



Environmentally Friendly Heterogeneously Catalyzed Production of Lactide: 2nd Generation of PLA Process

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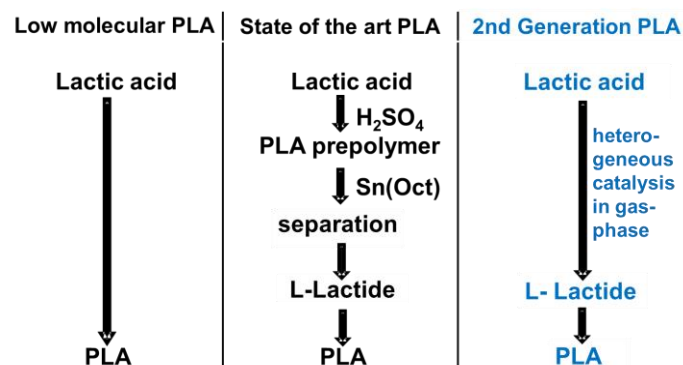
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Abstract:

A 2nd generation polylactic acid (PLA) process was developed in an environmentally friendly procedure by direct heterogeneously catalyzed synthesis of L-lactide (L-LD) from aqueous 90% lactic acid (LA) to avoid the commercially applied prepolymerisation and depolymerisation as well as the use of hazardous chemicals such as H_2SO_4 and homogeneous Sn containing catalysts. Various heterogeneous catalysts such as zeolites, $\gamma-Al_2O_3$ etc. were tested in a fixed bed reactor in the gas phase. The acidity of the catalysts plays an important role. Experiments were conducted in a continuous plug flow fixed bed reactor under gas phase conditions. In the presence of various heterogeneous catalyst such as zeolites [6], $\gamma-Al_2O_3$, $AlPO_4$ etc. the influence of pressure, temperature, residence time and water content of the starting material was investigated. The L-LD selectivity can be improved by high temperature and reduced pressure achieving up to 99 %.



Reference:

Hoelderich, W.F. et al., WO002013160485A1 (2013).assigned to Uhde Inventa Fischer, Germany