



## Direct nitrogen upcycling as microbial protein

### Background

Domestic used water treatment systems are currently based on conventional resource inefficient treatment processes. While resource recovery is gaining momentum it lacks high value end-products which can be efficiently marketed. Microbial protein production offers a valid and promising alternative by upgrading low value recovered resources into high quality feed and also food. Among the various metabolic pathways suitable for MP production, autotrophic hydrogen-oxidizing bacteria (HOB) constitute a special and thus far unexplored metabolic niche with potential for novel applications in resource recovery and upgrade. The metabolic features of autotrophic HOB allow them to grow on hydrogen (electron donor) and oxygen (electron acceptor) while fixing carbon dioxide into cell material and assimilating nitrogen into high quality protein. This project aims to fill this gap by using renewable energy sources and microbial re-synthesis processes to upgrade nutrients into biomolecules with market value.

### Tasks

- Determination of hydrogen oxidation capacity for a set of pure isolates
- Accessing the relationship between inoculum concentration and biomass productivity of a thermophilic community enriched with HOBs, under CSTR conditions
- Accessing productivity of different mixed communities using a hollow fiber reactor.

### Profile

We are looking for a Master student with a background in biotechnology, microbiology or related area, seeking for an internship, fluent in English and willing to work in an international environment. Laboratory experience (in microbiology and biological engineering) is a plus.

### Duration, salary and location

The internship will take place at Wetsus (the European Centre of Excellence for Sustainable Water Technology, located in Leeuwarden) for a period of 6 months starting preferentially in February or March. The salary for HBO/WO (Bachelor and Master Students) is 350 € per month.

### Further remarks

Wetsus' scientific research program is defined by the private and public water sector and conducted by leading universities. The inspiring and multidisciplinary collaboration between companies and research institutes from all over Europe in Wetsus results in innovations that contribute significantly to the solution of the global water problems.

### Contact details

Raquel Gonçalves Barbosa, [Raquel.Barbosa@wetsus.nl](mailto:Raquel.Barbosa@wetsus.nl)