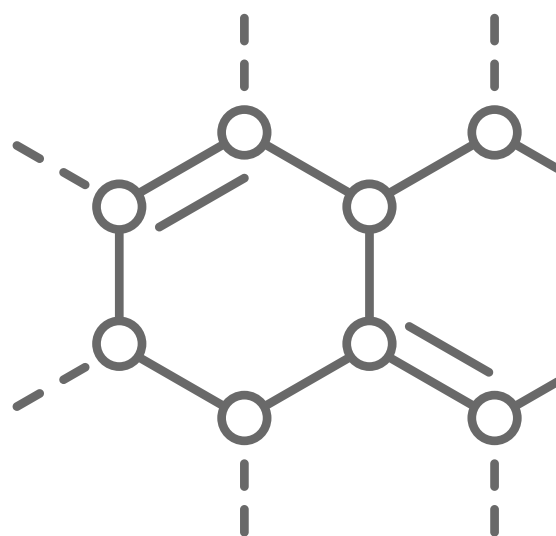




Welcome to NEFERTITI!

NEFERTITI will develop an **innovative high-efficiency photocatalytic system** that will allow a simultaneous conversion of **CO₂ and H₂O in solar fuels** (ethanol and alcohols with a longer chain such as isopropanol) and thus provide an innovative alternative to transform **CO₂ into valuable products for the energy and transportation.**



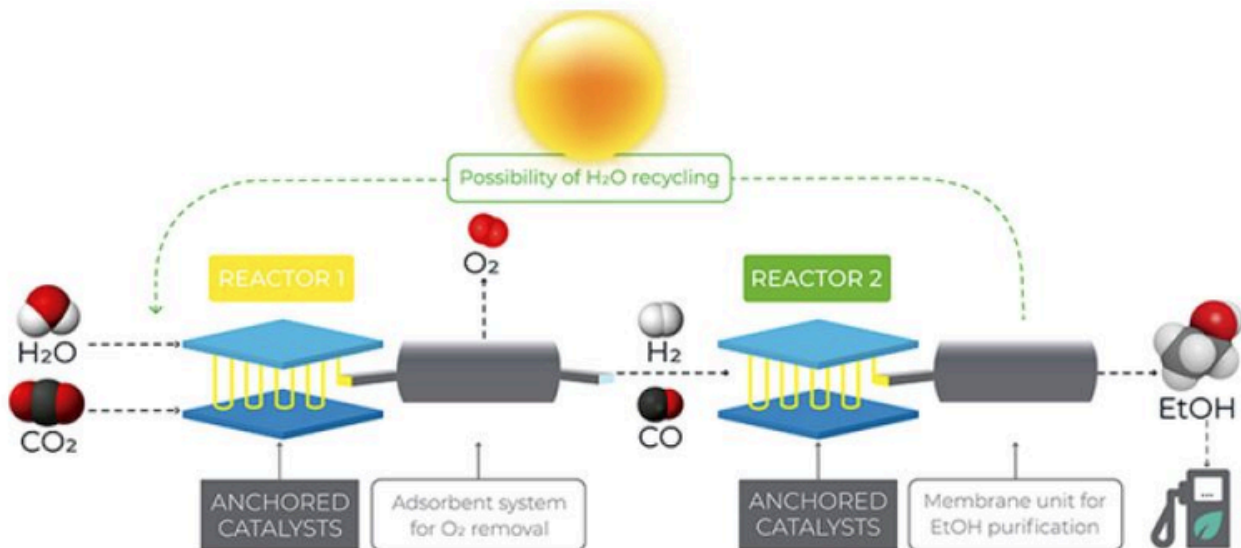
NEFERTITI's goal is to integrate **new heterogeneous catalysts** (covalent organic structures and metal oxides combined with nanoparticles) and luminescent solar concentrators in **two photocatalytic flow reactors sourced by sunlight energy.**





NEFERTITI METHODOLOGY

The project NEFERTITI is going to develop two connected functionalized flow reactors in a single device for the synthesis of fuels from CO_2 and H_2O .



- Flow Reactor 1 will use enhanced heterogeneous photocatalysts (2-D COFs with Au & RuO_2 nanoparticles) to perform the simultaneous conversion of CO_2 and H_2O , by mimicking Z-scheme photocatalysis found in nature to produce syngas. An adsorbent system will be used to continuously remove the generated O_2 produced during the first transformation.
- Flow Reactor 2 will use enhanced heterogeneous photocatalysts (Fischer-Tropsch Synthesis catalysts & TiO_2) to transform the syngas into ethanol and C_2+ alcohols.





NEFERTITI OBJECTIVES

01

Develop high-efficiency systems for CO₂ and H₂O solar conversion.

Demonstrate innovative and scalable CO₂ conversion routes.

02

03

Design and optimise novel catalysts and advanced flow reactors.

Produce solar fuels and alcohols for energy and transport.

04





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