

Webinar: Biohydrogen for the sustainable energy transition – developments, opportunities and challenges

1400-1515 CEST (UTC+2), Wednesday 18 May 2022

Please [REGISTER HERE](#).

Agenda

- 1400 – 1405 Brief introduction to webinar and speakers
Constance Miller (GBEP Secretariat)
- 1405 – 1425 Role of biohydrogen in the biorefinery
Abhijeet Borole (University of Tennessee)
- 1425 – 1445 Biomass gasification for biohydrogen – research frontiers
Filomena Pinto (National Laboratory of Energy and Geology, Portugal)
- 1445 – 1510 Question and answer session
Moderator tbc
- 1510 – 1515 Concluding remarks
Maria Michela Morese (Executive Secretary, GBEP)

Overview

Hydrogen is seen as an attractive fuel option for transport and electricity generation as it is a clean energy carrier that can be produced from multiple sources, including biomass. Hydrogen produced using biological activity is called biohydrogen, which is primarily produced through three production processes: fermentation, biophotolysis and microbial electrolysis. Biohydrogen production, storage, distribution and use are extremely important research areas, with still many challenges to overcome for widespread commercialisation.

This webinar will introduce biohydrogen and its production as part of a biorefinery concept. It will then focus on the some specific pathways for biohydrogen production.

The webinar is hosted by the Global Bioenergy Partnership (GBEP) as part of the Scope of Work of Activity Group 4. More information on this activity group can be found on the [GBEP website](#).



Speakers



Abhijeet Borole, *Research Professor, University of Tennessee*

Abhijeet Borole has two decades of experience in bioprocessing, biomass conversion, waste to energy, and bioelectrochemical systems. His research is focused on microbial electrolysis cells, microbial fuel cells, fermentation, and applications in the biorefinery and the oil and gas industry. His interests lie at the interface of biology, electrochemistry and engineering, targeting energy efficiency and electrosynthesis. He uses biofilms and develops practical strategies to convert low value resources into higher value products. His main goal is to develop the waste to hydrogen pathway using bioelectrochemical systems, which can impact the waste problem, availability of zero emission fuel and climate change. He co-founded a startup, Electro-Active Technologies to commercialize this technology. The startup received the 'Outstanding Venture Award' given by National Renewable Energy Laboratory in the Emerging Markets category in 2021.

His current efforts cover water-energy-food nexus issues spanning from the biorefinery and bioenergy industry to the oil and gas industry. He has been nominated for Discover Award and Biology Award from BioMed Central. He serves on the Editorial Board for the Journal of Renewable Energy and The Open Biotechnology Journal. His expertise is in bioprocess engineering, bioreactor design, environmental biocatalysis, fuel cells, pyrolysis, syngas utilization, desulfurization and metals removal in bioelectrochemical systems and anaerobic digestion.



Filomena Pinto, *Senior researcher, National Laboratory of Energy and Geology, Portugal*

Filomena Pinto's main research areas cover: thermochemical conversion technologies (combustion, gasification, pyrolysis, liquefaction and hydrothermal liquefaction) for coal, biomass and different types of wastes. She is also interested in emissions control from thermochemical processes. She has coordinated several national and international projects and has participated in many projects in the research areas mentioned above.

Her current efforts cover mainly pyrolysis and gasification processes to produce biofuels. She has tested a large range of biomass types and a variety of wastes in fluidised bed gasification. The results obtained have shown that gasification has the advantage of allowing high fuel flexibility with high conversion of the feedstock and the production of syngas that besides CHP applications leads to a large range of final biofuels and bio-products: kerosene, biodiesel, biogasoline, bio DME and biohydrogen.

Her main goal is to develop syngas cleaning and conditioning procedures. She has also worked in biohydrogen production from syngas focusing in hydrogen separation from syngas through membranes and CO₂ capture. She is also a professor at Faculty of Sciences - University of Lisbon, Portugal and has supervised many undergraduate students and co-supervised several MSc and PhD thesis.