Press Release

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More Than Just a Dream. Climate-Destroying CO_2 as a Feedstock for Fuels, Chemicals and Plastics – Current Research and Industrial Implementation Highlights

The sixth edition of the international "CO_2 – Carbon Dioxide as Feedstock for Fuels, Chemicals and Polymers" conference (www.co2-chemistry.eu) will take place in Cologne on 15 and 16 March 2018. More than 200 experts from industry and research are expected to attend the symposium. Nova-Institute, the event organisers, have once more managed to attract leading international speakers, who will discuss the very latest developments in this future-oriented field. The conference will shed light on carbon dioxide or CO_2-based production technologies for fuels, chemicals, polymers and even proteins. A broad portfolio of technologies is employed here, ranging from chemical catalysis to industrial biotechnology. The event will be held under the patronage of Prof Dr Andreas Pinkwart, Minister of Economic Affairs, Innovation, Digitalization and Energy of the Federal State of North Rhine-Westphalia, who will also be the keynote speaker at the conference.

How to use CO_2?

Utilising carbon dioxide (CO_2) as a feedstock has been topping the agenda of innovative research projects and companies for several years now. The underlying idea is to achieve a more circular use of the greenhouse gas that is CO_2 and, at the same time, to avoid additional emissions through substituting raw materials such as natural gas and crude oil with CO_2-based products. Internationally, the technologies used are summarised under the term *Carbon Capture and Utilisation,* or *CCU* for short. CCU embraces a whole range of technologies allowing CO_2 and other emissions, among them carbon monoxide (CO) and synthesis gas (CO_2, CO and H) in particular, to be used for the production of various commodities.

Rapid development

It is impressive to see how fast researchers advance and especially how swiftly the industry implements their findings. Over the past few years public research funders in Germany and the European Union have increasingly understood the significance of these new technologies and as a consequence support numerous research projects, working hand-in-glove with the private sector. It is only a matter of time before CO_2, along with crude oil, natural gas, coal and biomass, is an important feedstock of the chemicals and energy industries – adding to the benefits of renewable energies and addressing climate protection goals. After the U.S. has lost ground under Donald Trump, Europe may now gain pole position.
The annual conference held in Cologne provides an overview of the latest developments and applications; it has developed into *the* central meeting place of this aspiring industry. Leading scientists will gather in Cologne as will representatives of start-up companies and pioneers in addition to innovative large corporations.

What's New at this Year's nova Conference in Cologne?

The sixth "Conference on CO_2 as Feedstock for Fuels, Chemistry and Polymers" will showcase the latest CCU developments. The first session will be dedicated to politics, innovation and implementation strategies, with talks by Prof Dr Andreas Pinkwart, Minister of Economic Affairs, Innovation, Digitalization and Energy of the Federal State of North Rhine-Westphalia, Jürgen Tiedje (European Commission), Dr Helmut Löwe, (Federal Ministry of Education and Research (BMBF), DE), Linsey Garcia-Gonzalez and Heleen de Wever (Vlemish Institute for Technology (VITO), BE) and Thomas Ross (Council for Scientific and Industrial Research (CSIR), ZA).

These lectures will be followed by deep insights into the field of sustainability and political frameworks. Prof Christian Breyer of Lappeenranta University, Finland, will analyse the potential of global renewable energies for the utilisation of CO_2. Lisa Buchner, who is with the German Environment Agency (UBA), will discuss CCU technologies against the background of the EU Emissions Trading System (ETS). Dr Juha-Pekka Pitkänen, VTT Technical Research Centre of Finland, will shed light on the production of single-cell proteins for the production of feed proteins from CO_2 and electricity. Daniel Egger from Climeworks AG, Switzerland, will give participants insights into the current status of his company's technology that allows CO_2 to be captured straight from the atmosphere, as well as providing details on the experience of constructing the first such pilot plant of its kind.

The second conference day will be more technical in nature, focusing on the CO_2-based production of chemicals, polymers and fuels. The session on chemicals and polymers includes, among others, presentations by speakers from Wageningen University (NL) and the Catalan ICIQ/ICREA research institute. The highlights of the morning session will be the joint presentation by Nordic Blue Crude AS (Norway) and sunfire GmbH (Germany), which are cooperating to build up a demonstration plant for the production of synthetic naphtha (blue crude) in Norway, as well as the insights granted into the latest developments at Avantium (NL) and Covestro (DE), which are dedicated to the production of building block chemicals and polymers.

The production of sustainable fuels based on CO_2 has the clear potential to benefit both industry and environment. Blue crude, mentioned above, and in particular methanol, which may also be used as a platform chemical, share excellent prospects for application. Dr Günter Harp, a consultant to the Icelandic Carbon Recycling company is one of the speakers who will discuss possible fields of methanol application ("Methanol as Key for Industrial Symbiosis between Chemistry and Steel"). Mitsubishi Hitachi Power Systems Europe GmbH, which relies on innovative process chains to synthesise methanol, is working within the scope of the European OptiMeH research project to build a pilot plant for the emissions-based production of methanol together with Carbon Recycling.

With its biotechnologically produced butanol, the American Phytonix Corporation, the conference's gold sponsor, blazes a trail for commercial use in the production of fuels. Bruce Dannenberg, CEO and founder of the company, will give an account of thrilling developments and collaboration projects at his company. Project managers from Thyssenkrupp AG and Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT (DE) will present the $Carbon_2Chem$ project, which is looking into the utilisation of steel industry emissions for the sustainable production of fuels. The Finnish VTT company harnesses decentral Fischer-Tropsch processes to produce blue crude. SkyNRG (NL) will discuss challenges and opportunities for the production of sustainable aviation fuels using CO_2-based

technologies. In their presentation, bse Engineering Leipzig GmbH (DE) will focus on energy consumption in the CO_2-to-fuels conversion process.

Nova-Institute wishes to thank Prof Dr Andreas Pinkwart, Minister of Economic Affairs, Innovation, Digitalization and Energy of the Federal State of North Rhine-Westphalia, for acting as patron of this conference, as well as Phytonix Corporation, the event's gold sponsor, and EnergieAgentur.NRW, the conference's premium partner, for supporting the convention.

For further information and to register online for the "CO_2 – Carbon Dioxide as Feedstock for Fuels, Chemicals and Polymers" conference, please visit www.co2-chemistry.eu.

The detailed and latest version of the conference programme is available for download under www.co2-chemistry.eu/media/2018/Leaflet/CCU-Leaflet.pdf

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