

Cluster of Excellence

MATERIALS FOR ENERGY CONVERSION AND STORAGE

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About the CoE

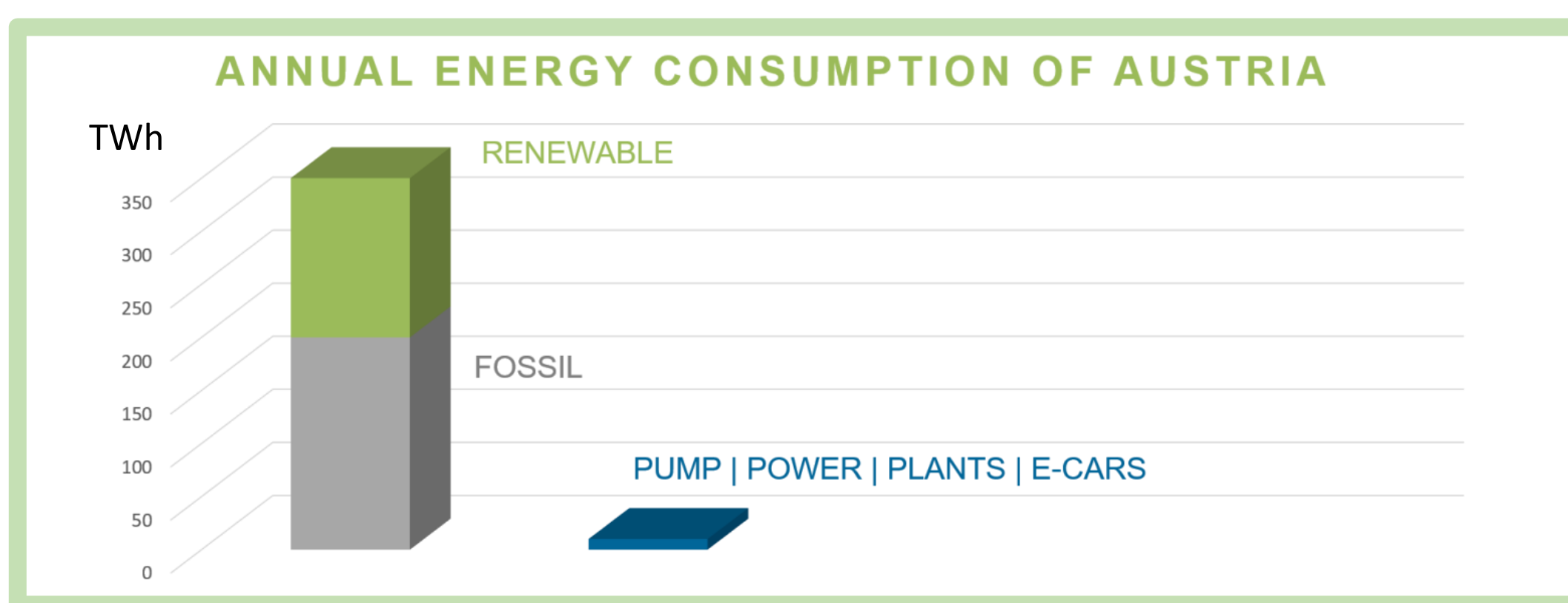
THE ENERGY CRISIS: HIGH NOON!

Energy demand is growing, paralleled by worldwide global warming and climate change.

Paradigm shift: Replacing fossil fuels by renewable resources.

Research Vision

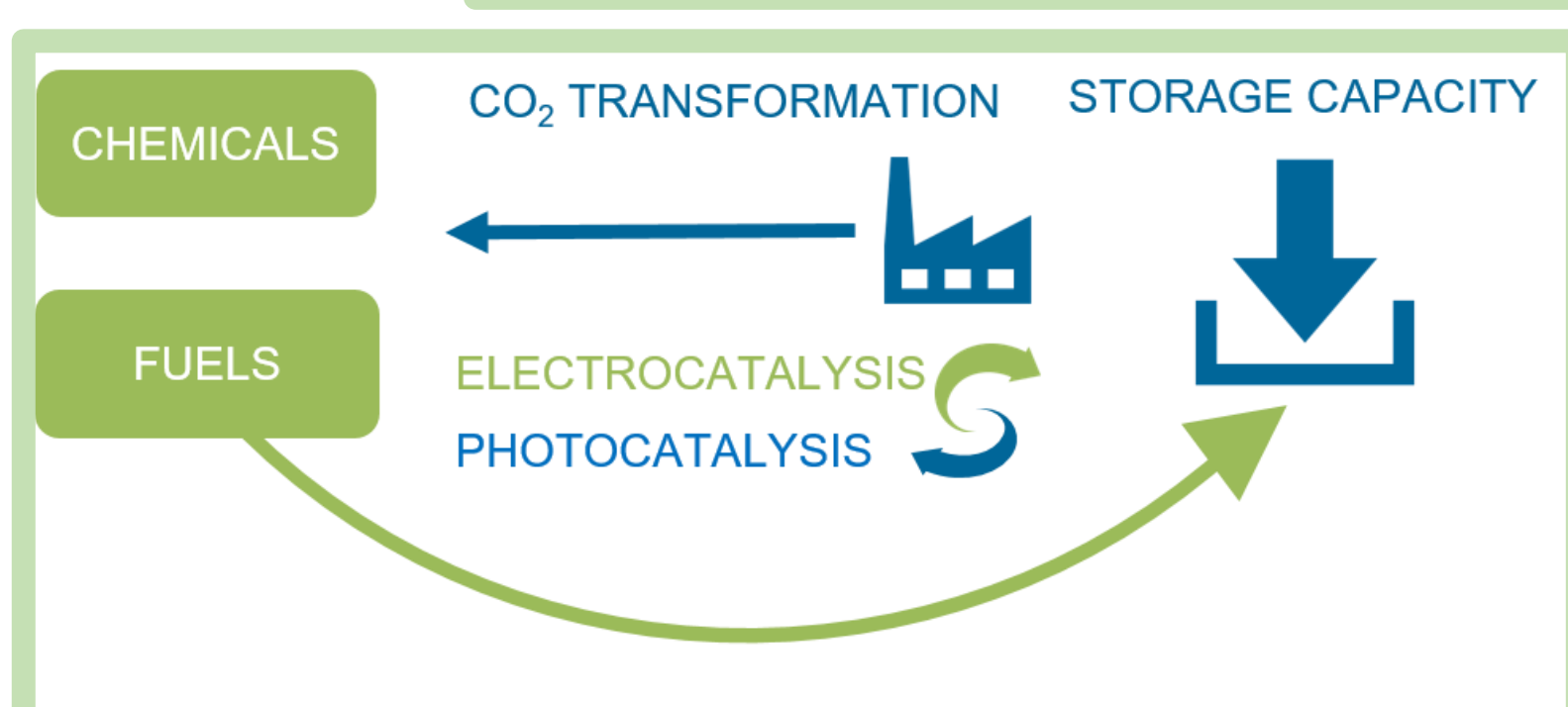
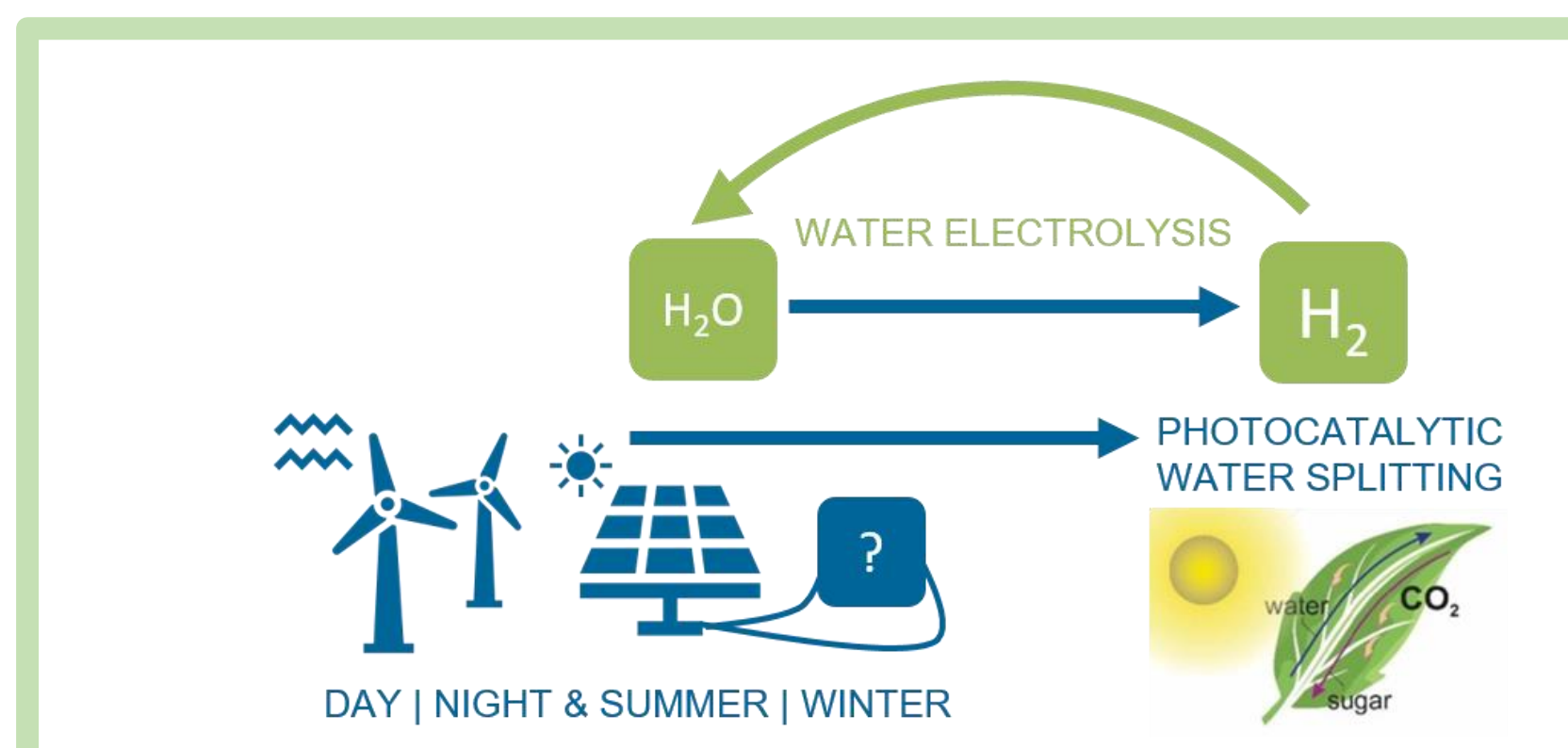
THE ENERGY MATERIALS AGE



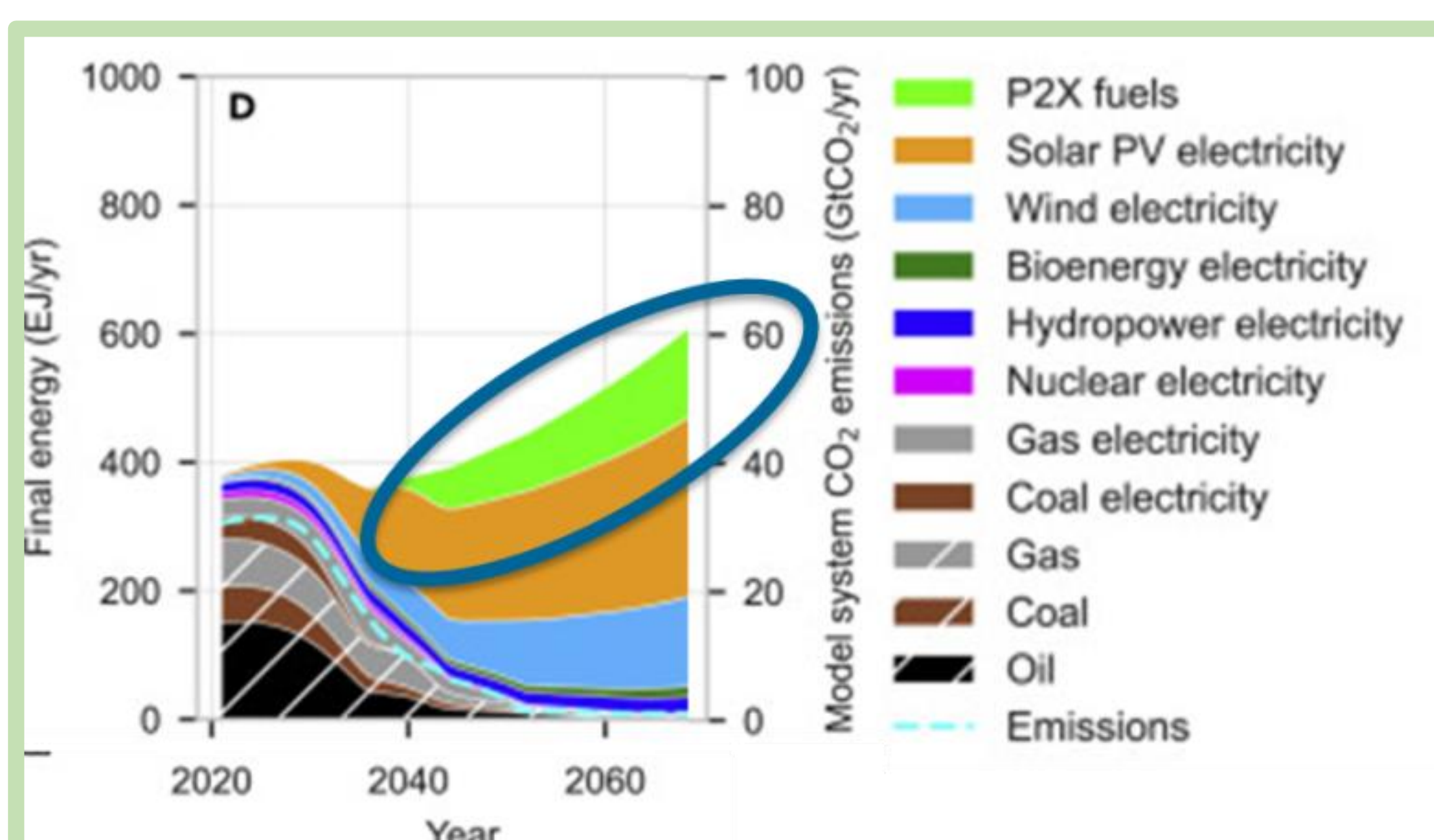
Challenge:

We have to store huge amounts of renewable energy, which can only be done in chemical bonds. Thus, we need **reversible carriers for renewable energy**.

Electro- and photocatalysis for the generation of **green H₂, chemicals, and fuels**.

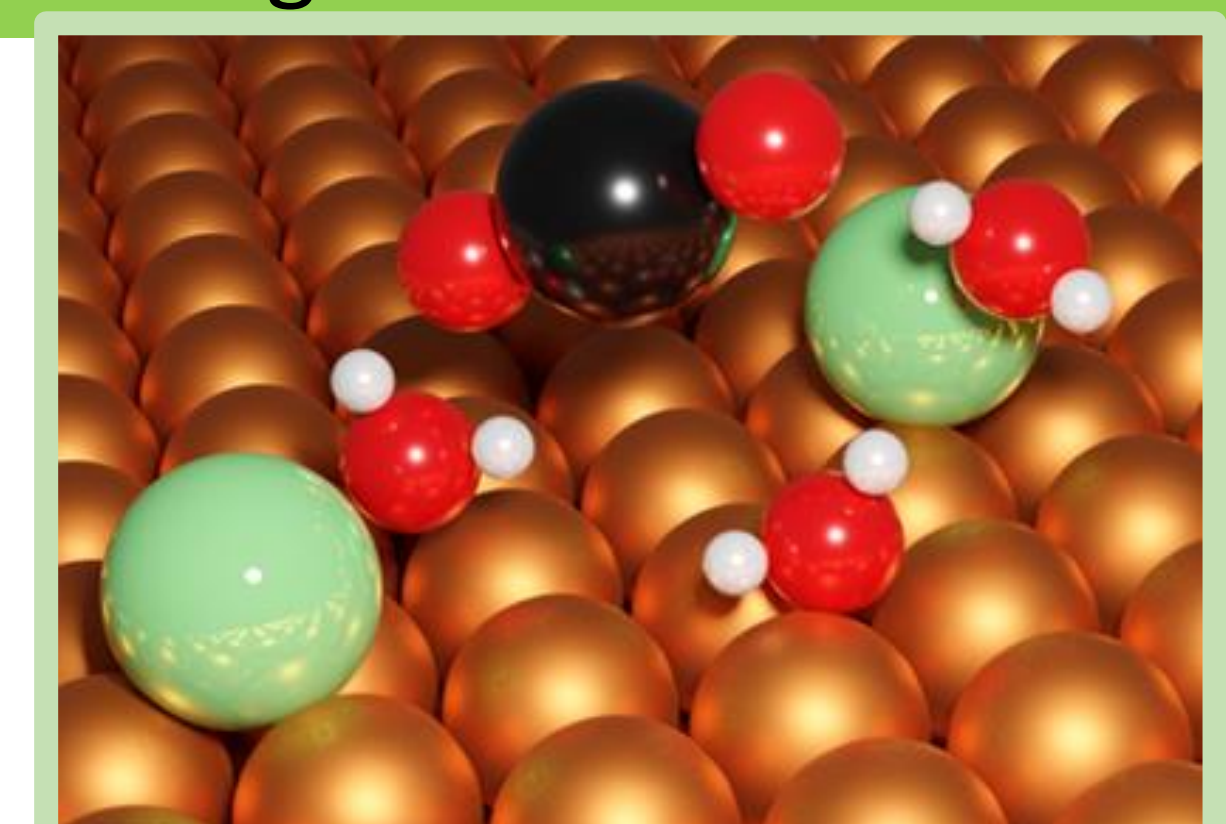


So far used: Rare expensive metals, low efficiency, not stable, or even toxic despite decades of academic and industrial research: Insufficient fundamental, atomistic, and mechanistic understanding



TAILORED COMPETITIVE SOLUTIONS FOR THE FUTURE REQUIRE:

- **Atomic-level understanding** of the involved processes
- **Major breakthroughs** in energy materials design (abundant, non-toxic, environmentally friendly, stable)
- **Fundamental research** enables sustainable technologies



- Build a **transformative centre** that is a beacon of scientific excellence
- Energy storage is a worldwide challenge, with **MECS** being a **unique important asset**

FWF + Institutions fund ca. 35 Mio €

Contributors:

- **19 outstanding researchers** from **4 Institutions**, with complementary expertise in physics, chemistry, materials science
- A nucleus for **synergies** in Austria and internationally creating a **sustainable network**
- Very **diverse** academic age & brain gain!

