

# Piloting of fermentation processes for the production of (di)carboxylic acids for biopolymer production

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**Abstract:** In 2004, the U.S. department of Energy identified chemicals, which can be used as building blocks for the production of fuels, chemicals and polymers. These building blocks can be produced directly out of sugars, through biological or chemical reactions. In this analysis itaconic acid and 2,5 furan dicarboxylic acid (FDCA) belong to the top 12 value-added chemicals from biomass. Dicarboxylic acids are interesting as polymerization starter units due to their bi-functionality. But also malic acid, adipic acid and xylonic acid are interesting molecules for biopolymer applications.

The Fraunhofer CBP is working together with partners on the development, optimization and scale-up (to 10 m<sup>3</sup> scale) of fermentation processes by using different microorganism as bacteria or fungi to produce sugar based carboxylic acids. These molecules can be used e.g. in the chemical industry as intermediate for (co)polymerisation (application as resins or bioplastic comonomers) or as additive in paints, varnishes and adhesives. Further applications are in food and beverages as flavor enhancer or acidulant agent, or in cosmetics, pharmaceuticals and agriculture as well as in the construction industry (additive in cement production).

Challenging is the recovery and purification of the products out of the fermentation broth to reach a sufficient purity depending on the aimed application. Therefore, in addition to the fermentation process, we are also working on the development of the downstream processing in close cooperation with the (end)user.

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**Further information on the Congress: [www.polykum.de/biopolymer-2018](http://www.polykum.de/biopolymer-2018)**