# Supporting Information

## Additional Information Chapter 3.1.1 – Scale-up Rh/TPPTS catalyst system

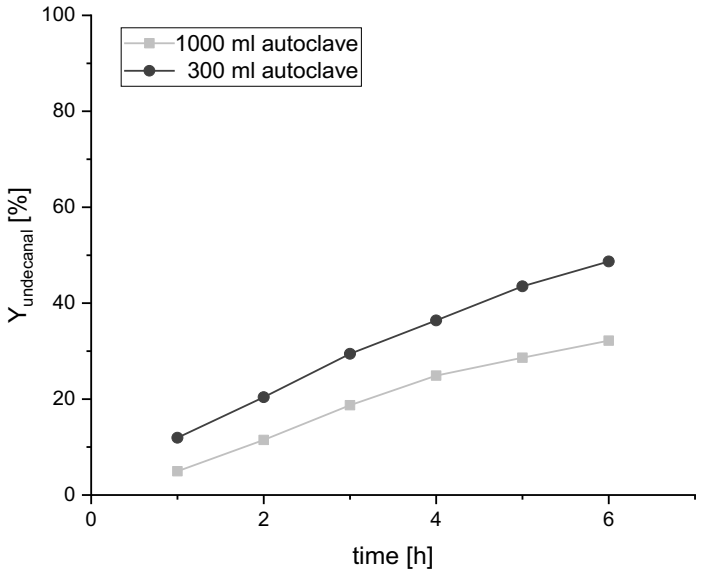


**Figure 1: Reaction profile of the CD mediated aqueous biphasic hydroformylation of 1-decene using TPPTS for two reactor size.**

**Condtions:** Preforming: p($CO/H_2$)= 20 bar, $n_{CO}/n_{H2}$=1:1, T= 80°C, t=2 h; Reaction: p($CO/H_2$)=40 bar, $n_{CO}/n_{H2}$=1:1, T=80°C, t=6 h, $m_w/m_S$=4:1, $n_S/n_{Cat}$=496, $n_{CD}/n_{Cat}$=12, $n_P/n_{Cat}$=5, n= 800 $min^{-1}$.

## Additional Information Chapter 3.1.2 – Scale-up Rh/sulfoxantphos catalyst system

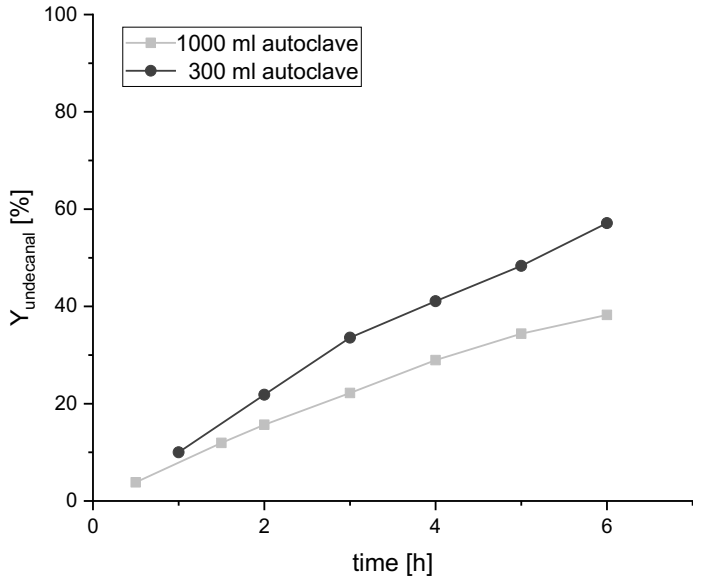


**Figure 2: Reaction profile of the CD mediated aqueous biphasic hydroformylation of 1-decene using sulfoxantphos for two reactor sizes as ligand.**

**Conditions**: Preforming: p($CO/H_2$)= 20 bar, $n_{CO}/n_{H2}$=1:1, T=120°C, t=12 h. Reaction: p($CO/H_2$)=40 bar, $n_{CO}/n_{H2}$=1:1, T=120°C, τ=6 h, $m_w/m_S$=4:1, $c_{Cat}$= 0.0064 mol%, $n_{CD}/n_{Cat}$= 12, n= 800 $min^{-1}$.

# Additional Information Chapter 3.2.4 – Distillation & substrate recycle concept

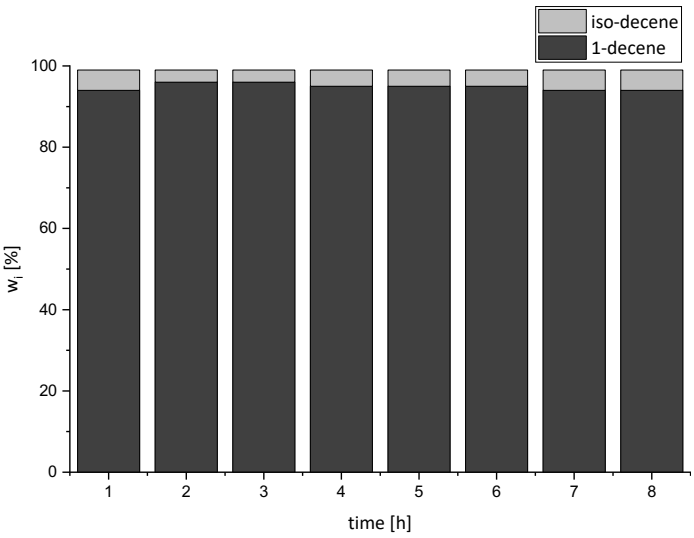


**Figure 3: Composition of the distillate stream (top fraction) for a continuous operation.**

**Conditions**: p= 15 mbar, $T_{head}$= 80 °C, $T_{bottom}$= 135 °C, reflux= 4, $\dot{m}_{Feed}$= 45.34 g/h