

EPSRC CDT in Aerosol Science Annual Conference

Theme: Aerosol Technology

Bristol, UK

Thursday 16th September 2021

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Please view our event [Code of Conduct here](#) to ensure all participants have an enjoyable and fulfilling experience during our Annual Conference event.

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WELCOME TO THE AEROSOL SCIENCE ANNUAL CDT CONFERENCE 2021

The first Annual Conference for the Aerosol Science CDT will be held on **Thursday 16th September, 1-5pm**. Our hope is that each annual conference will provide an exciting opportunity to hear about the latest research underway across the CDT. We anticipate that this first conference, held virtually for partners and academics, will be no less informative than meeting in-person, although we do hope we can return to in-person meetings soon.

For Industrial Partners and Academics attending virtually, please follow the link below to our Zoom conference:

Join Zoom Meeting: <https://bristol-ac-uk.zoom.us/j/852358809?pwd=SOUyWk5hYmxlN3ZTOG5YMVV4YmtMZz09>

Meeting ID: 852 358 809 - Passcode: 112589

We are delighted to announce that **Prof. Reinhard Vehring** (University of Alberta, Canada) will be our plenary speaker at 3pm. His talk is *Spray Dried Respiratory Vaccines for Global Distribution*.

Reinhard's talk will be preceded and followed by brief oral presentations by our Cohort 1 and 2 students, grouped thematically in 20 minute segments. Following each group of talks, there will be a brief time for questions.

Best regards

The CDT Core Team

LOCATION

ENGINEERS' HOUSE

Information for our cohorts and Academics attending in-person:

- ◆ Covid-Safe Venue
- ◆ Food Safety & Service
- ◆ Social Distancing
- ◆ Outdoor Space



COVID-19 Industry Standard

In Partnership with;

The National Tourist Organisations of Great Britain and Northern Ireland

In recognition that this business has confirmed that they have followed government and industry COVID-19 guidelines, ensuring processes are in place to maintain cleanliness and aid social/physical distancing.

For more details please visit our [Venue's brochure](#) and [information pack](#).



The Promenade, Clifton Down, Clifton, Bristol BS8 3NB

AGENDA

THURSDAY SEPTEMBER 16

TIME	EVENT	LENGTH
IN-PERSON COHORTS POSTER SESSIONS		
08:15	Arrivals & Welcome Cohort 1	45 min
08:30	Arrivals & Welcome Cohort 2	30 min
09:00	Cohort 1 poster session	1h20
10:20	Break	20 min
10:40	Cohort 2 poster session	1h20
12:00	Lunch	60 min
THE VIRTUAL CDT CONFERENCE		
13:00	Introduction to Flash Presentations in themes	5 min
13:05	Group 1 - Theme: Drug Delivery to the Lungs	20 min (15 + 5 min questions)
13:25	Group 2 - Theme: Respiratory Aerosols and Pathogens	20 min
13:45	Group 3 - Theme: Aerosol Quantification and Charge	20 min
14:05	Group 4 - Theme: Aerosol Exposure and Health Impacts	20 min
14:25	Group 5 - Theme: Optical Properties of Aerosols	20 min
14:45	Break	15 min
15:00	Plenary Speaker - Prof Reinhard Vehring: Spray dried respiratory vaccines for global distribution	50 min
15:50	Break	10 min
16:00	Group 6 - Theme: Materials Synthesis and Assembly	20 min (15 + 5 min questions)
16:20	Group 7 - Theme: Environmental Organic Aerosols and Ice	20 min
16:40	Group 8 - Theme: Impaction, Sedimentation and Losses	20 min
17:00	Closing Remarks & end of event	5 min

FLASH PRESENTATIONS

Group 1: Drug Delivery to the Lungs

- ◆ **Toria Legh-Land:** Physicochemical Particle Properties and Ambient Humidity Levels Affect the Interaction of Medicinal Aerosols with Water Vapour in the Respiratory System and Their Regional and Total deposition Upon Inhalation
- ◆ **Khaled Alzahabi:** Inhalable Nanomedicine for the Treatment of Pulmonary Tuberculosis
- ◆ **Lance Jiang:** Dynamics of Aerosolized excipients on Inhalation at above 95% Relative Humidity
- ◆ **Caterina Fantuzzi:** Microphysiological models for the assessment of pulmonary concentration of inhaled aerosol

Group 2: Respiratory Aerosols and Pathogens

- ◆ **Joshua Harrison:** Exploring Approaches to Characterise Respiratory Droplets $>20 \mu\text{m}$ Diameter
- ◆ **Rob Alexander:** Determining early loss of infectivity in aerosolised coronavirus
- ◆ **Stanislaw Koper:** Early warning detection systems for Bio-terrorism & Pandemic monitoring
- ◆ **Jiangnan Tian:** Inhalation Dynamics of Aerosol and Airborne Disease Transmission

Group 3: Aerosol Quantification and Charge

- ◆ **Peter Knapp:** Charge distributions of aerosols: NaCl, DOS and PSL
- ◆ **Josh Hassim:** Low-cost sensing of aerosols: Sensor development and integration for first and second moment measurements
- ◆ **Cyprien Jourdain:** In-flight measurement of nanoparticle surface area and volume
- ◆ **Frederick Bertani:** Improving the Evaporative Light Scattering Detector through experiments and modelling

FLASH PRESENTATIONS

Group 4: Aerosol Exposure and Health Impacts

- ◆ **George Downing:** Smart Filtration of Aerosols using Preferential Concentration
- ◆ **Georgia Gamble:** Tyre Wear Particles and their Impacts on Health
- ◆ **George Adams:** Determining the effects of airborne particles on immune and epithelial cell function
- ◆ **Altin Kocinaj:** In vitro modelling of lung response to environmental nanoparticulate

Group 5: Optical Properties of Aerosols

- ◆ **Joanna Egan:** Optical Properties of Venusian Clouds
- ◆ **Jamie Knight:** Cavity Ring-Down Spectroscopy Measurements of Absorbing Aerosol Particles
- ◆ **Max Moss:** Building flexible biological particle detection algorithms for traditional and emerging real-time instrumentation
- ◆ **Rob Lewis:** Respirable Fibre Detection from Light Scattering Patterns

Group 6: Materials Synthesis and Assembly

- ◆ **Ted Robson:** Aerosol-Assisted Chemical Vapour Deposition of Inorganic Semiconductors
- ◆ **Michael Glerum:** Kinetic limitations of the floating catalyst carbon nanotube synthesis process
- ◆ **Ellie Vokes:** Aerosol Jet Printed p- and n-type Semiconducting Materials: Practical Routes to Printed Electronics
- ◆ **Jack Macklin:** Investigating the timescales of self-assembly in aerosol droplets

FLASH PRESENTATIONS

Group 7: Environmental Organic Aerosols and Ice

- ♦ **Liv Jackson:** Towards a Better Understanding of Pesticides in the Atmosphere
- ♦ **Tom Hilditch:** Investigating the effect of organic aerosol composition on the properties of the individual components
- ♦ **Hannah Jarvis:** Ice Nucleation in Aerosols Containing Biomolecules
- ♦ **Katie Thompson:** The characterisation of mid-latitude sources of ice nucleating particles

Group 8: Impaction, Sedimentation and Losses

- ♦ **Madeleine Reader:** Damage to jet engines by airborne particulates; detection and mitigation
- ♦ **Fergus Lidstone-Lane:** Particle Transport and Losses in Sampling Aircraft Gas Turbine Engine Combustion Emissions
- ♦ **Edward Neal:** High Confidence Modelling of Particle Resuspension
- ♦ **Lauren McCarthy:** The impaction of droplets on surfaces

PLENARY SPEAKER

ABSTRACT



Prof. Reinhard Vehring

University of Alberta, Canada

Spray Dried Respiratory Vaccines for Global Distribution

Vaccines are most valuable tools in the suppression of pathogens and can control pandemics, when used on a global scale. Liquid vaccines typically need to be stored and distributed at low temperatures incompatible with the infrastructure in many developing countries. This talk will summarize microparticle engineering strategies to develop thermostable, robust vaccine dosage forms that are more suitable for resource-poor settings. Room temperature stabilization in a trehalose glass will be demonstrated using the example of an adjuvanted subunit tuberculosis vaccine, in versions for reconstitution and for respiratory delivery. Various mechanisms of encapsulating particles with a protective shell will be discussed.

BIOGRAPHY

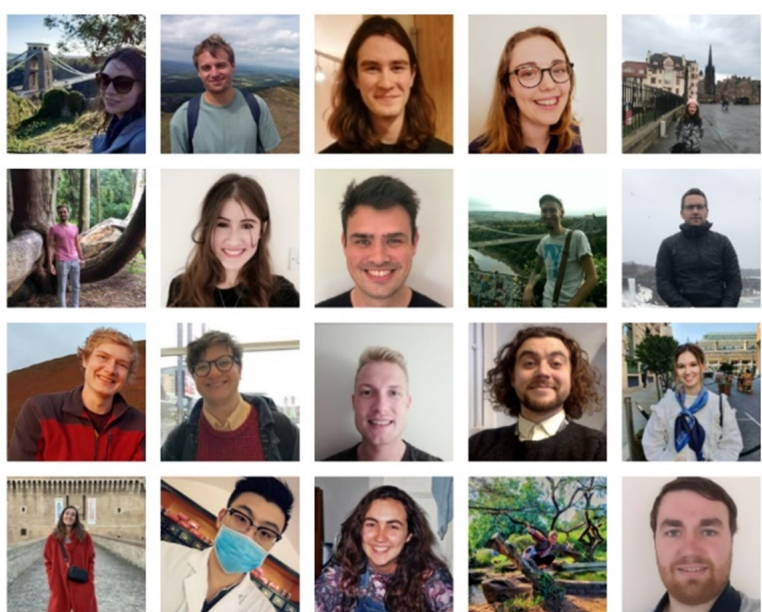
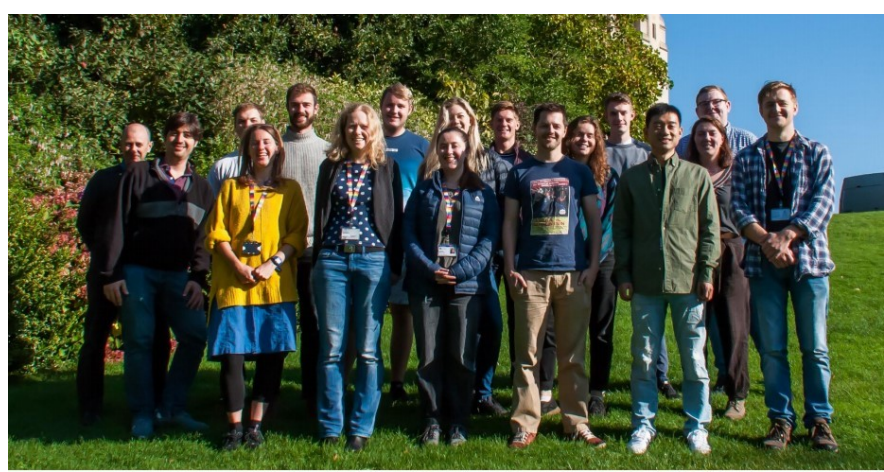
Dr. Reinhard Vehring is a Professor in the Mechanical Engineering Department at the University of Alberta and holds the George Ford Chair in Materials Engineering. He graduated in Mechanical Engineering from the Gerhard Merckator University in Duisburg, Germany, and received a doctorate from the University of Bochum in the field of molecular spectroscopy. Dr. Vehring has held positions in academia and industry for more than 30 years. He worked on pulmonary delivery of insulin at Nektar Therapeutics in California. Subsequently, he developed monoclonal antibodies, and oncology therapeutics at Medimmune, and supported FluMist, the first nasally administered influenza vaccine. Dr. Vehring was the lead inventor for the cosuspension formulation technology which is used by Astra Zeneca in inhalers for respiratory diseases. At the University of Alberta, Dr. Vehring directs the Particle Engineering facility, designing advanced microparticles for Global Health, pharmaceutical and agriculture applications.

COVID REGULATIONS & COMPLIANCE

To mitigate covid risks, we have put in place the following measures during our face-to-face meetings:

- ♦ Social distancing of 1,5m
- ♦ Requiring our guests to perform two lateral flow tests (prior to attendance & mid-week)
- ♦ Face covering is mandatory to be worn during training (ensuring frequent breaks)
- ♦ Environments risk assessments
- ♦ Added ventilation using PureJade air purifiers (at 600M³ per hour)
- ♦ CO2 detectors to monitor ventilation
- ♦ Open doors and windows to ensure ventilation throughout the day





EPSRC Centre for Doctoral Training in Aerosol Science

Key contacts:

Prof Jonathan Reid - CDT Director

Dr Rachael Miles - CDT Course Manager

Kate Lucas - CDT Administration Manager

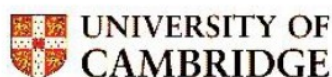
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The University of Manchester



The Aerosol Society