

MASTER'S -/ DIPLOMA THESIS

Microbiological biogas upgrading by combined H₂ injection and CO₂ reduction

Biogas as energy carrier can be produced by anaerobic digestion from various substrates. Besides the main component methane it also contains up to 50 Vol.-% CO₂, depending on the substrate used. Since high CO₂ contents reduce the energy content of biogas various upgrading techniques enable the utilization of bio-methane as substitute for natural gas. Microbiological conversion of CO₂ and H₂ to bio-methane in a bioreactor with immobilized methanogenic archaea provides an attractive alternative to mechanical and chemical upgrading which is still costly.

Aim of the work is the combined CO₂ reduction in biogas by H₂ injection produced from surplus wind and solar power in a biofilter with immobilized methanogenic archaea to produce bio-methane.

Your duties would include the cultivation of anaerobic methanogenic archaea, carrying out chemical analysis, immobilization of respective bacteria as well as monitoring and optimizing a lab-scale continuous biofilter for CO₂ reduction by H₂ injection.

Basic information

Start date	immediately
Duration	approx. 6 months financial support will be provided
Skills	background in microbiology / biotechnology / environmental science is desirable; ability to work independently is essential
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