Greenet

The network of Horizon Europe Cluster 5 National Contact Point.



Topic/area: **Renewable H_2 production (electrolysis, other routes)**

Specific contribution to the topic/area: **Biomass conversion for H_2 production**

European Hydrogen Week

European Hydrogen Week 2024
GREENET Pitch session
TechForum, 19th November 2024

Clean Hydrogen Partnership

Georgios Bampos (FORTH/ICE-HT, ChemEngUP)

The GREENET project has received funding from the EU Horizon Europe programme under Grant Agreement No 101069604

Greenet

FORTH
FOUNDATION FOR RESEARCH AND TECHNOLOGY - HELLAS

- **Georgios Bampos, Dr. Chem. Eng.**
- Foundation for Research and Technology – Hellas (FORTH) (Non-profit research organization) Institute of Chemical Engineering Sciences (ICE-HT), Patras, Greece
  - Nanotechnology & Advanced materials, Energy & Environment & Biosciences - Biotechnology
- Department of Chemical Engineering, University of Patras (ChemEngUP), Patras, Greece
  - Laboratory of Heterogeneous Catalysis
  - Laboratory of Electrochemical Engineering

- **Panagiota Natsi, Dr. Chem. Eng.**
- Foundation for Research and Technology – Hellas (FORTH) (Non-profit research organization) Institute of Chemical Engineering Sciences (ICE-HT), Patras, Greece
  - Nanotechnology & Advanced materials, Energy & Environment & Biosciences - Biotechnology
- Department of Chemical Engineering, University of Patras (ChemEngUP), Patras, Greece
  - Laboratory of Inorganic and Analytical Chemistry

Greenet

Our team

Laboratory of Heterogeneous Catalysis, ChemEngUP

Prof. D.I. Kondarides
Dr. G. Bampos
Dr. T. Ramantani

Laboratory of Electrochemical Engineering, ChemEngUP

Prof. S. Bebelis
Dr. G. Bampos

Laboratory of Advanced Separation and Catalytic Processes, ChemEngUP

Assoc. Prof. G.N. Karanikolos

Lab. of Physicochemical Analysis, FORTH/ICE-HT & Lab. of Inorganic and Analytical Chemistry, ChemEngUP

Prof. P. Koutsoukos
Dr. P. Natsi

Laboratory of Environmental Catalysis, School of Chemical and Environmental Engineering, Technical University of Crete

Assoc. Prof. P. Panagiotopoulou

Laboratory of Chemistry and Environmental Protection (Chem.Envi.Pro.) Ionian University Department of Environment, Zakynthos

Assist. Prof. A. Petala

Greenet

Ongoing and past projects

Ongoing projects

- Hydrocarbons reforming for hydrogen production
- Dry reforming of CH_4 (DRM)
- LPG steam reforming
- Microorganisms as bio-catalysts for biomass conversion to hydrogen
- PERFORMANCE
- Microbial electrolysis cells (MECs)
- Development of low or non-noble metal electrocatalysts for low temperature H_2-fuelled fuel cells

Past projects

- Low temperature steam reforming of ethanol over supported Pt and Ni catalysts
- Purification of H_2 rich gas streams (CO_2 capture, CO oxidation)
- Water gas shift reaction over supported noble metal catalysts
- Glycerol and bio-oil steam reforming reaction over supported metal catalysts
- Development of Pt- and Pd-based electrocatalysts for ORR and HOR
- CO_2 hydrogenation to value added products over supported Pd catalysts and composite metal oxides ($CuO/ZnO/M_xO_y$)

Greenet

Seeking partnership

Development of next generation synthetic renewable fuel technologies (HORIZON-CL5-2024-D3-02-02)
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2024-d3-02-02

Biomass reforming to produce H_2

- **Development of alternative low-cost catalytic materials**
- **Potential combination with other technologies for H_2 production (e.g. MECs or low T electrolyzers) and H_2 energy use (e.g. fuel cells) or storage**

Research groups

- **Innovative low-cost catalytic/electro (or-bio) catalytic materials & processes (incl. scale-up)**
- **Mathematical modelling - DFT calculations**
- **Life Cycle Analysis (LCA)**

- **Technologies for H_2 production**
- **Processes for purifying H_2-rich gas streams**
- **Fuel cell technologies**
- **H_2-storage technologies**

Greenet

Contact info

Thanks!

Dr. Georgios Bampos

Department of Chemical Engineering, University of Patras,

Rio University Campus,GR26504 Patras, Greece

Phone number: **+30 6943939570**

E-mail: **geoba@chemeng.upatras.gr**

Researcher unique identifiers: **https://scholar.google.gr/citations?user=U4MjbDgAAAAJ&hl=el**,

https://orcid.org/0000-0002-1742-2723