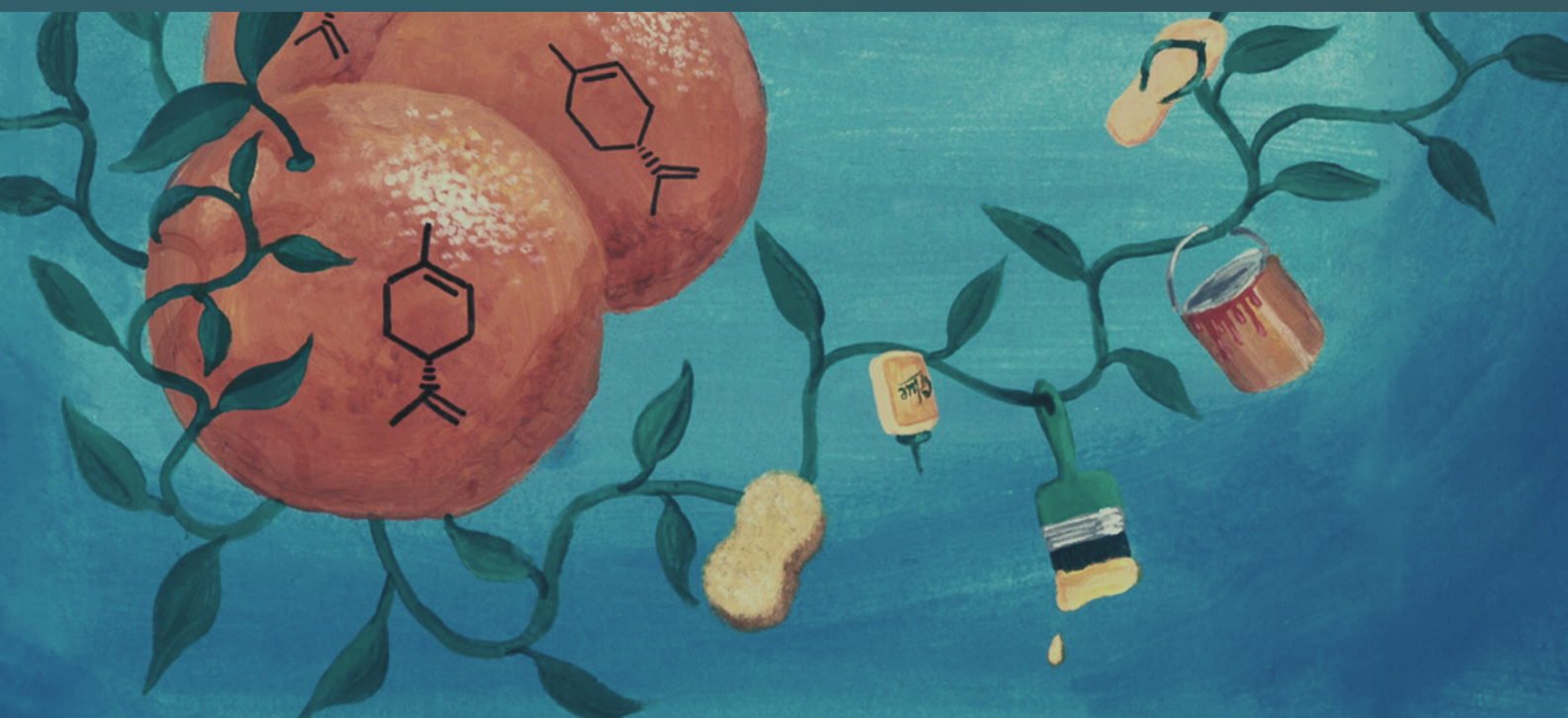


CDT in Sustainable Chemical Technologies

2022 SUMMER SHOWCASE

Molecules to Materials for a Sustainable Future



Programme

27-28 JUNE 2022 THE EDGE, UNIVERSITY OF BATH

27-28 JUNE 2022

SUMMER SHOWCASE

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Molecules to Materials for a Sustainable Future

Monday 27 June

09.00 ARRIVAL & REGISTRATION

09.30 WELCOME

Prof Sarah Hainsworth OBE FREng, Pro-Vice-Chancellor
(Research), *University of Bath*

Prof Matthew Davidson, CSCT Co-Director, *University of Bath*

09.40 PRESENTATIONS

Prof Igor Polikarpov, São Carlos Institute of Physics
Professor, *University of São Paulo*

Prof Stephen Eichhorn, Professor of Materials Science &
Engineering, *University of Bristol*

10.40 IGNITE TALKS

Sandra McHugh

Laura English

George Neville

Andy Brookes

PhD Researchers in Sustainable Chemical
Technologies, *University of Bath*

11.00 POSTER SESSION / TEA & COFFEE

12.00 COLLABORATIVE PARTNERSHIP TALK

Prof Phil Andrews, Head of School of Chemistry, *Monash University*

Prof Toby Jenkins, Professor of Biophysical Chemistry,
University of Bath

Rupinder Dhamoon, Bath-Monash Global PhD Researcher,
University of Bath

12.40 LUNCH



13.50 PLENARY

Dr Camilla Alexander-White, Chemicals Safety Assessor & Independent Scientific Advisor on Chemicals Policy, *Royal Society of Chemistry*

14.35 ALUMNI TALK

Dr Marcus Johns, Postdoctoral Researcher, *University of British Columbia*

14.55 TEA & COFFEE

15.25 PRESENTATION

Dr Davide Califano, Protein Chemist, *Naturbeads*

15.55 FLASH TALKS

Cohort '21 CSCT PhD Researchers, *University of Bath*

16.05 PRESENTATIONS

Dr Paul Murray, Director, *Paul Murray Catalysis Consulting* & Chief Technical Officer, *PhosphonicS*

Prof Susan Bourne, Professor of Physical Chemistry, *University of Cape Town*

17.05 CLOSING REMARKS

Prof Matthew Davidson, CSCT Co-Director, *University of Bath*

18.00-23.00 SOCIAL PROGRAMME

18.00 Drinks Reception & Networking

18.45 Conference Dinner

20.30 Ceilidh Dance

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Molecules to Materials for a Sustainable Future

Tuesday 28 June

09.00 ARRIVAL & REGISTRATION

09.30 WELCOME

Prof Marcelle McManus, CSCT Co-Director, *University of Bath*

09.35 PLENARY

Juliet Davenport OBE, Founder, *Good Energy*

10.20 THREE-MINUTE THESIS ®

Rebecca Furlong

Piers Townsend

Joshua Topley

Matthew Wilkinson

Lorraine Amponsah

CSCT PhD Researchers, *University of Bath*

10.40 POSTER SESSION / TEA & COFFEE

11.35 COLLABORATIVE PARTNERSHIP TALK

Dr Gerrit Gobius du Sart, Corporate Scientist, *TotalEnergies Corbion*

Prof Matthew Davidson, CSCT Co-Director, *University of Bath*

Niamh Murphy, CSCT PhD Researcher, *University of Bath*

12.15 PRESENTATION

Prof Tim Mays, CSCT CDT Co-Director, *University of Bath*

12.45 LUNCH



14.00 PRESENTATIONS

Dr Lewis McDonald, IDRIC (Industrial Decarbonisation Research and Innovation Centre) Researcher, *University of Bath*

Prof Matthew Davidson, iCAST (Innovation Centre for Applied and Sustainable Technologies) Executive Director, *University of Bath*

Dr Ben Groombridge, iCAST Specialist Technician, *University of Bath*

14.30 IGNITE TALKS

Hannah Rogers

Hollie Richards

Adam Khan

Owen Harper

CSCT PhD Researchers, *University of Bath*

15.00 TEA & COFFEE

15.30 PRESENTATIONS

Sarah Davidson, Group Sustainability Coordinator for Global R&T, *CRODA*

Prof Peter Dowding, Chief Research Scientist, *Infineum*

16.30 AWARDS & AWARD LECTURES

Poster Prize and Janet Scott Prize, awarded by **Prof Tim Mays**, CSCT CDT Co-Director, *University of Bath*

Abel & Imray Prize awarded by **Katy Pellow**, *Abel&Imray*

17.00 CLOSING REMARKS

Prof Marcelle McManus, CSCT Co-Director, *University of Bath*

17.10 DRINKS RECEPTION



Igor Polikarpov is a Professor of the Institute of Physics of São Carlos (IFSC), University of São Paulo (USP) and a Coordinator of the Center for Renewable Energies and Molecular Biotechnology (poloTERRA/USP-São Carlos). His main scientific interests are centered on Structural Biology and Molecular Biophysics and their applications in Bioenergy and Biotechnology.

Igor has published over 320 scientific papers and coordinated joint scientific projects with European Union (FP7), UK (FAPESP-RCUK), Argentina and Uruguay (CBAB), India (CNPq-DBT) and Belgium (FNRS-FAPESP). He has also developed scientific collaborations with biotechnological and pharmaceutical companies and he was responsible for construction and operation of large-scale scientific installations (protein crystallography beamlines MX-1 & MX-2 at the Brazilian National Synchrotron Laboratory/LNLS, Campinas, Brazil).

He was an Honorary Professor at the University of Bath (2016-2019) and an Honorary Visiting Professor at the Department of Biology at the University of York (2015-2020). Igor Polikarpov is a Commander of the Brazilian National Order of Scientific Merit and a Member of São Paulo State Academy of Sciences. Listed as a Top scientist by Research.com in the area of Biology and Biochemistry, being #30 on the National Ranking and #8072 on the World Ranking.

Talk title: **CAZymes and cellulose scaffolds** - 27 June @ 09.40

**PROFESSOR
IGOR
POLIKARPOV**

São Carlos Institute of
Physics Professor,
University of São Paulo



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PROFESSOR STEPHEN EICHHORN

Professor of
Materials Science &
Engineering,
University of Bristol

**Talk title: The Hydrophobic and Hydrophilic
Faces of Cellulose - 27 June @ 10.10**

Professor Steve Eichhorn graduated with a BSc in Physics from the University of Leeds in 1993, after which he did a MSc and PhD (1995-1998) at the University of Manchester Institute of Science and Technology (UMIST) in the Paper Science Department. Following that he carried out postdoctoral research under the supervision of Professor Bob Young FRS in the Department of Materials Science and Engineering (1999-2002). He was hired as a new lecturer in 2002 in the UMIST Materials Science Department. He was promoted to Senior Lecturer and Reader and then became Chair of Materials Science at the University of Exeter in 2011, where he built an activity around sustainable materials research and took on leadership roles as a co-Director of an EPSRC-funded CDT and Head of Engineering (2014-2017).

In 2017 he moved to the University of Bristol and into the newly formed Bristol Composites Institute, and was interim Head of School (for the CAME School of Engineering) in 2020. He has been awarded the Rosenhain Medal and Prize in 2012 from the Institute of Materials, Minerals & Mining (IOM3) for his contributions to Materials Science; the Hayashi Jisuke prize from the Japanese Cellulose Society (in 2017); the Swinburne Medal and Prize (IOM3) in 2020; and was the Chair of the ACS's Cellulose and Renewable Materials Division. In 2021 he was awarded an EPSRC ED&I fellowship on Biobased Composites.

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Professor Phil Andrews completed his PhD at the University of Strathclyde, Scotland, and joined Monash University as a Research Fellow in 1995. He was subsequently successful in being awarded a five-year ARC QEII Fellowship in 1997. In 2004, he was appointed as a lecturer in the School of Chemistry..

Prior to joining Monash, Professor Andrews was an Alexander von Humboldt Fellow at the Philipps Universität, Marburg, Germany, and he held a Royal Society Fellowship at Griffith University in Queensland.

Professor Andrews is a Fellow of both the Royal Society of Chemistry and the Royal Australian Chemical Institute. Phil is currently Professor and Interim Head of the School of Chemistry.

In 2020, he joined the Monash Centre to Impact AMR as a founding member and is helping drive the Centre's industry engagement strategy.

Talk title: **Collaborative Partnership Talk-**
27 June @ 12.00

**PROFESSOR
PHIL ANDREWS**

Head of School of
Chemistry, Monash
University



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PROFESSOR TOBY JENKINS

Professor of
Biophysical
Chemistry,
University of Bath

Talk title: **Collaborative
Partnership Talk** - 27 June @
12.00

Professor Toby Jenkins received his PhD in Electrochemistry from the University of Newcastle-upon-Tyne in 1996, before moving to Professor Steve Evans' group in the Department of Physics at the University of Leeds to work on solid supported lipid bilayers for sensing. Subsequently, he was awarded an Alexander von Humboldt fellowship at the Max Planck Institute for Polymer Research in Mainz, Germany, where he worked in Professor Wolfgang Knoll's group looking at micropatterned self-assembled monolayers for lipid bilayer support.

In September 2000 he was appointed Lecturer at the University of Bath and promoted to Professor of Biophysical Chemistry in 2016. Since arriving at Bath, Toby has become interested in the materials-microbiology interface and developed materials for microbial sensing in wounds, in the bladder and vagina and on skin. He works closely with clinicians and has run a number of clinical studies in collaboration with the Royal Bristol Hospital for Children and the Royal United Hospital, Bath.

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Dr Camilla Alexander-White is a Fellow of the Royal Society of Chemistry (RSC), Eurotox Registered Toxicologist and Chartered Chemist with over 20 years' experience in chemical safety assessment. After obtaining a DPhil in Chemistry at the University of York, she developed her experience as a toxicologist at Imperial College London (1996-2000), Unilever's Safety & Environmental Assurance Centre (2000-2010), Environment Agency (England & Wales)(2010-2012) and the global consultancy firm Ramboll Environ (2012-2016).

Camilla is an experienced consultant chemical risk assessor and strategist, and she specialises in preparing and reviewing safety dossiers for consumer goods (foods and cosmetics) and environmental (air, land and water) contaminants. She operates internationally and has led the safety evaluation strategy for global market-critical consumer goods ingredients and performed advocacy work at senior level in the EU.

Camilla participates in European task forces, and is a toxicologist on UK government scientific committees, such as the FSA Advisory Committee on Novel Foods and Processes (ACNFP). She was lead scientist in the Defra Category 4 Screening Level (C4SL) project in the development of a novel framework for assessing land contaminants. She currently has a role as Chemicals Policy Lead at the RSC, where she prepares and presents objective scientific evidence on chemical regulation for policy development.

Talk title: **Pollution
Prevention – A National and
Global Endeavour** - 27 June
@ 13.50

**DR CAMILLA
ALEXANDER-
WHITE FRSC**

Chemicals Policy
Lead, Royal Society
of Chemistry



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DR MARCUS JOHNS

Postdoctoral
Researcher,
University of
British Columbia

Talk title: **Following the light: From cellulose
to microplastics** - 28 June @ 14.35

Dr Marcus Johns is a Mitacs Accelerate Research Fellow at the University of British Columbia, Canada. Since receiving his PhD from the University of Bath's CSCT in 2017, he has worked with cellulose nanoparticles developing new techniques to track their distribution and evaluate their physicochemical properties.

He is currently a postdoctoral researcher in the University of British Columbia, Canada, and collaborates with BC Research Inc. to analyse microplastics via cluster-triggered fluorescence for high-throughput applications.

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Dr Davide Califano began his career studying a BSc in food chemistry and technology at the University of Naples “Federico II”. He then mostly focussed on the relationship between chemistry and life. Later, he joined a Molecular Biology course at the University of Pisa, where he studied life-science subjects including DNA recombination technologies, microbial physiology, and biochemistry. In 2017, he started a PhD at the University of Bath on the development of novel cellulose/enzyme hybrid materials. His research project concerned the design of suitable biodegradable materials in the view of mitigating the use of microplastics.

Led by the desire to operate in the field of sustainable chemistry, he joined Naturbeads, a young start-up based at Bath. Currently, he is engaged in a project regarding the realisation of cellulose-based materials for biotechnological application including cell culture, enzyme immobilisation and protein separation. Davide is enthusiastic to be part of the “technology transfer” process from academia to industry. His future goal is to continue working in the field of sustainable chemistry and biotechnologies to make industry and anthropic activities less harmful for the environment.

Talk title: **Biotechnological applications of cellulose-based soft materials**, 27 June @ 15.25

**DR DAVIDE
CALIFANO**

Protein Chemist,
Naturbeads



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**DR PAUL
MURRAY**

**Chief Technical
Officer, Phosponics
& Consultant**

**Talk title: Working with Janet – collaborations
in sustainable chemistry - 27 June @ 16.05**

Dr Paul Murray completed a degree in Natural Science followed by a PhD at Trinity College Dublin with Professor Brian McMurtry. He joined AstraZeneca in 1998 as a development chemist, working on various stages from process research to commercial manufacture. During this time Paul developed and proved the concept of Predictive Catalysis to improve the optimisation and understanding of catalytic reactions.

In October 2013, Paul Murray Catalysis Consulting Ltd was set up to provide consultancy and training in all aspects of catalysis, Design of Experiments, mapping of material properties with Principal Component Analysis and process development support. In May 2014 Paul joined Phosponics as CTO.

Paul is a visiting industrial fellow at the University of Bath. He has 22 publications and 10 patents.

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Professor Susan Bourne obtained a PhD at the University of Cape Town, studying organic inclusion compounds under the supervision of Professor Luigi Nassimbeni. After a postdoctoral period in Texas, USA, she joined the Chemistry Department at the University of Cape Town and rose through the ranks to become full Professor in 2008.

Her research interests include the application of physicochemical methods to inclusion compounds and crystal engineering of metal-organic materials, all with the aim of correlating solid state structure with physical properties and reactivity. She has published over 150 papers and has supervised more than 20 postgraduate students.

Susan has served as Head of Department, Deputy Dean and interim Dean of the Faculty of Science at the University of Cape Town. She has held several offices in the European Crystallographic Association and is currently Chair of the Structural Chemistry Commission of the International Union of Crystallography. She is a Fellow of the Royal Society of Chemistry and a Fellow of the African Academy of Sciences. In 2019, she was the recipient of the IUPAC Distinguished Women in Chemistry or Chemical Engineering award.

Talk title: **Walking with Janet: reflections on life in science**, 27 June @ 16.35

**PROFESSOR
SUSAN
BOURNE**

Professor of Physical
Chemistry, University
of Cape Town



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JULIET DAVENPORT OBE

Founder, Good
Energy

Talk title: **tbc** - 28 June
@ 09.35

In 1998, Juliet Davenport OBE founded the AIM-listed company Good Energy, a 100% renewable energy utility specialising in decentralised small-scale renewables. In her role as CEO, she oversaw its growth to a £130 million turnover business, including developing over 100MW of renewable assets. Juliet stepped down as CEO in 2021, and has moved into a non-exec and advisory career including a non-executive board director role at Good Energy.

In addition to the Good Energy role, she serves on the board of the Crown Estate, Chairs the Atrato Onsite Energy listed Investment Trust, is Non-Exec on Ombudsman Services and the EV infrastructure company Connected Kerb.

Juliet's roles in innovation include working with Solivus, a new thin-film tech firm; Gravitricity, an innovative storage company; British Growth Fund, an early-stage growth investor; and the Grantham Institute, Imperial College and LSE climate think tank.

She has recently been commissioned to write a book by Bonnier, called the Green Start-up, which is due to be published in October 2022. Juliet has recently received a Honorary Degree from the University of Bath.



Dr Gerrit Gobius du Sart has extensive expertise in R&D projects in an industrial context, from fundamental polymer chemistry and selective catalysis to polymer application, as well as in new technology scouting in the area of sustainable bio-based polymers. He is currently Principal Scientist and Group Leader Polymer Chemistry and Materials Science at Total Corbion PLA.

He has worked with the CSCT on sustainable polymers since 2009, when he joined Purac as Specialist Polymer Technology. Over the past ten years, the collaboration has grown via joint R&D projects including a fellow and multiple PhD students.

Gerrit is also a Visiting Industrial Fellow at the CSCT, where he brings the bioplastic industry view on new developments in sustainable chemicals.

Talk title: **Collaborative
partnership Talk**, 28
June @ 11.35

**DR GERRIT
GOBIUS DU
SART**

Corporate Scientist,
TotalEnergies
Corbion



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PROFESSOR MATTHEW DAVIDSON

CSCT Co-Director
& iCAST Executive
Director

Talk title: **Collaborative
partnership Talk**, 28 June
@ 11.35, **Introduction to
iCAST**, 28 June @ 14.15

Professor Matthew Davidson is Director of the Centre for Sustainable and Circular Technologies (CSCT) at the University of Bath, Executive Director of the Innovation Centre for Applied Sustainable Technologies (iCAST) and Director of an EPSRC Centre for Doctoral Training in Sustainable Chemical Technologies. He is also Whorrod Professor of Sustainable Chemical Technologies and leads the Catalysis for the Circular Economy strand of the UK Catalysis Hub.

Matthew held Lectureships in the Department of Chemistry at Cambridge (1995) and at Durham University (1995-1999) before being appointed to a Chair of Inorganic Chemistry at the University of Bath in 1999. He is a Fellow of the Royal Society of Chemistry and is a previous recipient of the Harrison Memorial Prize of the Royal Society of Chemistry and a Royal Society Industry Fellowship. Matthew graduated in Chemistry from the University of Wales, Swansea in 1990 and received a PhD from the University of Cambridge in 1993.

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Tim Mays is Professor of Chemical and Materials Engineering at the University of Bath. He is Co-Director of the EPSRC CDT in Sustainable Chemical Technologies within the CSCT, Co-Director of the EPSRC Supergen Hydrogen and Fuel Cell Hub (H2FC) and Director of the University's Institute for Sustainable Energy and the Environment (I-SEE). He was recently appointed as UKRI Co-ordinator for Research Challenges in Hydrogen and Alternative Liquids Fuels (UK-HyRES).

He has broad research interests in energy materials, with a focus on solid-state hydrogen storage materials for low-carbon industrial applications.

He is a Chartered Engineer, a Fellow of the Institution of Chemical Engineers and a Fellow of the Royal Society of Chemistry. He gained his PhD in Materials Science at Bath for research on nuclear graphites.

Talk title: **UK-HyRES: UKRI Co-ordinator for Research Challenges in Hydrogen and Alternative Liquid Fuels**, 28 June @ 12.15

**PROFESSOR
TIM MAYS**

CSCT CDT Co-Director



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DR LEWIS MCDONALD

Postdoctoral
Researcher, IDRIC,
University of Bath

Talk title: **Introduction to
IDRIC** - 28 June @ 14.05

Dr Lewis McDonald graduated from the University of Aberdeen with a BEng in Civil and Environmental Engineering before undertaking a PhD at the University of Aberdeen in the same field in 2018. The topic of their PhD was developing a means of capturing CO₂ from Portland cement kilns and mineralising it to produce minerals valuable to cement manufacturers, assessing the viability of calcium carbonate produced from CO₂ as a supplementary cementitious material and conducting a life cycle assessment of the cement manufacturing process with carbon capture implemented.

During their PhD, Lewis developed an interest in sustainable and circular thinking and LCA, and directed their PhD research in that direction. After completion of their PhD, they joined the University of Bath's Department of Mechanical Engineering as a postdoctoral researcher in January 2022 to work on the Industrial Decarbonisation Research and Innovation Centre (IDRIC) project. Lewis' research interests include industrial decarbonisation, carbon capture and utilisation, sustainable construction materials and LCA.



Dr Ben Groombridge graduated from the University of Bath with a BSc in Chemistry before undertaking a PhD at Queen Mary University of London in the same field in 2010. The topic of his PhD was the investigation of Pd-PEPPSI precatalysts for controlled polymerization of π -conjugated polymers from cheap starting materials.

Following his PhD, he has worked as a technician at the University of Bath, predominantly as a teaching technician, before joining iCAST as a specialist technician in 2021.

Along with his technical duties, he has been developing biobased tree guards.

Talk title: **NMC2/BIES JIP -
Biobased Tree Guards** - 28
June @ 14.15

**DR BEN
GROOMBRIDGE**

iCAST Specialist
Technician



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SARAH DAVIDSON

Group
Sustainability
Coordinator –
R&T, CRODA

Talk title: **Embedding
sustainability into new
product development** - 28
June @ 13.50

Sarah Davidson currently works as Group Sustainability Coordinator for Global Research and Technology at Croda. In this role, Sarah is working to embed sustainability in Croda's innovation programme and assist in the delivery of Croda's corporate sustainability targets. Further to this, Sarah leads Croda's UK Diversity and Inclusion sub-committee and is the current Chemical Industries Association Young Ambassador – leading their early careers network.

Sarah joined Croda in 2018, on the European Graduate Development Program, after completing an MSc in Chemistry with a year in industry from the University of Sheffield.

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Pete Dowding was appointed Chief Scientist at Infineum in 2016 acting as leader for the collaborative academic portfolio and for background/ fundamental studies of additives for future generations of lubricants and new business areas. Pete is responsible for bringing new science and analytical techniques into the company.

He has research interests in surfactant design/self-assembly, computational modelling of structure/performance relationships and characterisation techniques, particularly application of x-ray and neutron scattering to industrial systems. He holds 12 patents and has published >40 peer-reviewed papers and contributed to two books.

Pete is Honorary Professor at the Universities of Bristol, Edinburgh and Leeds and is a Visiting Scientist at Diamond Light Source. Pete was awarded the RSC/ SCI McBain Medal for Colloid and Interface Science in 2009 and the RSC Inspiration in Industry Award in 2014. He is a Fellow of the Royal Society of Chemistry and a Chartered Chemist & Chartered Scientist. Pete served twice on the Faraday Council and as Chair, Treasurer and Honorary Secretary for the Joint RSC/ SCI Colloid Group.

Talk title: **Improving sustainability in the Marine Sector**, 28 June @ 16.00

**PROFESSOR
PETER
DOWDING**

Chief Research
Scientist, Infineum

