Vienna renewable energy storage

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Energy Storage; Energy Conversion; Energy Conditioning; Questions and ...

In the Cluster of Excellence Materials for Energy Conversion & Storage (MECS) researchers from the Vienna University of Technology, IST Austria, the University of Innsbruck and the University of Vienna develop new technologies for efficient energy conversion and storage, in order to pave the way for a climate-neutral society.The chemist Leticia Gonz?lez represents the University of Vienna on the Board of Directors.

"Our society suffers from the uncontrolled burning of fossil fuels already now," warns Leticia Gonz?lez from the Department of Theoretical Chemistry of the University of Vienna. The current climate disasters and inflation are just two examples of negative consequences that we can expect if we continue to rely on fossil fuels. "The aim of the new Cluster of Excellence is to suggest solutions to our current energy crisis," says Gonz?lez: "We are going to contribute to the development of new materials for climate-neutral energy conversion and storage with fundamental and applied research."

Researchers involved in the Cluster of Excellence Materials for Energy Conversion & Storage will develop nanocatalysts which are able to perform chemical reactions in a fast and climate-neutral way. They follow two innovative paths for energy conversion: electrocatalysis and photocatalysis. Electrocatalysis uses electricity from wind turbines and photovoltaic systems to electrochemically convert water and CO2 to hydrogen, synthetic fuels and fine chemicals. Photocatalysis uses sunlight directly for chemical conversions.

In this context, the storage of renewable energies in sustainable energy sources is essential. Water can be separated into hydrogen and oxygen; CO2 can be converted to useful products - including climate-neutral alternatives to natural gas and petroleum.

New chemical energy storage solutions

"We primarily want to develop electrocatalytic and photocatalytic active materials for the production of green hydrogen as well as climate-neutral chemicals and fuels. Furthermore, we aim to develop solutions for the storage of renewable energies in form of chemical compounds," explains Gonz?lez.

To accomplish this goal, the researchers combine subject-specific knowledge from different fields, including surface chemistry, surface physics, materials science and computer simulation.

"We urgently need a change of mentality and large investments, in order to produce renewable, clean energy!" Leticia Gonz?lez

What is the excellence initiative?

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