

## **CAPRA: turning syngas into added-value chemicals using anaerobic fermentation technology.**

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Carbon Capture and Utilisation (CCU) technologies now deliver a wide range of products with varying amounts of incorporated CO<sub>2</sub>. The downstream processing of these products after an initial production step can be challenging. Initial CCU products are furthermore typically limited to C1 and C2 hydrocarbons, for example ethanol in case of a biological reduction process. To tackle both these issues simultaneously, a biological chain elongation technology can transform the short chain products of an initial syngas fermentation step into caproic acid bio-oil, a longer chain product that readily phase-separates. This avoids an energy-intensive distillation step.

This presentation will introduce the CAPRA project in which OWS, ArcelorMittal, Proviron, Ghent University and VITO join efforts to develop a process chain for the anaerobic transformation of ethanol-rich effluent of the Steelanol syngas fermentation plant at ArcelorMittal, into a bio-oil of caproic acid. This oil is then upgraded to added-value chemicals. The study combines basic research and upscaling to lab-pilot scale, as well as life cycle and techno-economic assessment. Results of lab-scale research, pilot design and LCA/TEA will be presented, as well as initial results on pilot scale operation, and insights on the role this technology can play. This project is of importance to all project partners, as to prove that higher value chemicals can be produced biologically from CO<sub>2</sub>. With CAPRA, new markets for CO<sub>2</sub>-based chemicals are within reach.