Integrated recovery and upgrading of bio-based dicarboxylates

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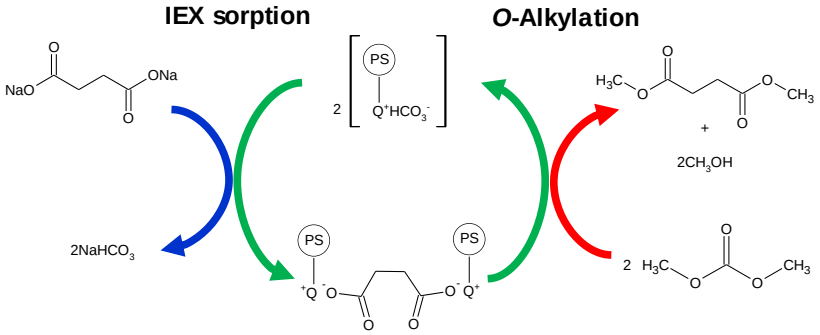
Description

The inevitable depletion of non-renewable resources for the production of chemicals requires continued research efforts to make platform chemicals from renewable resources. In particular, the development and establishment of processing routes based on biomass should be prioritized in the short to midterm and further to mitigate climate change effects. Although several of these routes are technically feasible, different challenges and pitfalls towards better utilization of raw materials, emissions and overall sustainability have been identified. Particularly, in the case of the pathway from sugars to derivatives and materials via bio-based dicarboxylates, better technologies on downstream processing and upgrading of these dicarboxylates are required to minimize waste salt emission if efficient neutral pH bio-based transformations are used.



Dissertation

C.S. López-Garzón, Integrated recovery and upgrading of bio-based dicarboxylates. PhD Thesis, Delft University of Technology, 2016. https://doi.org/10.4233/uuid:8661dcc6-9c0b-4df1-9bf5-166fe7527ee7

Publications from the dissertation

1. C.S. López-Garzón, M.Ottens, L.A.M. van der Wielen, Adrie J.J. Straathof, Direct downstream catalysis: from succinate to its diethyl ester without intermediate acidification. Chem. Eng. J. 200-202 (2012) 637-644.
2. C.S. López-Garzón, L.A.M. van der Wielen, A.J.J. Straathof, Green upgrading of succinate using dimethyl carbonate for a better integration with fermentative production. Chem. Eng. J. 235 (2014) 52-60.
3. C.S. López-Garzón, A.J.J. Straathof, Recovery of carboxylic acids produced by fermentation. Biotechnol. Adv. 32 (2014) 873–904

4. C.S. López-Garzón, L.A.M. van der Wielen, A.J.J. Straathof, Ester production from bio-based dicarboxylates via direct downstream catalysis: Succinate and 2,5-furandicarboxylate dimethyl esters. RSC Adv. 6 (2016) 3823-3829.
5. C.S. López-Garzón, L.A.M. van der Wielen, A.J.J. Straathof, Strong anion exchange recovery of aqueous dicarboxylates: Extraction and sorption equilibrium comparison. Sep. Purif. Technol. 175 (2017) 9-18.