

**Institute of Biochemistry and Biophysics Polish Academy of Sciences
(IBB PAS) Poland, Pawinskiego 5a, 02-106 Warsaw, www.ibb.edu.pl**



**INSTITUTE
OF BIOCHEMISTRY
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Laboratory of White Biotechnology

Searching for a consortium to join under the research topic:

Anaerobic digestion of wastes and by-products of the food industry as a source of gaseous biofuels

Key words: bio-hydrogen, bio-methane, anaerobic digestion, dark fermentation, scaling-up processes, microbial interactions and metabolic pathways

Contact:

Prof. Anna Sikora: annaw@ibb.waw.pl ORCID: [0000-0002-9464-6851](https://orcid.org/0000-0002-9464-6851)

Dr. Anna Detman, Eng.: annadetman@ibb.waw.pl ORCID: [0000-0001-9579-7523](https://orcid.org/0000-0001-9579-7523)

About the Institute

- The Institute of Biochemistry and Biophysics of the Polish Academy of Sciences (IBB PAS) in Warsaw is one of the leading scientific institutes in Poland
- It conducts basic research in the life sciences: biology, biophysics, biochemistry and genetics
- For the Institute, it is important to put the results of basic research into practice and use them in the creation of modern technologies in cooperation with industrial partners

Laboratory of White Biotechnology

Laboratory of White Biotechnology (IBB PAS) field of expertise

- Research on the anaerobic digestion of wastes and by-products of the sugar beet industry as a source of gaseous biofuels
- The works include basic, development and implementation works into the technology of bio-hydrogen and bio-methane production as a result of anaerobic digestion and the use of the bio-gases for energy

Our experience – Basic Research

Biochemical and molecular analysis of anaerobic digestion microbial communities

Microorganisms are the key players in biological hydrogen and methane production

What we can bring to join consortium – expertise on:

- the interactions in microbial communities determining bioreactors performance: competition, cross-feeding and synergy
- non-biological factors relevant for bio-hydrogen production *via* dark fermentation

Main Papers:

1. Biotechnology for Biofuels, 2021, DOI: 10.1186/s13068-021-01968-0
2. Frontiers in Microbiology, 2021, DOI: 10.3389/fmicb.2020.612344
3. Microbiome , 2021, DOI: 10.1186/s40168-021-01105-x
4. Microbial Cell Factories, 2019, DOI: 10.1186/s12934-019-1085-1
5. Biotechnology for Biofuels 2018, DOI: 10.1186/s13068-018-1106-z
6. International Journal of Coal Geology, 2018, DOI: 10.1016/j.coal.2018.07.015
7. International Journal of Hydrogen Energy, 2018, DOI: 10.1016/j.ijhydene.2018.05.004
8. Polish Journal of Environmental Studies, 2017, DOI: 10.15244/pjoes/68149
9. PLOS ONE, 2015, DOI: 10.1371/journal.pone.0128008
10. Bioresource Technology, 2011, DOI: 10.1016/j.biortech.2011.08.063

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Our experience – R&D

Development and the *know-how* of innovative technology for the production of bio-hydrogen and bio-methane by two-stage anaerobic digestion of the sugar beet industry by-products

What we can bring to join consortium – expertise on: scaling-up of the bioprocesses in cooperation with an industrial partner

Projects: PBS 1/B9/9/2012
and BIOSTRATEG2/297310/13/NCBiR/2016
supported by
The National Centre for Research & Development

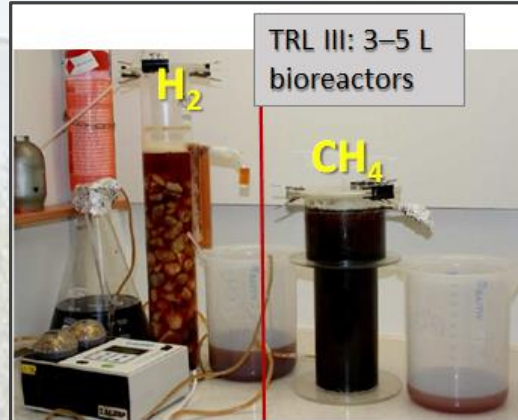
In this case the Industrial Partner
was Krajowa Grupa Spożywcza S.A.



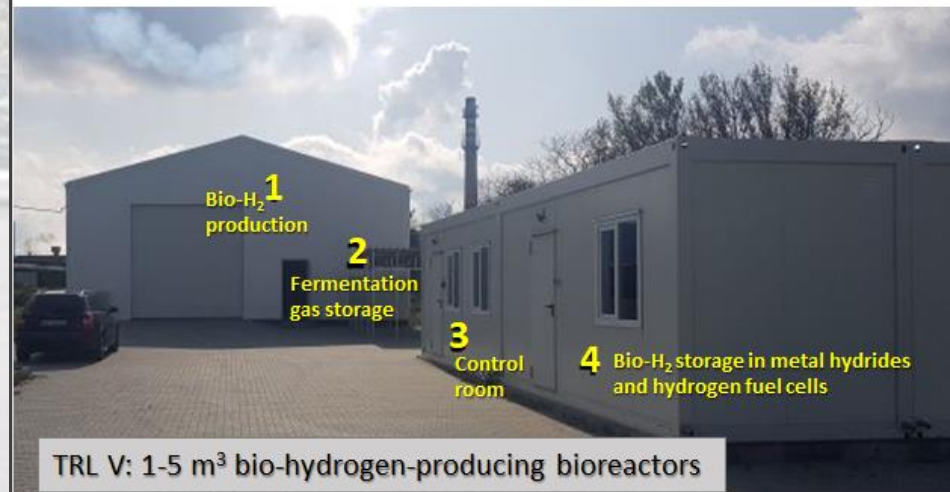
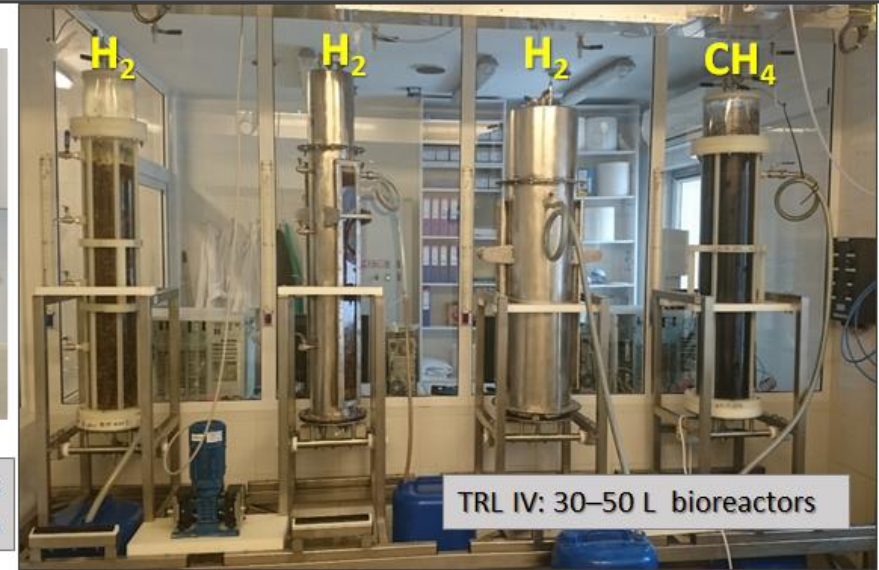
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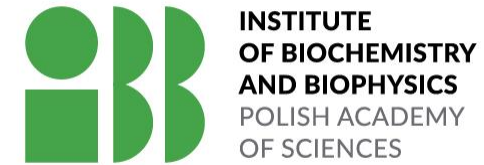
Industrial Partner:



73.9 – 122.0 dm³ H₂ / kg molasses
287.2 – 398.2 dm³ CH₄ / kg molasses



Our experience – Implementation works



Laboratory of White Biotechnology

Activities with an industrial partner aimed at:

- reducing the emission of greenhouse gases into the atmosphere and increasing the contribution of renewable energy in the total energy pool
- development of zero-carbon and circular economy

*Project
BIOSTRATEG2/297310/13/NCBiR/2016
supported by
The National Centre for Research & Development*

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Dobrzelin Sugar Factory

Industrial Partner:

