

## Press release

nova-Institut GmbH ([www.nova-institute.eu](http://www.nova-institute.eu))  
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## The “Top 6” candidates are nominated for the innovation award “Best CO<sub>2</sub> Utilisation 2020”!

**Vodka made from CO<sub>2</sub>. Biotechnological CO<sub>2</sub> conversion to produce chemicals, polymers and methane. Synthetic fuels produced with CO<sub>2</sub> captured from air and CO<sub>2</sub>-based consumer products. Everything and more is possible right now!**

Six new technologies and products from four different countries have been selected out of 13 applications and are now nominated for the innovation award of the “8<sup>th</sup> Conference on Carbon Dioxide as Feedstock for Fuels, Chemistry and Polymers”, 24 – 25 March 2020 in Cologne, Germany ([www.co2-chemistry.eu](http://www.co2-chemistry.eu)). The innovation award is sponsored by Covestro, world-leading supplier of high-tech polymer materials, and organised by nova-Institute and CO<sub>2</sub> Value Europe, the only association exclusively dedicated to Carbon Capture and Utilisation (CCU).

The call for the innovation award “Best CO<sub>2</sub> Utilisation 2020” has attracted outstanding innovations in the field of CCU, highlighting how active and successful companies are in its implementation. The advisory board was inspired by this year’s applications, which were of consistently high quality and showed a surprising range of diversity. The six top candidates will be presented here in detail.

After a short presentation of all nominees, the three winners will be elected by the participants of the “8<sup>th</sup> Conference on Carbon Dioxide as Feedstock for Fuels, Chemistry and Polymers”. The winners will be awarded at the festive gala dinner on the evening of the first conference day. Take part in this unique event and elect the innovation winner!

### The “Top 6” candidates in detail:

#### **Air Co. (USA): Air Vodka from CO<sub>2</sub>**

Air Co., an organisation that created the world’s first ever carbon negative spirits. Utilising ground-breaking, proprietary technology to transform carbon dioxide into the purest, highest quality, and most sustainable alcohol on the planet, Air Co. improves the air we breathe every day. With core inputs of only carbon dioxide, water and renewable electricity, Air Co.’s production method actively helps prevent climate change by removing the most abundant greenhouse gas from our planet (CO<sub>2</sub>) and turning it into ultra-high purity alcohol. The first application is the world's first carbon negative spirit, Air Vodka.

[www.aircompany.com](http://www.aircompany.com)

### **Austrian Centre of Industrial Biotechnology (Austria): PHAs from CO<sub>2</sub>-Recycling**

Austrian Centre of Industrial Biotechnology (acib) has developed two independent methods using the greenhouse gas CO<sub>2</sub> for production of biopolymers. This allows the environmentally friendly production of bio-based and biodegradable natural polymers. acib uses a highly sophisticated strain of cyanobacteria which is able to productively grow in a photobioreactor without sugars or oil using light and CO<sub>2</sub> to generate PHA (TRL 4). In addition, acib has further developed a technology using the bacterium *Ralstonia eutropha* (aka *Cupriavidus necator*). This technology can use both H<sub>2</sub> (e.g. from electrolysis of water using excess of electric energy) and CO<sub>2</sub> (TRL 3) to produce PHA (TRL4). Accordingly, the production of high quality PHA produced by valorisation of the greenhouse gas CO<sub>2</sub> is already possible with acib's technology. We now strive to conduct further optimisation and are looking for industrial partners.

[www.acib.at](http://www.acib.at)

### **Carbon Upcycling Technologies (Canada): Watch with a concrete face from CO<sub>2</sub>**

Carbon Upcycling Technologies ("CUT") was formed to use the pollution of today to build the materials of tomorrow by converting CO<sub>2</sub> gas into solid products. CUT sells advanced solid products derived from greenhouse gas emissions and cheaply available solids. With this material, CUT started a consumer product line. These products include a yoga mat, the "Negative Bracelet", a bracelet made with captured atmospheric carbon, and even a watch with a concrete face. This material not only replaces carbon-intensive traditional materials, but these products give consumers a voice in climate change discussions. CUT's vision is to show that collaboration is the key to a low carbon world – low impact materials can be used without changing supply chains drastically. Furthermore, each purchase changes the status quo because it's the accumulation of small actions that really make a big difference.

[www.carbonupcycling.com](http://www.carbonupcycling.com)

### **Climeworks (Germany): First commercial direct air capture (DAC) technology**

Climeworks captures CO<sub>2</sub> from air with the world's first commercial direct air capture (DAC) technology. The Climeworks DAC plants capture CO<sub>2</sub> with a filter and are powered solely by either waste or renewable energy. They play an important role in the production of fuels from air-captured carbon dioxide and green power. A new facility on the premises of Karlsruhe Institute of Technology (KIT) combines all four steps required to produce synthetic fuels from air and green power in the project "Kopernikus". Climeworks DAC technology secures the supply of CO<sub>2</sub> from air. Through electrolytic splitting, Fischer-Tropsch synthesis and hydrocracking, the production of synthetic fuel is proven. This way, fuels of high energy density can be used in a carbon-neutral way and green power can be stored.

[www.climeworks.com](http://www.climeworks.com)

### **Electrochaea (Germany): Electrochaea Power-to-Gas Technology with Biological Methanation – a grid-scale energy storage solution**

Electrochaea is commercialising a grid-scale energy storage solution. Our proprietary Power-to-Gas (P2G) process converts renewable energy and carbon dioxide into grid-quality renewable methane for storage and distribution. In Switzerland and Denmark plant operators are already injecting renewable methane into commercial gas grids. Electrochaea provides a technology based on biological methanation that makes it possible to store renewable energy and recycle CO<sub>2</sub> in a cost-effective way. This allows efficient energy and CO<sub>2</sub> storage as renewable methane. When renewable power is available but not immediately used, renewable methane can be stored in the gas grid, thereby enabling a growing market for renewable electric power and creating a growing source of renewable gas.

[www.electrochaea.com](http://www.electrochaea.com)

## **Wyss Institute for Biologically Inspired Engineering at Harvard (USA): PHAs and sustainable chemicals from CO<sub>2</sub>**

The Wyss Institute for Biologically Inspired Engineering is building a versatile fermentation platform to convert CO<sub>2</sub> into sustainable chemicals. Widespread adoption of bioproduction is an essential part of a sustainable future. The main barrier for it is cost. We propose using genetically engineered microbes to produce desirable products from gaseous sources. CO<sub>2</sub> waste streams and locally generated H<sub>2</sub> will be fed to the engineered microbes on site. Using continuous gas fermentation technology, we make products, such as polyhydroxyalkanoate (PHAs) biopolymers and triglycerides (TAGs) milk lipids. We have demonstrated production of tailored PHAs from CO<sub>2</sub> on lab scale and are working to expand our product portfolio and scale. Gas fermentation is the next step for industrial bioproduction to lower costs and as a sustainable use of resources.

[www.wyss.harvard.edu/news/shannon-nangle-on-microbes-and-mars](http://www.wyss.harvard.edu/news/shannon-nangle-on-microbes-and-mars)

## **The leaders of the CCU industry meet in Cologne**

The final programme of the “8<sup>th</sup> Conference on Carbon Dioxide as Feedstock for Fuels, Chemistry and Polymers” is available online ([www.co2-chemistry.eu/programme](http://www.co2-chemistry.eu/programme)). The conference features major topics such as Policy & Innovation, Renewable Carbon & Energy, Carbon Capture, Electrochemistry, Hydrogen Production, Mineralisation as well as CO<sub>2</sub> for Chemicals, Fuels and Materials. 200 participants are expected and only a few booths at the exhibition space are still available.

Don't miss the new highlight one day before the conference: the „1<sup>st</sup> European Summit on CO<sub>2</sub>-based Aviation Fuels“ [www.co2-chemistry.eu/aviationfuels/](http://www.co2-chemistry.eu/aviationfuels/). Combined tickets for both events are available here [www.co2-chemistry.eu/registration/](http://www.co2-chemistry.eu/registration/).

All information, registration and the conference programme are available at [www.co2-chemistry.eu](http://www.co2-chemistry.eu).

The nova-Institute would like to thank Covestro (Germany) for sponsoring the innovation award “Best CO<sub>2</sub> utilisation 2020” and CO<sub>2</sub> Value Europe for the co-organisation. Enviro Ambient (USA) supports the conference as a Gold Sponsor and Total (France/Belgium) as a Bronze Sponsor.

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