

Bifunctional Zeolite based Catalysts and Innovative process for Sustainable Hydrocarbon Transformation



New and innovative methods for the conversion of alkanes to olefins and aromatics

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The project

“Bifunctional zeolite-based catalysts and innovative process for sustainable hydrocarbon transformation”



48 months

January 2019 to
December 2022



13

partners



9

countries



6.5 M€

Eu funding

Motivation



What's the challenge?

There is a need for lowering the carbon footprint of the refining industry in EU since it's one of the most polluting ones.

The atmosphere is polluted with compounds such as hydrocarbons and sulfur dioxide.

Catalysts as enablers of waste minimization.

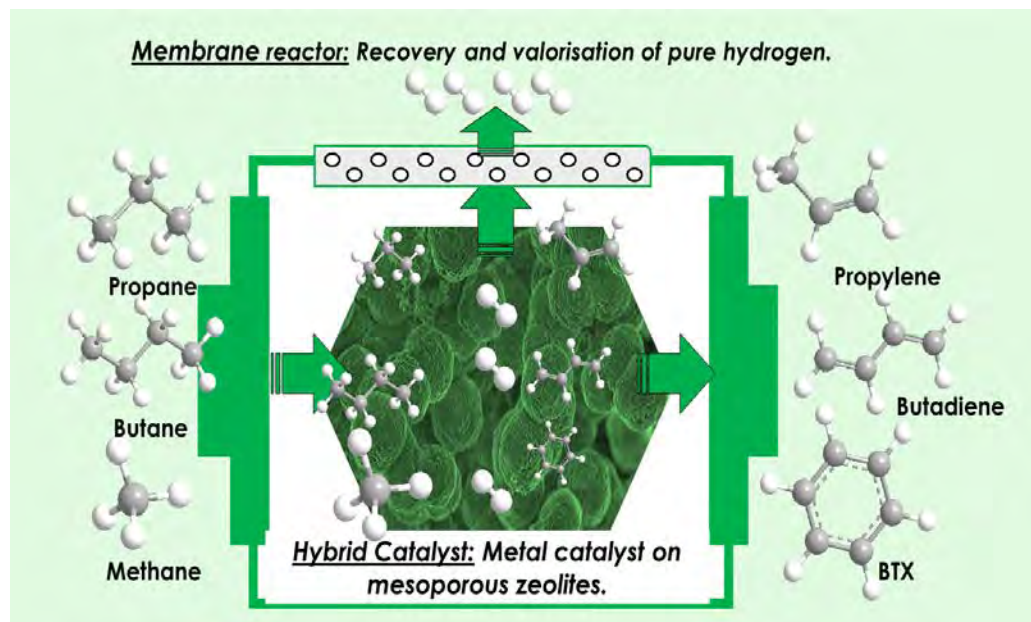
Concept

What's our vision?

Bizeolcat consortium works towards using hydrocarbons as feedstock for speciality chemical industry(not for fuel) to drive the transition to a sustainable economic system.

Our goals are:

- To implement and demonstrate new procedures, involving innovative catalyst synthesis methodologies and novel reactor design and processing
- To obtain light olefins and aromatics using light hydrocarbons (C1, C3, C4)
- Significant improvement in sustainability and economic scalability compared to existing industrial processes



Impact on industry and environment

- Assessment of environmental impact, HHR and Hazop ongoing
- Significant reduction in OPEX and CAPEX
- Significant reduction in GHG emissions
- Socio-economic impact in ENP
- Market study

RESULTS so far

- Patent application filed on February '21 about new process for catalyst synthesis
- New results under patentability study
- Preliminary process design and techno-economic analysis finished
- Micro and macro kinetics for PDH process using experimental data
- 3 Published articles available in www.bizeolcat.eu

[PDH with Cr; https://doi.org/10.1016/j.jcat.2020.03.037](https://doi.org/10.1016/j.jcat.2020.03.037)

[BDH with Pd membranes; https://doi.org/10.3390/membranes10100291](https://doi.org/10.3390/membranes10100291)

[Multiscale modelling https://doi.org/10.1021/acscatal.0c03197](https://doi.org/10.1021/acscatal.0c03197)

Who we are?

From proof of concept



to exploitation



Take away messages

- Strong focus on giving alternatives for reducing CO₂ in the petrochemical industry
- 13 partners committed on RIA with high expectations!
- Open to collaborate, to grasp the opportunities to innovate, align to the actual needs and make a tangible impact on european refining industry

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Thank you for your attention

Ana Villacampa, Project Coordinator



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