



# SUPERGEN Bioenergy Hub

## Hub News – Autumn 2014



The SUPERGEN Bioenergy Hub aims to **bring together** industry, academia and other stakeholders to focus on the **research and knowledge challenges** associated with increasing the contribution of UK bioenergy to meet strategic **environmental** targets in a coherent, **sustainable** and **cost-effective** manner.



**Dr Patricia Thornley**  
SUPERGEN Bioenergy  
Hub Director

As I write this we are putting the final touches to the programme for the hub's researcher links workshop on food-fuel interfaces in South Africa in September. The 4 day event at the Kruger National Park with the [University of Stellenbosch](#) and [TSB Sugar Holdings](#) really embodies what the hub is all about: bringing together people from different backgrounds and disciplines to share knowledge that will enhance sustainable bioenergy implementation. We will, of course, put updates, outputs and photographs on the hub website ([www.supergen-bioenergy.net](http://www.supergen-bioenergy.net)) and will follow up with a report on the event at the hub's annual assembly in Birmingham on the 5<sup>th</sup> of November.

The assembly will showcase a selection of leading UK bioenergy research and projects, so if you have some research work or project news you want to share please ensure you submit a 250 word abstract to Dr Laura O' Keefe ([laura.okeefe@manchester.ac.uk](mailto:laura.okeefe@manchester.ac.uk)) by Friday 19 September. All selected abstracts will receive free event entry and accommodation.

There has been a lot of unease about the sustainability of bioenergy in recent times and this has been reflected in policy changes and reviews. A key issue is the greenhouse gas balance associated with bioenergy systems and this is an area where the hub is trying hard to clarify some of the complex issues involved. Our freely available report, [Understanding Greenhouse Gas Balances of Bioenergy Systems](#), brings together the expertise of a number of leading academics and private sector analysts to conclude that there is potential to achieve very significant greenhouse gas savings with bioenergy systems, but these are not guaranteed and thought does need to be given to supply chain impacts.

The hub is supporting this at many levels: we currently have a researcher seconded to DECC working with them on carbon balances, we are running an event jointly with the [IMechE in November](#) to help disentangle some of the issues in a practical way for industrialists and we continue to progress research on key supply chains with input from our industrial partners.

So, if you need any further information or support in respect of bioenergy sustainability or technology development please contact us and we will try to connect you with appropriate individuals. The UK has very significant research expertise in biomass and bioenergy and we want to use that to support sustainable bioenergy development.

I look forward to seeing many of you at the hub's annual assembly in Birmingham on the 5<sup>th</sup> of November. Registrations are now open and numbers are limited so please visit our website [www.supergen-bioenergy.net](http://www.supergen-bioenergy.net) for more information and to reserve your place.

**Patricia Thornley**  
**SUPERGEN Bioenergy Hub Director**



# Research Highlights

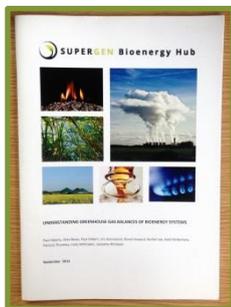


## Research Highlights

- A novel electrostatic precipitator has been built to investigate its potential for cost-effective emissions reduction for domestic biomass stoves.
- A novel plasma-based tar reduction device has been constructed to characterize its performance in conditioning biomass derived syngas and potential for integration into biomass gasification systems.
- Life cycle assessment of a small scale gasification system has been completed (journal paper available).
- Tests have been undertaken on a wide range of fuels including torrefied and washed biomass in a domestic scale wood burning stove facility to identify the impact of different feedstock parameters on emission levels.
- Life cycle assessment techniques have been used to help identify the environmental costs and benefits of implementing torrefaction in wood pellet supply chains (conference presentations and journal papers).
- Losses from storage / ambient drying of wood chip have been found to be as high as 20%, the majority as CO<sub>2</sub>, but some as CH<sub>4</sub> & N<sub>2</sub>O.
- A supply chain case study of forest residues to electricity has shown that greenhouse gas savings from switching to biomass from coal could be negated by emissions during wood storage.

Please contact [Laura.Okeefe@manchester.ac.uk](mailto:Laura.Okeefe@manchester.ac.uk) for any further information.

## Publication Highlights



### Understanding Greenhouse Gas Balances of Bioenergy Systems.

This report was published as an output from a SUPERGEN Bioenergy Hub workshop held in January 2013. The workshop aimed to provide an open forum for life cycle assessment specialists to discuss some of the issues surrounding greenhouse gas balances for bioenergy systems and to provide an overview of the extent to which some bioenergy systems actually reduce greenhouse gas emissions.

### Gasification Technologies: Delivering the potential

This report was based on the outcome of a workshop held in Newcastle University in October 2013, for the project 6 "Gasification Integration". The workshop aimed to gather and collate experiences and expertise of significant players from industry and academia. Keynote speakers included Dr Chris Manson-Whitton (Progressive Energy Ltd), Dr Veronika Wilk (Vienna University of Technology) and Dr Bram van der Drift (ECN).

**Electronic copies of both reports are available on our website [www.supergen-bioenergy.net](http://www.supergen-bioenergy.net), hard copies are available on request.**





# SUPERGEN Bioenergy Hub Events



## SUPERGEN Bioenergy Hub Annual Assembly 2014

**Sustainable Bioenergy: Learning from experience to promote implementation**

Conference Aston, Birmingham

5th November 2014

### REGISTRATION NOW OPEN!

The **SUPERGEN Bioenergy Hub Annual assembly** is a one-day event which will bring together industrialists, academics and stakeholders to share experiences on the key challenges associated with implementing sustainable bioenergy systems. The UK had made significant progress in bioenergy research, development and deployment in recent years. However, many significant challenges remain. At this one day event, there will be opportunities for industrialists to make relevant connections with those leading key bioenergy research areas in academia, for academics to gain understanding of the commercial challenges facing developers and for policy stakeholders to obtain the most up-to-date information on current knowledge and deployment.

If you would like to give an oral presentation at this event to share your work with the wider bioenergy community **please submit an abstract or summary (not more than 250 words) of your proposed presentation** to Dr Laura O'Keefe (Laura.Keefe@manchester.ac.uk) by Friday the 19th of September at 16:00. Please include three keywords when submitting your abstract.

Presentations may target any area of UK bioenergy activity, but the following would be particularly welcome: case studies of practical implementation experience, policy developments and challenges, sustainability, environmental emissions, gasification, combustion behaviour, feedstock properties, energy crop growth, biomass from forestry systems, greenhouse gas balances of bioenergy systems, scale-up issues, economic analyses of actual operations, biomass processing, novel conversion technologies, pyrolysis, pretreatment, syngas production and utilization.

***The best submissions will be selected for oral presentation and will receive free entry to the event, including complimentary overnight accommodation.***

The SUPERGEN Assembly will have a mixture of invited and submitted oral presentations, posters and discussion sessions that will facilitate an improved understanding of the key issues associated with different technologies and how they can most effectively be addressed. In the evening there will be a poster session displaying a wide range of current UK bioenergy research and activity during a drinks reception, followed by a conference dinner.

To register for this event, please visit: <http://goo.gl/ObSd2c>

<b>Day rate</b> (inc. conference dinner and drinks reception)	£50
<b>Overnight rate</b> (inc. conference dinner, drinks reception and overnight accommodation with breakfast)	£100
<b>Speaker rate</b> (inc. conference dinner, drinks reception and overnight accommodation with breakfast)	FREE

For more information contact Dr Laura O'Keefe (Laura.Keefe@manchester.ac.uk) or visit our website:

[www.supergen-bioenergy.net](http://www.supergen-bioenergy.net)



# Events and Outreach



## SHARE Network

The SUPERGEN Bioenergy Hub Early Careers Researcher Network (SHARE Network) has been set up to provide an informal but professional interdisciplinary network of peers who are engaged in bioenergy research. It will run workshops and seminars to support knowledge exchange, promote mobility of early career researchers and interdisciplinary collaboration.

The SHARE Network is open to all bioenergy PhDs, post-doctoral researchers and research fellows, or those of equivalent professional standing, belonging to formal partners of the SUPERGEN Bioenergy Hub. Current members have backgrounds in chemical, materials and energy engineering, chemistry, physics, social science and economics.

The first official SHARE network meeting took place at the International Bioenergy Conference in Manchester where the Chair (Dr Paul Adams, University of Bath) and Co-Chair (Dr Aakash Welgamage Don from The Robert Gordon University) were elected.

On Thursday 3<sup>rd</sup> of July, the SHARE network visited Cockle Park farm (Newcastle University), who have recently installed a state of the art anaerobic digestion plant that uses the farm's pig and cattle manure and grass silage to generate heat and power.



The next **SHARE network** meeting will take place on the 6<sup>th</sup> of November. For more information on this event and how to join the SHARE network, please contact [Laura.Okeefe@manchester.ac.uk](mailto:Laura.Okeefe@manchester.ac.uk)

### International Bioenergy Conference

Manchester, March 2014

In addition to sponsoring the event and the exhibition stand, the hub hosted a welcome event on the first evening of the conference attended by over 80 people. It provided a great opportunity for networking and for SUPERGEN researchers to discuss their research in an informal setting.

### PYRO 2014

Birmingham, May 2014

The SUPERGEN Bioenergy Hub had an exhibition stand and also sponsored the 20<sup>th</sup> International Symposium on Analytical and Applied Pyrolysis in Birmingham which was attended by 230 delegates from 34 countries.

### EU BC & E 2014

Hamburg, June 2014

The hub hosted the parallel event "Can bioenergy pay back carbon debt in time? Challenges of temporal aspects of greenhouse gas emissions from bioenergy" attended by scientists, decision makers and stakeholders. This was in addition to attending the stand at the week long conference.

### Researcher's Day

Newcastle, July 2014

Over 30 members attended the SUPERGEN Bioenergy hub's annual Researcher's day on the



2<sup>nd</sup> of July at Newcastle University. The lead researcher on all 16 projects presented preliminary results and future plans at this internal event.



# Funding



## SUPERGEN Bioenergy Hub - Small Grant Fund (Ongoing)

The SUPERGEN Bioenergy Hub small grant fund aims to provide flexible, responsive funding of up to £10,000 (at 80% of full economic costs) to cover a range of bioenergy research-related activities.

Funding from this call is **not intended to cover basic research**, but to support the activities of UK bioenergy researchers that are more difficult to fund via other established mechanisms. There is considerable flexibility around the range of activities that could be funded from the small grant fund and researchers are **encouraged to be imaginative** about what would actually move things forward in their area. These could include research visits, secondments, development work on larger proposals, proof of market, collaborative workshops etc. Funding can also cover staff time at eligible institutes, travel, subsistence, consumables and small items of equipment relevant to the activity.

For more information please email: [Laura.Okeefe@manchester.ac.uk](mailto:Laura.Okeefe@manchester.ac.uk)

We currently have 16 different projects within the SUPERGEN Bioenergy Hub, more detail on each of these projects can be found by visiting our website [www.supergen-bioenergy.net](http://www.supergen-bioenergy.net):

### Hub Research Projects

1. **Emissions from solid biomass combustion** led by Newcastle University
2. **Impact of feedstock parameters on airborne emissions** led by University of Leeds
3. **Evaluation of Synthetic natural gas** led by University of Bath
4. **Streamlining the supply chain** led by Rothamsted Research
5. **Carbon uncertainties in the supply chain** led by The University of Manchester
6. **Gasification integration** led by Newcastle University
7. **Torrefaction integrated assessment** led by University of Bath
8. **Carbon capture and storage** led by University of Leeds
9. **Bio-oil partial upgrading** led by Aston University
10. **Whole systems analysis of novel biofuel technologies** led by Aston University
11. **Clean energy utilisation from biogas and biomass gasification** led by Lancaster University
12. **Bioenergy value chains: Whole systems analysis and optimisation** led by Imperial College
13. **Development of fast pyrolysis based advanced biofuel technologies** led by Cranfield University
14. **Increasing energy yield from the integration of anaerobic digestion and pyrolysis** led by Aston University
15. **Photocatalytic bioethanol production** led by The Robert Gordon University
16. **Clean Energy from Rice Straw** led by University of Manchester & International Institute of Rice Research

For more information about our projects, potential funding opportunities, news on our latest research outputs or on anything within this newsletter contact Dr Laura O'Keefe ([Laura.Okeefe@manchester.ac.uk](mailto:Laura.Okeefe@manchester.ac.uk)) or visit our website:

[www.supergen-bioenergy.net](http://www.supergen-bioenergy.net)

