Scientists propose new method for sustainable production of copolyester monomers with biomass

13 December 2021, by Li Yuan

In this study, the researchers used plant-based acrylate and acetaldehyde as feedstocks, and produced PCTA monomer in an overall yield of 61 percent. The whole process included Morita-Baylis-Hillman (MBH) reaction, one-step dehydration/Diels-Alder reaction, and final Pd/C-catalyzed dehydrogenation.

Besides, they varied the final step to hydrogenation over Pd/C-Cu/Zn/Al dual-bed catalyst, and produced UNOXOL™ diol, which is another important monomer in coatings industry, in an overall yield of 67 percent.

Furthermore, the life cycle assessment implied that the newly-developed biomass-based routes had the potential to reduce carbon footprint.

"This study paves a new way for the production of renewable PCTA and also provides a new guidance for biomass conversion," said Prof. Li.


Provided by Chinese Academy of Sciences