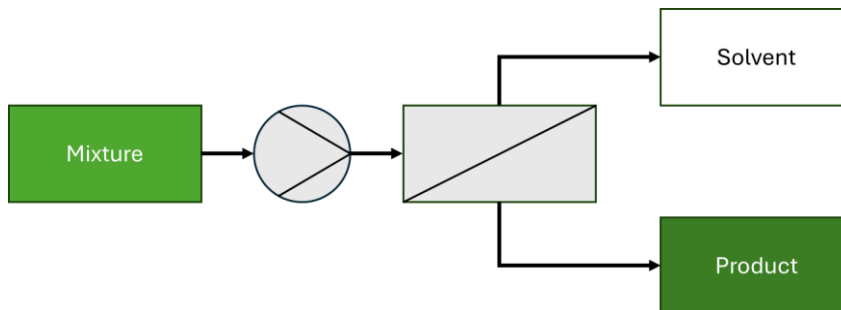


# Recycling of $\gamma$ -valerolactone using a membrane process

Topic for *Plant Design Exercise (Konstruktionsübung)*



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

Replacing hazardous solvents is essential to reduce human and environmental impact. A promising green solvent is  $\gamma$ -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 project is to evaluate different membrane processes for the energy efficient separation of water and GVL. Their feasibility and their potential installation at the institute shall be assessed.

## Scope:

- Preliminary literature research
- Feasibility study the investigated process
- Documentation of results in a final report



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