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Press Release

German chemists nominated for European Inventor Award

CO₂ technology competes as one of top three inventions

- **Dr. Christoph Gürtler and Prof. Walter Leitner nominated in the Industry category**
- **CO₂ made commercially viable as a raw material**
- **Technology forms the basis for a large number of marketable products**

CO₂ technology continues to write its success story. The European Patent Office (EPO) has announced the nomination of the two German chemists, Dr. Christoph Gürtler (Covestro AG) and Prof. Walter Leitner (Max Planck Institute for Chemical Energy Conversion and RWTH Aachen University), as finalists in the "Industry" category of the 2021 European Inventor Award for their role in developing a new technology for using carbon dioxide (CO₂). This technology enables the harmful climate gas CO₂ to be used as a valuable raw material for sustainable plastics. Their process deploys chemical catalysts to drive reactions between CO₂ and a conventional raw material. This process creates so-called polymers in a more sustainable and economically viable way. CO₂ is firmly incorporated in the process.

"This nomination is an important confirmation of our efforts towards making chemistry more sustainable. It shows how crucial patents are for the development process of a technology," says Christoph Gürtler, who is responsible for the development of new processes and products at Covestro. "It is a tremendous honor to be part of the award ceremony on behalf of the interdisciplinary team from product research, process development, marketing and the many other minds driving our invention."

Successful cooperation between industry and science

"The plastics industry can make a significant contribution to combating climate change by switching to greenhouse gas-neutral production. To achieve this, we need to break away from petroleum and use alternative raw materials such as CO₂", says Dr. Markus Steilemann, CEO of Covestro. "The nomination for the European Inventor Award is an endorsement of our company as a pioneer in this field. I would like to extend my sincere congratulations to the many colleagues, including those at our partners, who contributed to the development of the innovative CO₂ technology – a genuine sustainability highlight."

The two nominees, Gürtler and Leitner, have played a significant role in the development and market launch of the platform technology, which originated in the collaboration between application-oriented science and

research-oriented industry. Their involvement in a large number of patents related to the use of CO₂ is proof of this: together, the two hold over 100 patents on CO₂ technology.

Breakthrough in catalysis research yields success

Covestro and RWTH Aachen University founded the CAT Catalytic Center in 2007. "The scientific community has long had the desire to be able to use carbon dioxide as a supplier of carbon for plastics. Experts have been working on this issue for nearly half a century," explains Walter Leitner.

CO₂ forms chemical compounds only with great difficulty. This is the problem that Christoph Gürtler and Walter Leitner's team had to solve.

The team combined industrial and academic expertise. A great deal of creativity, perseverance and many experiments with catalysts finally culminated in success. The breakthrough was achieved by precisely controlling the reaction between CO₂ and the petroleum-based propylene oxide in the presence of a customized catalyst system. "We collaborated closely to develop the right catalyst that led us to success," says Gürtler.

The resulting so-called polyol was introduced to the market by Covestro under the product name cardyon®. It is already being used to produce soft foam for mattresses, for adhesives in sports floors, padding in shoes and in car interiors. Elastic textile fibers are currently on the threshold of market maturity. Research projects have successfully demonstrated that CO₂ can also be deployed for insulating materials made of rigid foam and for surfactants, for example in detergents.

Contributing to resource conservation and the circular economy

The use of CO₂ contributes significantly to the circular economy. Replacing conventional crude oil as a carbon source in part with the climate gas CO₂ preserves resources. The carbon, in turn, remains in the cycle without being released into the atmosphere. Moreover, initial studies have also shown that this technology makes it possible to produce more recyclable plastics whose components can be more easily recycled. An all-round sustainable innovation.

Launched in 2006, the European Patent Office's Inventor Award distinguishes outstanding European inventors and teams and is one of the most prestigious awards of its kind. The award ceremony will take place online for the first time on June 17 and will be broadcast live on the Internet. Three teams are nominated in the Industry category.

Forward-looking statements

This press release may contain forward-looking statements based on current assumptions and forecasts made by Covestro AG management. Various known and unknown risks, uncertainties, and other factors could lead to material differences between the actual future results, financial situation, development, or performance of the company and the estimates provided here. These factors include those discussed in Covestro's public reports. These reports are available at www.covestro.com. The company assumes no liability whatsoever to update these forward-looking statements or to make them conform to future events or developments.

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About the MPI CEC und the Max Planck Society:

The Max Planck Society conducts basic research in the natural sciences, life sciences and humanities. Since its foundation in 1948, 20 Nobel Laureates have emerged from its ranks. The Max Planck Society, with its 86 institutes and facilities, is the international flagship for German science: In addition to five foreign institutions, it operates another 20 Max Planck Centers with research institutions such as Princeton University in the United States, Sciences Po University in Paris, France, University College London, and the University of Tokyo in Japan. Equally funded by federal and state governments, the Max Planck Society received basic funding of around 1.9 billion euros in 2019."

The Max Planck Institute for Chemical Energy Conversion (MPI CEC) in Mülheim an der Ruhr studies the fundamental chemical processes for energy storage in chemical molecules. Fundamental science at the MPI CEC creates a comprehensive understanding of the active sites of catalysts that are essential for the interconversion of energy and chemical bonds. The goal of the researchers at MPI CEC is, among other things, the development of a comprehensive theory of catalysis as well as the production, storage and use of hydrogen. www.cec.mpg.de

About Covestro

With sales of €10.7 billion in 2020, Covestro is one of the world's leading polymer companies. Business activities are focused on the manufacture of high-tech polymer materials and the development of innovative, sustainable solutions for products used in many areas of everyday life. In doing so, Covestro is fully aligning itself to the Circular Economy. Its main customers are the automotive and transport industries, the construction industry, the furniture and wood processing industries, and the electrical, electronics, and household appliance industries. Other sectors include sports and leisure, cosmetics, healthcare and the chemical industry itself. As of the end of 2020, Covestro produces at 33 sites worldwide and employs around 16,500 people (converted to full-time positions).

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