Bio-Resources: Feeding a Sustainable Chemical Industry

Faraday Discussion

Analytical Catalysis Energy Environmental Materials Organic Physical

Bio-resources: feeding a sustainable chemical industry: Faraday Discussion

19 - 21 June 2017, London, United Kingdom

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Introduction

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There is a rapid growth of interest in the use of renewable resources, and in particular bio-resources for the manufacture of future, sustainable chemicals and materials. The latest USDA report on the potential for bio-based products indicates 10% chemical market penetration by 2015 with ultimately 50,000 eco-products representing a global market value of $1 trillion and the creation of over 200,000 jobs in the US alone

This movement is encouraged by end-user concerns over security of supply (of products based on traditional but diminishing feedstocks), legislation forcing substitution of many common (typically petroleum-based) chemicals, new standards for bio-based products designed to stimulate the markets in Europe and the USA, incentives (e.g. the US bio-preferred programme) and consumer pressure.

The first significant market movement in this direction was with biofuels but the rush to produce these without proper consideration of competing uses for resources and the efficiency of the manufacturing processes lead to considerable debate over the true sustainability of the products and processes. With increasing pressure in Europe, USA and elsewhere to move towards bio-based chemicals it is essential that we underpin the bio-economy with sound and well debated science and technology and that we embrace key chemical technologies including catalysis.

Themes

- **Bio-based materials**
  What materials in the future will be bio-based or bio-derived?
  Should they be “drop in” replacements for existing materials or completely new materials?

  Can we find or make efficiently enough renewable aromatic compounds for us to continue to have a substantial number of high volume aromatic polymers?
- **Bio-based chemicals**
  What proportion of future chemicals will be bio-based?
  Should the focus be on specialities or commodities (or both)?
  What will be the key bio-based “platform molecules”?
  What are the drivers for bio-based chemicals?
  What are the likely feedstocks?
  How can we separate molecules from complex bio-based mixtures?
  How can we purify molecules from refined mixtures?
- **Conversion technologies**
  What proportion of the bio-based market can be met from bio-transformations?
  How can modern chemical catalysis be exploited in the area?
  Can we fully exploit heterogeneous catalysis in the conversion of biomass to chemicals?
  Can we integrate bio- and chemo-technologies such as bio- and chemical catalysis?
  What is the future for alternative energy technologies (e.g. microwave)?
  Do we need new technologies?
  How can we match raw materials with market needs?
- **Feedstocks and analysis**
  What are the most important feedstocks for a bio-based chemicals/materials industry?
  How important is the location of the feedstock?
  Do we need speciality non-food feedstocks?
  How can we analyse complex bio-based mixtures?
  How can we separate complex bio-based mixtures obtained from biomass?

Aims

This Faraday Discussion aims to address some of the critical issues in this field by bringing together experts in different but complementary areas in the chemical sciences. These issues include:

- Which resources?
- All chemicals or specialities only?
- How can (green) chemistry complement biotechnology in the production of chemicals and materials?
- Which catalytic technologies re best suited for the biomass challenge and what are the knowledge gaps?
- Can we use the synthetic chemistry toolkit to create a new chemistry set based on (bio-derived) platform molecules?
- How can (green) chemistry help the bio-energy (including bio-fuel) industries?
- Do chemists understand enough about biomass?
- What will be the most important biomass conversion technologies?
- How can we address the complex separation and analysis issues associated with biomass chemistry?
- What proportion of materials (especially polymers) can bio-based products replace?
- Should bio-based chemicals and materials be drop-in or do we need to start new molecules and processes and create new formulations to deal with new components?

These topics are largely unresolved and sometimes controversial yet their solution is essential. This Faraday Discussion will provide the opportunity for discussion and networking of the multidisciplinary team needed to make good progress.

Format

The Faraday Division have been organising high impact Faraday Discussions in rapidly developing areas of chemistry and its interfaces with other scientific disciplines for over 100 years.

Faraday Discussions have a special format where research papers written by the speakers are distributed to all participants before the meeting, and most of the meeting is devoted to discussing the papers. Everyone contributes to the discussion - including presenting their own slide if it aids discussion.

Find out more about Faraday Discussions here.

Supporting Division

Organised by the Faraday Division in association with the Environment, Sustainability and Energy Division.

Deadlines

Jan
30
2017

Full paper submission deadline

Useful links

E-Issue now online!

Downloads

Provisional Programme

Pre-Prints Session 1

Pre-Prints Session 2

Pre-Prints Session 3

Pre-Prints Session 4

Speakers

Bruce Dale (Introductory Lecturer)
Michigan State University, United States

Andrzej Stankiewicz (Closing Remarks Lecturer)
Delft University of Technology, Netherlands

George Huber
University of Wisconsin-Madison, United States

Mark Mascal
University of California, Davis, United States

Avtar Matharu
University of York, United Kingdom

Xindong Mu
QIBEBT, China

Gadi Rothenberg
University of Amsterdam, Netherlands

Keith Waldron
Institute of Food Research, United Kingdom

Vania Zuin
Federal University of Sao Carlos (UFSCar), Brazil

Abstract Submission

Submit your oral/paper abstract by 03 October 2016
Submit your poster abstract by 17 April 2017 - extended deadline

Oral Abstracts and Research Papers

A full research paper containing new unpublished results always accompanies oral presentations at Faraday Discussions. Submit an oral/paper abstract if you wish to be considered for an oral presentation and associated published paper. The oral/paper abstract should outline current research in progress. Authors of the selected abstracts must then submit a full research paper with a significant amount of new, unpublished work by 30 January 2017.

The research papers are reviewed upon submission and are sent to all delegates 4 weeks before the meeting so they can be read in advance. At the meeting the presenting author is allowed five minutes to highlight the main points of their paper, and the rest of the time is for discussion. The discussion is recorded and will be published alongside the research paper in the Faraday Discussion Volume.

Poster Abstracts - deadline extended until 17 April

Submit your poster abstract by 17 April 2017. Posters are displayed throughout the meeting and a poster session is held on the first evening. The Faraday Division Poster Prize will be awarded to the best poster presented by a student at the conference.

Additional Information

Authors will be notified of the outcome of the review process within about 6 weeks of the submission deadline. The abstracts should be no longer than one A4 page in portrait layout. Please ensure you provide the details of the presenting author and indicate whether you are submitting an abstract for oral or poster presentation.

Deadlines

Oct
03
2016

Oral abstracts deadline

Apr

Poster abstract deadline

17
2017

Downloads

Abstract template

Useful links

Abstract submission

Registration

Bursaries

Programme

Sponsorship & supporting organisations

Venue

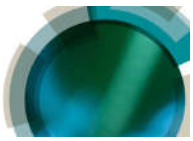
Committee

Contact information

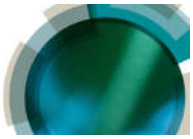
Related events

International Conference on Emerging Advanced Nanomaterials ICEAN 2018
30 October 2018 08:00 - 2 November 2018 20:00, Newcastle, Australia

ANEM2018-Advanced Nano and Energy conference, The University of Western Australia
12 - 14 December 2018, Perth, Australia



1st Annual Congress on Research in Applied Sciences; Engineering, Science & Technology (EST Congress-I)
16 November 2018 08:00 - 18 November 2018 18:00, Kuala Lampur, Malaysia



8th Global Conference on Global Warming
22 - 25 April 2019, Doha, Qatar

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