NEWSLETTER

FEBRUARY 2011

DIBANET

The latest edition of the newsletter provides you with updated results and outcomes generated in the frame of the DIBANET project. The project will reach its half-life soon and many activities have already been carried out. At the end of 2010 both a networking event and a Summer School were organised; the project's progress was reviewed and further strategies for the project were planned at the project meeting in Rio de Janeiro last December.

DIBANET partners at the Networking Day in Rio de Janeiro, December 2010

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About DIBANET

DIBANET (www.dibanet.org), the Development of Integrated Biomass Approaches Network, is a 42 month, € 3.73m research project that is funded by the EU's Seventh Framework Program. It is coordinated by the Carbolea Research Group at the University of Limerick (www.carbolea.ul.ie) in Ireland, and builds on the key, complementary, strengths of European and Latin American researchers and industries to advance the development of second generation biofuels. It focuses on the conversion, by non-biological means, of the residues and wastes of Europe and Latin America. DIBANET offers the possibility of converting agricultural residues and wastes into sustainable biofuels and additional value added products. This work will contribute to the development of the green economy and will help to secure jobs into the future.

DIBANET Project Progress

Sugarcane harvesting, Brazil

The progress to date, as detailed in the meeting which was hosted by project partner Federal University of Rio de Janeiro, is summarised below:

- A main focus of DIBANET is that feedstock is used to its maximal potential and that wastes are minimised or eliminated. Latin American DIBANET partners CTC (Brazil), Fundacion Chile and UNICAMP (Brazil) continue to work closely with the DIBANET team at the University of Limerick (Ireland) and FOSS (Denmark) to evaluate potential sustainable Latin American and European feedstocks for the DIBANET process. The work underway on the development of rapid analytical techniques for feedstocks will allow online analysis of a feedstock at biorefineries in the future.

- Acid hydrolysis of biomass feedstocks for the production of levulinic acid is being carried out in the DIBANET reactor system at the Carbolea Research Group at the University of Limerick. Before hydrolysis the recalcitrance of biomass can be reduced by chemical pretreatment.

Miscanthus (before) and after pre-treatment.

This will lead to higher carbohydrate content in the material, which will result in an improvement in the hydrolysis yields. It will also contribute to lower energy consumption by allowing higher particle size processing. Investigations into pretreatment of biomass for levulinic acid production are underway and showing promising results.

- Aston University (UK) is working to determine how different hydyrolysis conditions effect the properties of the acid-hydrolysis resides as this will influence the bio-oil and biochar that can be produced by pyrolysis of these residues.

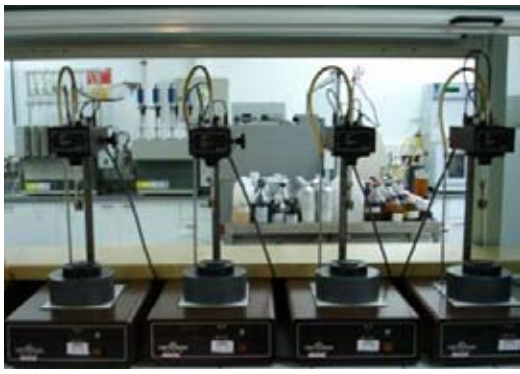
Pyrolysis-GC-MS used at Aston to screen the pyrolytic decomposition products, bio-oil and char characterisation

- CERTH (Greece) has analysed and pyrolysed the residues from this system and are developing catalytic pyrolysis processes for improved bio-oil production and upgrading.
- University Federal Rio de Janeiro (Brazil) and University of Buenos Aires (Argentina) are continuing work on development and testing of catalysts for upgrading of bio-oils from pyrolysis and the conversion of carbohydrates and levulinic acid.

DIBANET partners discuss catalysis production and characterisation in UFRJ's research labs at the recent DIBANET meeting

DIBANET is an integrated process, residues from the hydrolysis process are used to produce more biofuels, via pyrolysis, and the biochar residue from this subsequent processing stage is evaluated as a plant growth promoter and carbon sequester by EMBRAPA (Brazil).

DIBANET partners, YPF, a large Argentinean oil company is undertaking analysis of the range of biofuels produced from the DIBANET technologies for their compliance to EN 590 requirements.



Biofuel analysis at YPF, Argentina

Existing biochar trials at EMBRAPA, Brazil

Catalytic pyrolysis rig at CERTH, Greece

DIBANET Networking Day

The DIBANET research consortium presented "Diesel fuels from wastes, residues and non-food crops of Latin America & Europe" at the recent DIBANET Networking Day that was held on Monday, December 13th 2010 at the Federal University of Rio de Janeiro, Brazil.

The Networking day brought together key players in scientific communities and industry to discuss how Europe and Latin America can work together to produce diesel fuels sustainably and cheaply. Presentations were made and discussions took place on new methods for the sustainable production of diesel fuels from wastes and residues. Speakers included DIBANET partners from Europe and Latin America.

Members of the DIBANET team (Prof. Michael H.B. Hayes-UL, Prof. Victor Teixeira da Silva-UFRJ, Corinna Byrne-UL, Daniel Hayes-UL) meet with Iowa State Governor Chet Culver at the DIBANET Networking Day

Topics covered were:

- Latin American and European feedstocks for diesel fuel production
- Technologies for sustainable diesel fuel production and their products
- Catalysis in diesel fuel production
- Newly developed analytical techniques for online feedstock characterisation

Presentations are available on the DIBANET website.

Chet Culver, Governor of Iowa, the renewable energy capital of the United States, attended the DIBANET Networking Day, where he outlined Iowa's activities in the renewable energy sector. Petrobras, the fourth largest energy company in the world, also attended and were keen to learn about technologies being developed by DIBANET.

Culver, representative of the Governors Biofuel Coalition, discussed the latest developments in biofuels and biomass in Iowa. These developments are driven by the Iowa Power Fund, which was created to be a tool to promote the energy independence for Iowa.

"This fund has seen Iowa's renewable energy grow from 5% to 20% of the energy sector in a short space of time. Biofuels currently have an 8 billion dollar impact on Iowa's economy, which has generated 2 billion dollars in new household income and created and supported 50,000 Iowa jobs" said Prof. Michael H.B. Hayes, UL, coordinator of DIBANET. "If such a fund was made available in other countries to support and develop green technologies like DIBANET, not only would it ensure energy security but it would drive the Green economy and deliver much needed sustainable, green jobs."

Culver consulted with DIBANET members as to how the technologies and processes developed within the project may contribute to secure sustainable energy sources as well as value-added products from biomass in the future.

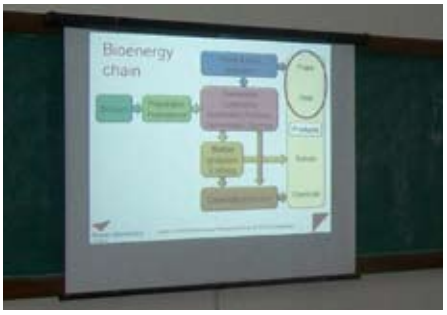
"The Governor's Biofuel Coalition welcomes collaboration with all of you and our partners around the world so we can accomplish our goals", Culver said.

DIBANET SUMMER SCHOOL
Federal University of Rio de Janeiro
13-16 December 2010

SUMMER SCHOOL

The DIBANET Summer School, aimed at providing in-depth information on technologies for the sustainable production of second generation diesel fuels, took place recently at the Federal University of Rio de Janeiro from December 13th to 16th 2010. The School was designed for postgraduate students (Masters and PhD) in Chemistry and Chemical Engineering, typically in their first or second years of research, who wanted to engage together in the examination of technologies for the sustainable production of second generation diesel fuels, chemicals and biochars from the wastes, residues and non-food crops of Latin America and Europe.

The Summer School took place over four days. Day one overlapped with the DIBANET Networking Day and gave students a valuable opportunity to engage with leading players in the scientific and industrial communities. The remainder of the summer school examined hydrolysis and thermal processing of biomass for second generation biofuel production. This included a series of lectures on carbohydrates chemistry, biomass characterization, hydrolysis, and products analysis as well as on pyrolyis, characterisation of pyrolysis products, catalytic pyrolysis and catalytic upgrading of products. The course offered a unique opportunity for interaction with fellow students and leading international scientific and industrial experts from Europe and Latin America.



The materials of the Summer School will be available for everyone interested in the topic via an e-learning course at the DIBANET website soon.

DIBANET Team

DIBANET's research student wins research award

Prof. Victor Teixeira da Silva-UFRJ, Mr. Luiz Antonio Rodrigues Elias (Minister of Science and Technology), Mr. Leandro Alves de Sousa, pictured at the award ceremony

Mr. Leandro Alves de Sousa, a PhD student working in the DIBANET research team under the supervision of Prof. Victor Teixeira da Silva at the Federal University of Rio de Janeiro, recently received the Young Scientist Presidential Award for his catalysis work which is a major theme of DIBANET research.

Join the DIBANET Network & Contact Database

The DIBANET Network & Contact Database is an online networking opportunity bringing together key players from scientific communities and industry biofuels to engage with each other in the area of biofuel research and development.

Benefits of joining the DIBANET Network:

- Regular updates on research results on diesel production from wastes and residues
- Access to the DIBANET e-learning course materials on second generation diesel production
- Easy business and research network creation opportunity

The Network is beneficial for:

- Industry leaders and policy makers
- Investors
- Corporate energy and sustainability executives
- Renewable energy entrepreneurs
- Marketing & business development professionals
- Legislators, government agencies
- Scientists and researchers
- Students

Please visit http://www.dibanet.org/network_reg.php to register online for the DIBANET Network.

A new researcher has recently joined the DIBANET team at Aston University.

Ms. Ana Maria Cortes joins the DIBANET research team at Aston University.

DIBANET aims to foster cooperation and form strong links between Europe and Latin America by the establishment of DIBANET scholarships for Latin American students. Ana Maria Cortes from Colombia joined DIBANET at Aston University in December 2010. Ana is funded as a Latin American PhD student through the DIBANET scholarship scheme. Ana has a Bachelors degree in Chemical Engineering from the Universidad Nacional de Colombia (2004). Her final year project was on glycerol monostearate production. She obtained a masters degree in Advanced Materials and Processes from Friedrich Alexander Universitaet Erlangen – Nuernberg, Germany (2008) and her research project was on modelling gas solubilities in ionic liquids. Ana's work will focus on catalytic pyrolysis of the acid-hydrolysis residues produced in the DIBANET process.