



Transformative Chemistry for a Sustainable Energy Future

Successful ENERGY-X „Research needs“ Workshop

in Brussels, 1st to 3rd July 2019

As part of the EU-funded project [ENERGY-X](#) (Coordination & Support Action (CSA) of the funding programme [Horizon 2020](#)) which deals with the sustainable production of fuels and chemicals from clean energy sources, a strategy workshop "Research needs" took place in Brussels from 1st to 3rd of July. The coordinator Jens K.

Nørskov, Villum Kann Rasmussen Professor at the Technical University of Denmark and the 12 project partners of [ENERGY-X](#) (Max Plank Society, University of Ghent, Jerzy Haber Institute for Catalysis and Surface Chemistry of the Polish Academy of Science, CEA, Czech Academy of Sciences, University of Utrecht, ERIC aisbl, ETH Zurich, RWI, Technical University of Valencia, DECHEMA e.V., and EERA aisbl) invited European scientists and stakeholders to jointly design a strategic research roadmap, which could influence key decisions of the European Commission on the R&D of the future energy landscape of Europe.

More than 180 participants from both academic and industrial R&D, including high-ranking scientists from all over Europe, participated in 12 parallel sessions over 2 days to discuss the future of our energy system at the pan-European level. The participants discussed the current status and defined specific R&D needs in the fields of sustainable energy production, CO₂ capture and use, and catalysis in academia and industry.

Major focus across all sessions was on the existing scientific and technical challenges and how they can be addressed and overcome to make Europe less dependent on fossil fuels in the future. Individual discussion sessions included catalytic processes such as the conversion of CO₂ into chemically more valuable compounds, up-scaling of electrochemical processes and the role of industry, water splitting and sustainable hydrogen production as well as the use of biological processes, e. g. alternative production of ammonia, and the role of data and artificial intelligence.

In the three plenary lectures, which dealt with important topics for the transformation of our energy system for a sustainable future, Harry Atwater from Caltech reported on results and findings of artificial photosynthesis, Maximilian Fleischer from Siemens AG explained the requirements for energy storage within the energy system of the future and Hans Geerlings from Shell presented the large-scale application of electrochemical transformations in the synthesis of solar fuels.

The collected knowledge and experience of all the scientists involved in the individual discussions will be summarized in the research roadmap. It will summarize the current challenges in various catalytic research areas and the implications of solving them. In the European Commission's decision-making process on the implementation of the future European energy system, the roadmap offers decisive assistance in the form of summarised R&D needs at both industrial and academic level. The ENERGY-X research roadmap will be officially presented to the general public and the scientific community during the [R&I Days](#) of the European Commission from 24th to 26th of September in Brussels.



Successful talks and lively discussions at the Research needs workshop in Brussels. (Copyright© Yoan Stanev / EERA, Sabrina Müller / DECHEMA e.V.)