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## Techno-Economic Analysis of Glucose Oxidation to Value-Added Chemicals

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Carboxylic acids (CAs) are being used increasingly as a food additive, corrosion inhibitor, in deicing, and in detergents, and is also a potential starting material for the production of CAs chemicals. This work describes a techno-economic analysis of a potential bio-based process for the production such as glucaric acid, gluconic acid, tartronic acid and oxalic acid generated by biometallic catalytic oxidation of glucose with oxygen as an oxidant. from glucose (biomass) heterogeneous oxidation of glucose with oxygen to carboxylic acids is considered. Rstoc reactor was used for this process. Techno-economic assessment (TEA) is made for this oxidation route and cover the entire process from glucose to pure carboxylic acids that can be used as a starting material for the production of valuable chemicals. This is the first TEA of pure CAs production incorporating azeotropic evaporation, distillation and separation. In this report, Aspen Plus V9 simulation represented glucose conversion process to carboxylic acids via PtPd/TiO<sub>2</sub> catalyst. Also detailed study have been conducted on energy optimization, techno-economic analysis, and environmental impact for this process. The key finding is that relatively less energy demands and capital investment are required for CAs process. CO<sub>2</sub> emission per production of CAs is much lower in the case of another catalysts. The outcome of this study could provide useful information for process design and implementation of glucose conversion to value added chemicals technologies for other energy and environmental applications.

### Biography

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