert and having to do public speaking, having to chair an important meeting which removes you from your comfort zone or learning a coding language for the first time. But these skills build your confidence and employability at the end of the PhD marathon.

The main way I have been able to achieve the expansion of transferable skills is through being a PGI ambassador. I don't like the phrase 'soft skills' as it makes them seem unimportant, when they are actually crucial in the workplace. I have been a PGI training and events ambassador over the past year and during that time I have improved my interpersonal skills, communication and networking skills, ability to deal with different personality types, organisation and management skills and much more. For me, being part of the PGI ambassador team has been a very rewarding and flexible way to develop beyond my PhD and become a very appealing candidate in future job applications.

# Industrial CASE Studentships

**Debbie Meikle** *PGI Recruitment Officer*

**Industrial Cooperative Awards in Science & Technology (CASE)** provide funding for PhD studentships where businesses take the lead in arranging projects with an academic partner of their choice. The aim of these awards is to provide PhD students with a first-rate, challenging research training experience.

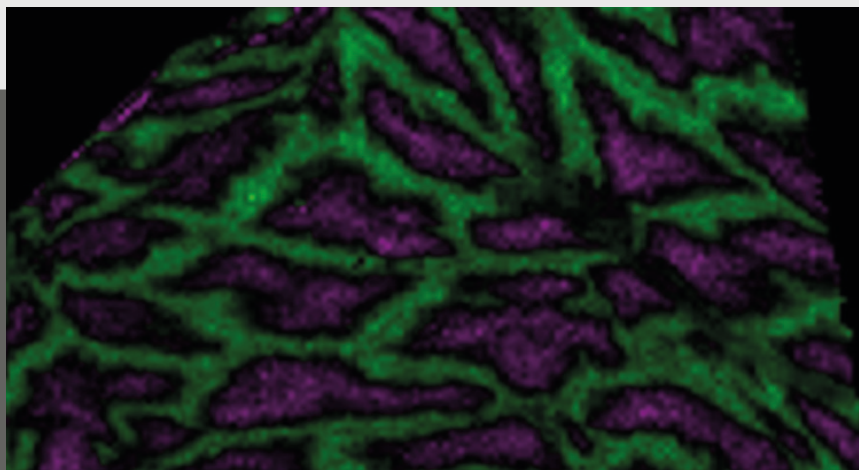
NPL was allocated 10 studentships in the 2019/20 round and held an internal competition to allocate these studentships to groups with exciting PhD projects. The projects chosen this year cover a broad range of topics and will be hosted by a number of different academic partners. If you know anyone looking to start a PhD, these opportunities will be advertised on our website shortly:

- Supporting analytics for nuclear asset data lifecycle, *University of Strathclyde*
- Efficient multifidelity data-informed models for urban air quality, *University of Strathclyde*
- Medical imaging standardisation for large scale studies, *University of Surrey*
- Tissue-like bioelectronics embedded 3D flexible scaffolds for precision electronic medicine and cellular interrogation, *University of Surrey*
- Photoacoustic imaging for optimisation of CAR-T cell cancer therapy, *University of Surrey*
- Inter-scanner and inter-patient variability for large-scale MRI studies, *UCL*
- Quality and safety assessment of advanced batteries, *UCL*
- Nanoscale thermal management, *University of Manchester*
- Multi-layer technology for superconducting quantum processors, *University of Glasgow*
- The prospect of a complete spectrally-resolved Earth radiation budget dataset from the inter-operation of new EO missions, *Imperial College London*

## Science in pixels winner

After having some excellent submissions to our science in pixels competition, we are delighted to announce the winner of the competition is Melina Kyriazi (Imperial College London), with her MALDI MSI of pork liver.

‘Pork liver analysed using matrix-assisted laser desorption ionisation (MALDI) mass spectrometry imaging (MSI). Principal component analysis (PCA) is presenting clearly the anatomical features present, Reproducibility of results when analysing serial sections of the same tissue in different laboratories is a challenge.’



# Call for Ambassadors

**Ben Webster** *University of Surrey*

As many of us enter our final year, we are looking for postgraduate researchers (PGRs) to join the PGI student ambassador team.

Being an ambassador is a great opportunity to ensure that PGRs across NPL, and at collaborating universities, are well represented and supported by the PGI. As ambassadors we want to ensure that you get the most out of doing your doctorate at, or in collaboration with, NPL and that your experience is an enjoyable and fulfilling one. The PGI has so much potential in bringing out the best in all of us, both in a professional manner and as a PGR community, but it faces many challenges and requires the constant input of student representatives.

If you are interested and would like to find out more, or would like sign up to become an ambassador, then please get in contact with one of the current ambassadors directly, or email: [pgiambassadors@npl.co.uk](mailto:pgiambassadors@npl.co.uk).

## Current Ambassadors

- Emma Braysher
- Michael Woodley
- Rhiann Canavan
- Ben Webster
- Hannah Cook
- Keir Murphy
- Leonardo Del Bino
- Caitlin Thomson
- Lewis Hill
- Dan Flintoft
- Danielle Cox-Pridmore

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