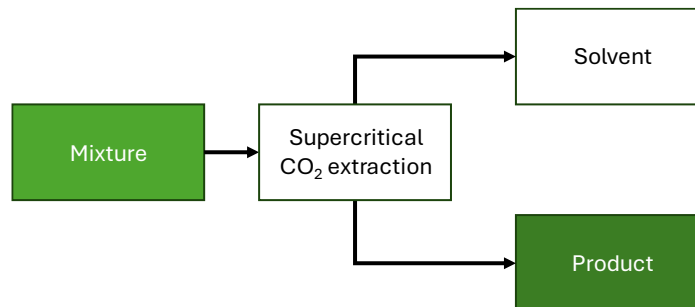


Recycling of γ -valerolactone using supercritical CO₂

Topic for master's thesis



Organic solvents are an essential part of many chemical processes. They are used, e.g., for dissolving reactants, extraction, purification and cleaning. However, many conventional organic solvents pose health risks and are environmentally harmful. To reduce costs and environmental impact, organic solvents are recycled in industrial applications.

Replacing hazardous solvents is essential to reduce human and environmental harm. A promising green solvent is γ -valerolactone (GVL). It is made from biomass and is non-toxic. However, due to its comparatively high vapor pressure it is energy intensive to separate it from water using distillation. Therefore, alternative methods for the separation of water and GVL need to be investigated for solvent recycling.

The goal of this thesis is to use supercritical CO₂ extraction for the energy efficient separation of water and GVL. The optimal extraction conditions shall be determined experimentally at the institute's laboratory.

Scope:

- Preliminary literature research
- Conducting laboratory experiments and necessary chemical analysis
- Documentation of results in a final thesis



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