

## **SUNERGY a European large scale initiative on fossil free free fuels and chemicals**

Running our entire world strongly depends on fossil-based energy sources and raw materials. Their intensive use over the last decades not only depleted the Earth's resources, but also caused a significant increase of the CO<sub>2</sub> concentration in the atmosphere and therewith global warming, with tremendous consequences for ecosystems and society in general as recently pointed again unequivocally by the Intergovernmental Panel on Climate Change (IPCC). Thus the EU faces the challenge of displacing fossil resources by renewables to achieve its vision of a zero-emission society by 2050. Converting renewable power and solar energy into chemical energy (fuels and chemicals) can make a key contribution to meet this challenge. This is the vision of the European initiative SUNERGY which gathers a community of more than 300 stakeholders (academia, industry, civil society, governmental/local authorities). Fulfilling such a vision highlights the importance of a systemic approach and the relevance in some cases of a decentralised production model as close as possible to the needs, thus the concept of hubs, whether industrial (e.g. hydrogen valleys) or residential (low energy districts). Furthermore, nanotechnology as an enabling technology is key to improve the performance of solar and renewable energy conversion in chemical form with e.g. better catalysts or photoabsorbers. The presentation will first give a general overview of SUNERGY before presenting the approach on these aspects.