Motivation

Protecting the environment by reducing emissions of sulphur compounds into the atmosphere, as well as improving the quality of gas streams are the main reasons to apply methods for gas desulphurisation. Since the early 90’s research has been carried out in the area of biotechnological H₂S removal from sour gas. This resulted in a family of biological hydrogen sulphide removal processes. The objective of this project is to expand the operating window of these processes to not only remove H₂S but also organic sulphur compounds such as methanethiol (CH₃SH) as this is often present in natural gas.

Biotechnological processes offer many advantages over physico-chemical technologies:
- Deep H₂S removal;
- Operation at ambient conditions (P, T);
- Lower operational costs;
- No use of chemical chelating agents;
- No hazardous bleed streams;
- Beneficial use of produced elemental sulphur.

Technological challenge

Previous research focused on developing a biological treatment processes for H₂S removal from gaseous and liquid stream. The aim of this work is to develop a process in which will be possible remove not only H₂S but also methanethiol and higher thiols from gas streams and then the transformation of these compounds to biosulphur. Technological challenge here is to develop a process in which you can easily remove methanethiol from the gas streams which at this moment is the biggest problem. This requires a system where scrubber is integrated with a bioreactor and liquid can be continuously recycled.