

## Process design for coproduction of biofuel and biochemical from lignocellulosic biomass

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Lignocellulosic biomass is an important resource to replace the petroleum meeting the requirement of future energy demand and leading environmental health through the limitation of carbon dioxide emission. We proposed a new process coproducing biofuel (i.e. butene oligomer) and biochemicals, such as 1,5-pentanediol and adipic acid from lignocellulosic biomass to enhance the flexibility for variable market conditions and the process economics. By the production of multiple products, the carbon efficiency is estimated until 48.6%. To investigate the feasibility of the proposed process, the techno-economic analysis (TEA) is performed alongside a pioneer plant analysis. Additionally, through the sensitivity analysis and uncertainty analysis, the primary driver in the economic is confirmed. The environmental impacts are investigated by performing life cycle assessment (LCA). The TEA and LCA can guide to improve the process development at the two viewpoints, which include the economics and environment.