

VIRTUAL!

**3RD ANNUAL
AEROSOL SCIENCE CDT
SANDPIT EVENT**

Bristol

Tuesday 15th September 2020



**University of
BRISTOL**

Welcome



Prof Jonathan Reid,
CDT Director

In my capacity as director of the EPSRC Centre for Doctoral Training in Aerosol Science, it is a great pleasure to welcome you to our Third Annual Sandpit. Clearly this sandpit is very different from our previous events. However, as we look forward to defining the PhD projects for recruitment to the third cohort, we hope the event will provide you with valuable opportunities to share your research ideas and identify potential collaborators, both in academia and industry. The CDT continues to thrive, despite the current challenges. Indeed, aerosol science has never been more important.

Now just over 1 year from our launch, we have an academic team of well over 50 members with support from almost 50 industrial and public sector partners. Our first cohort of 14 students have now moved on to the research phase of their PhDs and we are about to welcome a second cohort of 20 students. We hope you find the sandpit informative and that it sparks lots of research ideas as we move forward to recruiting our third cohort.



Dr Adam Boies,
CDT Partnership
Director

I am a Reader of Nanomaterials and Aerosol Engineering within the Energy Group at the University of Cambridge. My research focuses on characterizing the evolution, dynamics and impacts of gas-phase nanoparticles with an emphasis on energy applications, aerosol instrumentation and emissions. As Partnership Chair of the Aerosol Science Doctoral Training Centre my focus has been to ensure that the CDT brings value to our industrial and government partners through continued education, research and training of the next generation of aerosol scientists. We aim to ensure that the Aerosol Science CDT serves as a nucleus for industrial, academic and industrial research sparking new collaborations and partnerships.

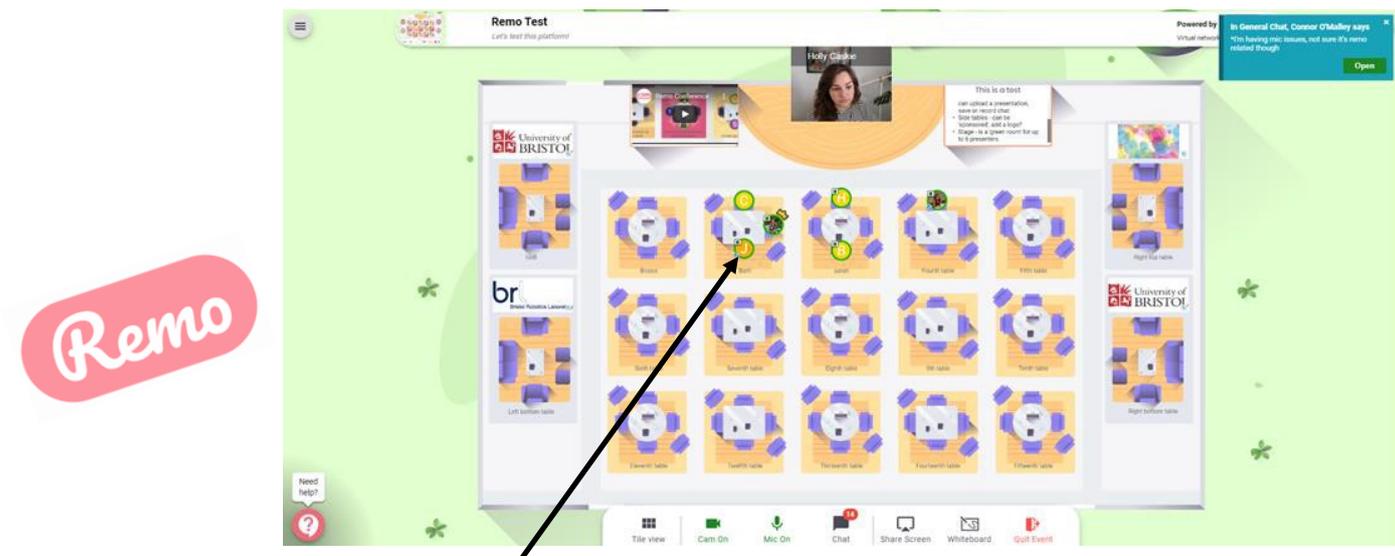


Prof Darragh Murnane,
CDT Deputy Director

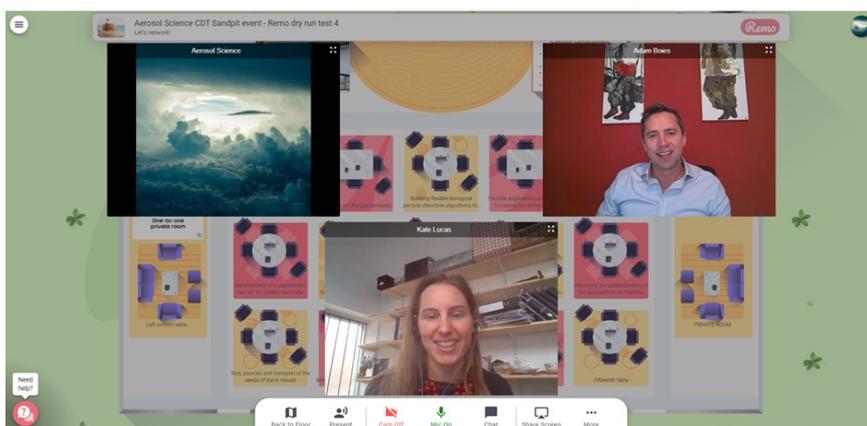
I am Professor of Pharmaceutics at the University of Hertfordshire Centre for Topical Drug Delivery and Toxicology. Within the Centre we undertake a wide range of investigations into the formulation, dispersal and biological exposure to aerosols. My particular focus is on the formulation, manufacture and testing of pharmaceutical aerosols, including approaches to pulmonary bioanalysis. As Deputy Director of the CDT in Aerosol Science, I have supported Jonathan and the team at Bristol to develop the curriculum and I have also been working to develop the entrepreneurship and innovation activities in the first-year programme. I hugely enjoy building networks of aerosol scientists across the academic and industrial divide, and for me the most exciting part of this first-year has been working closely with the students and watching them develop as a cohort. Next year brings a fresh set of challenges, as we seek to keep the cohort connected across the UK, and begin to connect the researchers with the panel of industrial and public sector supervisors.

Remo

Welcome to Remo, our new virtual informal venue. Once you login into the platform you will randomly sit on a virtual table of up to six people and be on “conversation mode”.



Other attendees appear as small ‘dots’ on tables. You can join whichever table has a space by double clicking on a table, and you are free to move around tables.



You can then switch your camera and audio on and click on ‘**Tile view**’ to see and chat with the other people on the table. You will have access to functions such as an interactive whiteboard which you will mainly use during the **breakout sessions**, screen sharing, chat and Q&A.

The speaker on stage will then call for your attention and you will be brought into “presentation mode” where you will be able to listen to the speakers and if needed, use the chat and Q&A functions.

During the three breakout topic discussions, each table will be named as a **topic** and by joining the table, you choose the topic you wish to discuss. There will be an “**Information/Q&A desk**” with a facilitator available at any time during the event should you have any issues or need any further information. Three “**one-to-one private rooms**” located on the sides of the floor will also be available at any time for anyone needing to have a private discussion with someone else. One of Remo’s support manager will be available at the beginning of the event to help you with any IT issues you might have.

- ◇ The event will be recorded. Please log in at least **5 min** prior to start time as you will need to register and create your profile first. Please register with your **full name followed by your company name**. Please read the **Remo Guide** to help you with this process.
- ◇ We advise using **headphones** with a built in microphone to avoid feedback issues.
- ◇ We advise using **Chrome, Safari or Firefox**. You can have a system check [here](#).

Sandpit programme

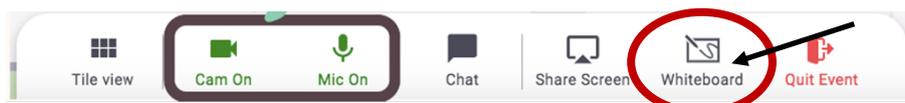
Morning Sandpit Session agenda targeted to Tier 1, 2, 3 & Academics

TIME	EVENT	LENGTH
10:00	Welcome and Introduction by Aerosol Science CDT Partnership Director Dr Adam Boies and brief intervention from Dr Rachael Miles and Ms Vivienne Kuh on the topic 'Responsible Innovation'	15 min
10:15	Industrial Partners' Interview and Testimonials DSTL, Dyson & Nanopharm	15 min
10:30	Overview of breakout sessions	5 min
10:35	Breakout session 1	30 min
11:05	Break	10 min
11:15	Breakout session 2	25 min
11:40	Break	10 min
11:50	Breakout session 3	25 min
12:15	Conclusion, Q&A and next steps	15 min
12:30	End of morning session	



Breakout Sessions Topics

In these sessions, while on your table, you will be using the **whiteboard** interactive function which you will find on your menu bar at the bottom of your screen.



Take time to read the instructions that you will find on the whiteboard and post your answers on a sticky note. The topics in **red** below will be repeated twice throughout the breakout sessions. All tables will be named as per the topics below which are in alphabetical order.

Breakout session 1

- | | |
|---|---|
| 1) Aerosol Characterization and Measurement | 9) Filtration |
| 2) Aerosol Composition and Chemical Analysis | 10) Ice and Aerosol Nucleation |
| 3) Aerosols and Human/Animal Health | 11) Indoor Air and Air Quality |
| 4) Aerosols and Light | 12) Modeling Aerosol Mechanisms and Basic Processes |
| 5) Aerosols and Plant/Crop Health | 13) Particle Chemical Sensing |
| 6) Atmospheric Aerosol | 14) Pharmaceutical aerosols and drug delivery |
| 7) Bioaerosol and infectious disease transmission | 15) Tailpipe Emissions |
| 8) Environmental and Urban Air Quality | |

Breakout session 2

- | | |
|---|---|
| 1) Advanced Computer Algorithms | 9) Filtration |
| 2) Aerosol Capture and Sampling Devices | 10) Indoor Air and Air Quality |
| 3) Aerosol Chemistry and Chemical Transformation | 11) Modeling Aerosol Mechanisms and Basic Processes |
| 4) Aerosol Synthesis and Functional Materials | 12) Particle Lung Interactions and Processes |
| 5) Aerosols and Light | 13) Particle Physical Sensing |
| 6) Bioaerosol and Environmental Science | 14) Smoking and Health |
| 7) Bioaerosol and infectious disease transmission | 15) Sprays and Droplets |
| 8) Climate Modelling | |

Breakout session 3

- | | |
|--|---|
| 1) Aerosol Biological Characterisation and Diagnostics | 9) Global Aerosol Modelling |
| 2) Aerosol Characterization and Measurement | 10) Ice and Aerosol Nucleation |
| 3) Aerosols and Human/Animal Health | 11) Non-exhaust emissions (break, tyre and microplastics) |
| 4) Aerosols and Plant/Crop Health | 12) Pharmaceutical aerosols and drug delivery |
| 5) Atmospheric Aerosol | 13) Reacting flows and Aerosol Fluid Dynamics |
| 6) Break and Tire Wear Emissions | 14) Sprays and Droplets |
| 7) Climate Modelling | 15) Tailpipe Emissions |
| 8) Environmental and Urban Air Quality | |

Poster Presentations

Remo

01. GEORGE ADAMS - University of Manchester

[Determining the effects of airborne particulates on immune and barrier epithelial cell function](#)

02. PETE KNAPP - Imperial College London

[Filtration of Charged Aerosols](#)

03. TORIA LEGH-LAND - University of Hertfordshire

[Particle engineering approaches to control the interaction of medicinal aerosols with the lung environment following inhalation](#)

04. KHALED HASSAN ALZAHABI - Imperial College London

[Inhalable Nanomedicine for Treatment of Pulmonary Tuberculosis](#)

05. MICHAEL GLERUM - University of Bristol

[Development of a packed bed reactor for carbon nanotube synthesis](#)

06. TED ROBSON - University of Bath

[Aerosol-assisted Chemical Vapour deposition \(AACVD\) of Inorganic Functional Materials](#)

07. MADELEINE READER - University of Bristol

[Damage to jet engines by airborne particulates; Detection and mitigation](#)

08. TOM HILDITCH - University of Bristol

[Improving the understanding of the gas/particle partitioning behaviour of organic aerosols in different environmental conditions](#)

09. KATHLEEN THOMPSON - University of Leeds

[Size, sources and transport of the seeds of ice in clouds](#)

10. JAMIE KNIGHT - University of Bristol

[Extinction Cross Section Measurements for Single Aerosol Particles Confined to a Linear Electrodynamic Quadrupole Trap](#)

11. JOSHUA HARRISON - University of Bristol

[Dynamic Surface Properties of Atmospheric Aerosol and Resulting Climate Impacts](#)

12. LAUREN MCCARTHY – University of Bristol

[The Coalescence of Drying Droplets](#)

13. MAX MOSS – University of Manchester

[Building flexible biological particle detection algorithms for traditional and emerging real-time instrumentation](#)

Our Partners—exploring the (Inter!) National Skills Gap in Aerosol Science



Code of Conduct

The Aerosol Science CDT Sandpit 2020 is an online virtual event intended for networking and collaboration in the Aerosol Science community. We value the engagement of each attendee and work to ensure all participants have an enjoyable and fulfilling experience. By choosing to attend, all participants at our workshop are agreeing to adhere to the following code of conduct:

The Aerosol Science CDT is dedicated to providing a harassment-free event experience for everyone, regardless of gender, gender identity and expression, age, sexual orientation, disability, physical appearance, body size, race, ethnicity, religion (or lack thereof), or technology choices. We do not tolerate harassment of event participants in any form, and we request cooperation from all attendees to help ensure a safe environment for everybody.

The Aerosol Science CDT will enforce this code of conduct throughout the event and any participants violating these rules may be expelled from the event at the discretion of the organisers.

WHO TO CONTACT

If someone makes you or anyone else feel unsafe or unwelcome, please approach an event organiser or contact our team as soon as possible through our email aerosol-science@bristol.ac.uk.

ATTRIBUTION

This Code of Conduct was adapted from confcodeofconduct.com and [Geek Feminism Wiki](https://www.geekfeminism.com/wiki/).

Special Thanks

The Aerosol Science CDT team would like to thank our speakers for sharing their research, our partners and partnership board for their insight and support, and finally, all of our Sandpit 2020 event attendees for participating. Thank you for signing on, and we look forward to continuing these important conversations and to seeing you in Bristol soon.

EPSRC Centre for Doctoral Training in Aerosol Science

Key contacts:

Prof Jonathan Reid - CDT Director

Dr Rachael Miles - CDT Course Manager

Kate Lucas - CDT Administrator

Yaelle Hartley - CDT Partnerships Administrator

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 <https://www.aerosol-cdt.ac.uk/>