

Continuous Biphasic Telomerisation of Glycerol with Butadiene

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The telomerisation of glycerol with 1,3-butadiene (Fig. 1) leads to different unsaturated ethers depending on the reaction conditions. Especially the isomers with remaining hydroxyl groups have an amphiphilic nature which makes them attractive as starting compounds for the production of emulsifiers or surfactants [1-3]

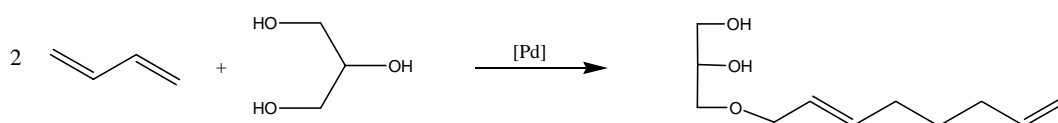


Fig. 1: Telomerisation of glycerol with butadiene

The reaction is catalysed homogeneously by palladium which leads to the necessity of an effective catalyst recycling concept to create an economically feasible process. This can be done by using a biphasic reaction system in which a water-soluble catalyst system is operating in a polar layer containing water and glycerol. Liquid butadiene forms a second organic phase. The reaction products are insoluble inside the aqueous phase and thus dissolve inside the organic phase.

The described process has been studied in a laboratory scale focussing on selectivity towards the monoethers and minimisation of catalyst leaching. Based on these results a concept for a continuous process to produce glycerol telomers was established (Fig. 2) and operated in a miniplant.

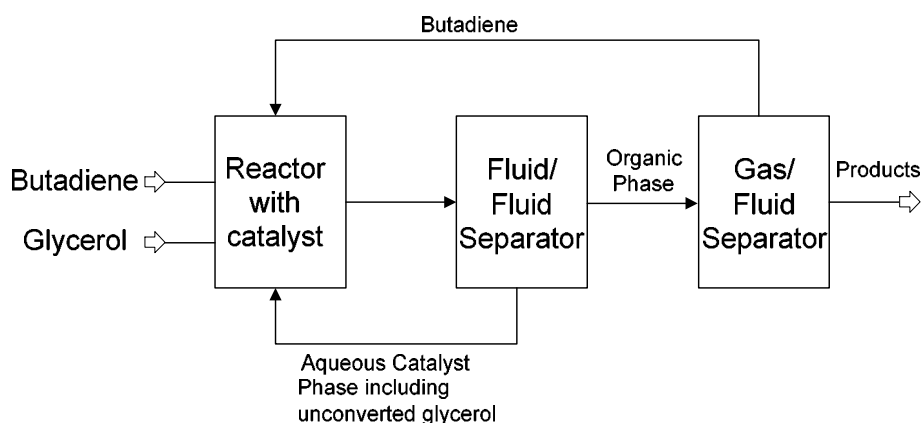


Fig 1: Continuous biphasic telomerisation of glycerol with butadiene

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2. A. Behr, J. Leschinski, C. Awungacha, S. Simic, T. Knoth, *ChemSusChem* 2(2009) 71-76
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