Electronic Supplementary Material (ESI) for Materials Advances. This journal is © The Royal Society of Chemistry 2024

Electronic Supporting Information

Modification of Chitosan-coated Magnetic Material with Glycidyltrimethylammonium Chloride and Its Application as Heterogeneous Base Catalyst for Levulinic Acid Esterification

Feri Mukhayani^a, Yuichi Kamiya^{*b}, Ryoichi Otomo ^b, Eko S. Kunarti^a, and Nuryono Nuryono^{*a}

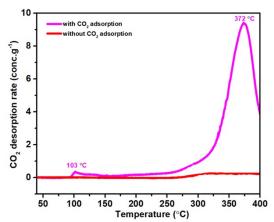
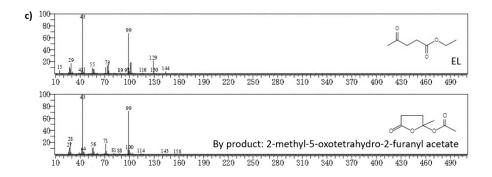


Fig. S1 CO₂-TPD profiles for MM/Chi/GTMAC taken with and without CO₂ adsorption.



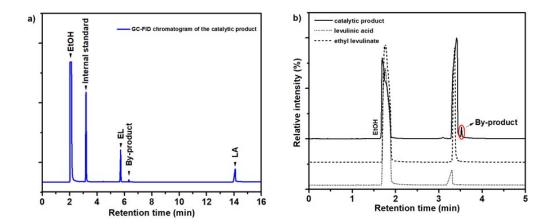


Fig. S2 Chromatograms of (a) GC-FID and (b) GC-MS for the reaction products that were obtained at the temperature of 80 C for 6 h; and (c) MS spectra of EL and the by-product.

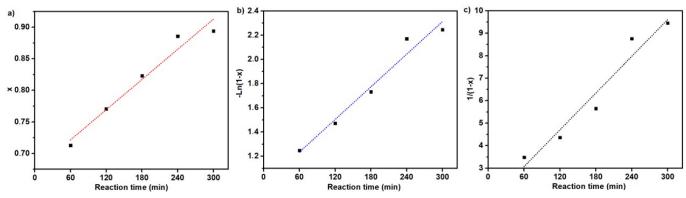


Fig. S3 Linear plots of (a) pseudo-0th-order, (b) pseudo-1st-order, and (c) pseudo-2nd-order kinetics for the reaction over MM/Chi/GTMAC.