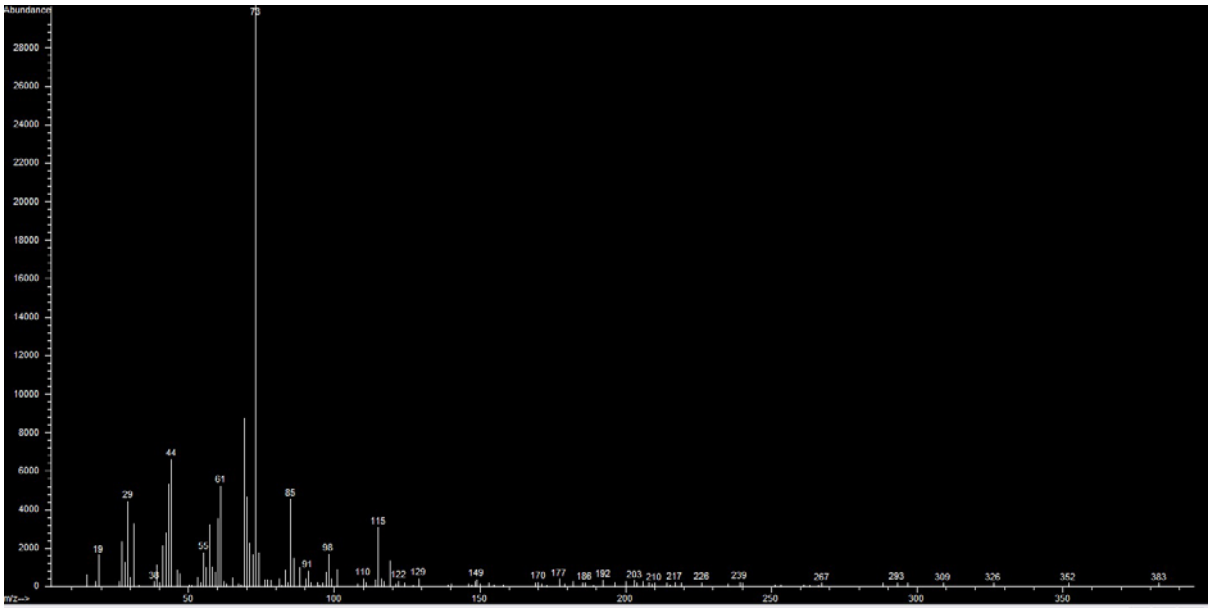
Supporting Information

Mediating acid-catalyzed conversion of levoglucosan into platform chemicals with various solvents

Xun Hu, Liping Wu, Yi Wang, Daniel Mourant, Caroline Lievens, Richard Gunawan and Chun-Zhu Li*

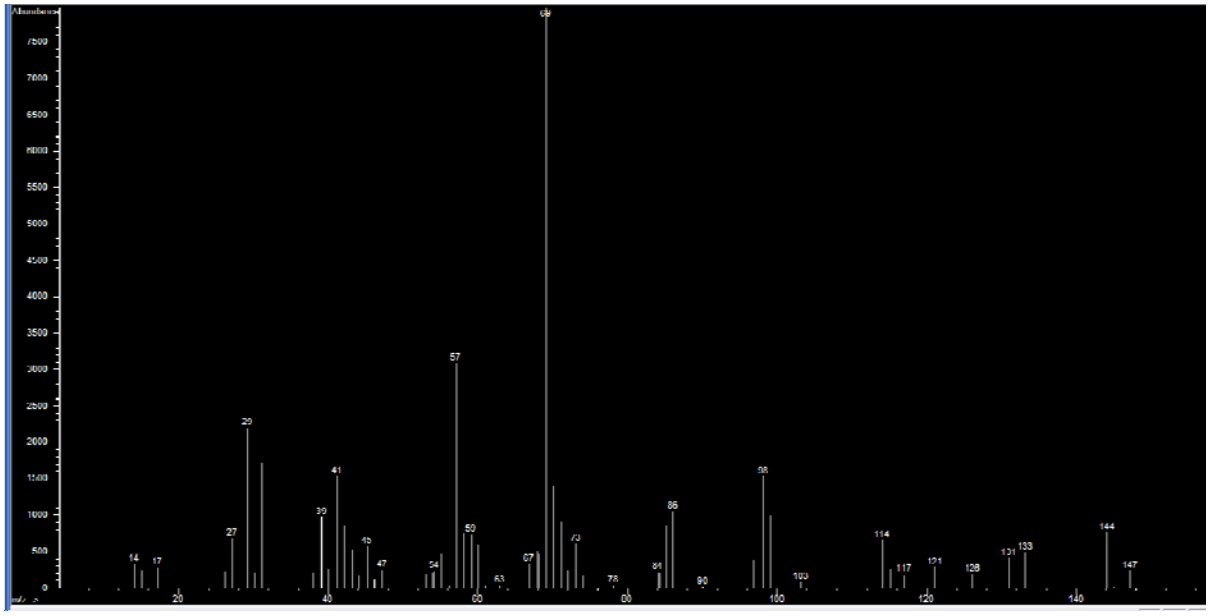
Fuels and Energy Technology Institute, Curtin University of Technology,

GPO Box U1987, Perth, WA 6845, Australia

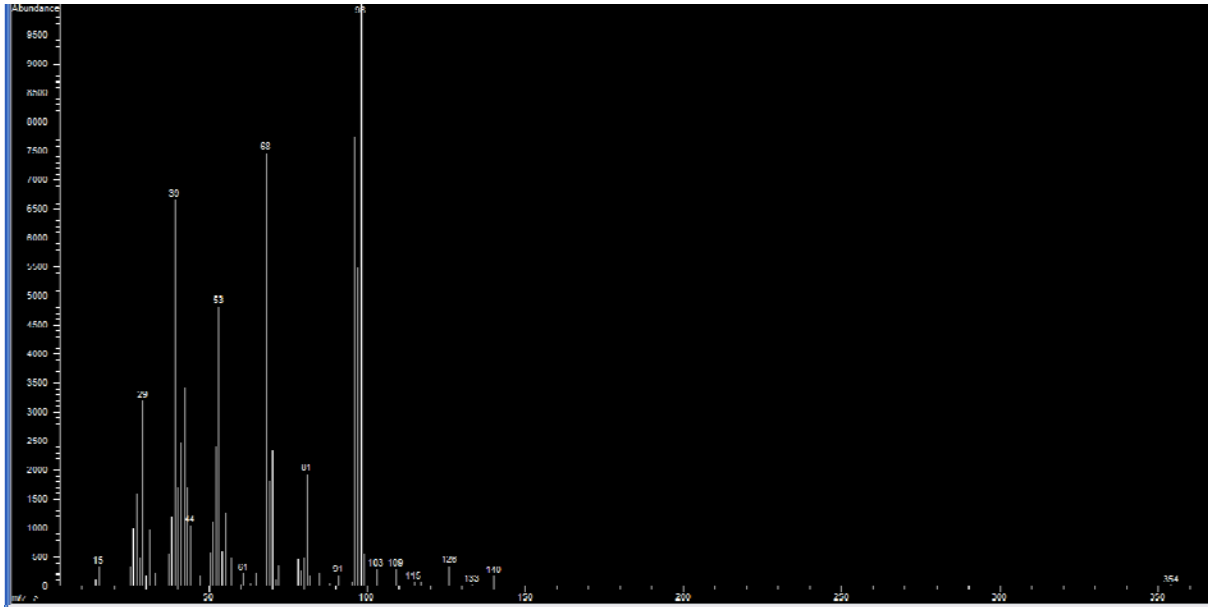


Scheme S1 Mass spectrum of 1,6-anhydro-beta-d-glucofuranose.

*Corresponding author. Tel: (+) 61 8 9266 1131; Fax: (+) 61 8 9266 1138; E-mail: chun-zhu.li@curtin.edu.au

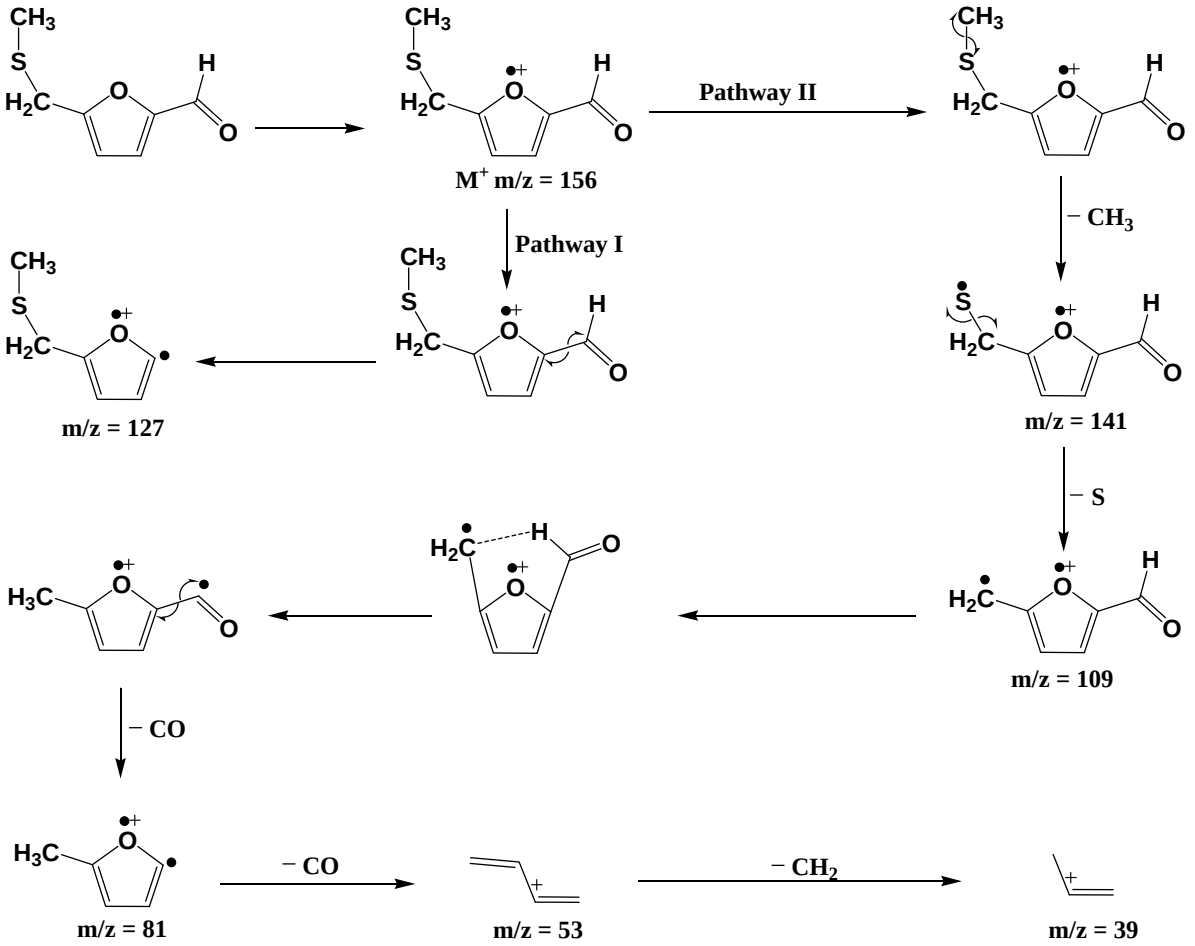


Scheme S2 Mass spectrum of 1,4;3,6-dianhydro-α-d-glucopyranose.



Scheme S3 Mass spectrum of levoglucosenone.

Scheme S4 Mass spectrum of 5-[(methylthio)methyl]-2-furancarboxaldehyde.



Scheme S5 Proposed degradation pathways of 5-[(methylthio)methyl]-2-furancarboxaldehyde in mass spectrograph.

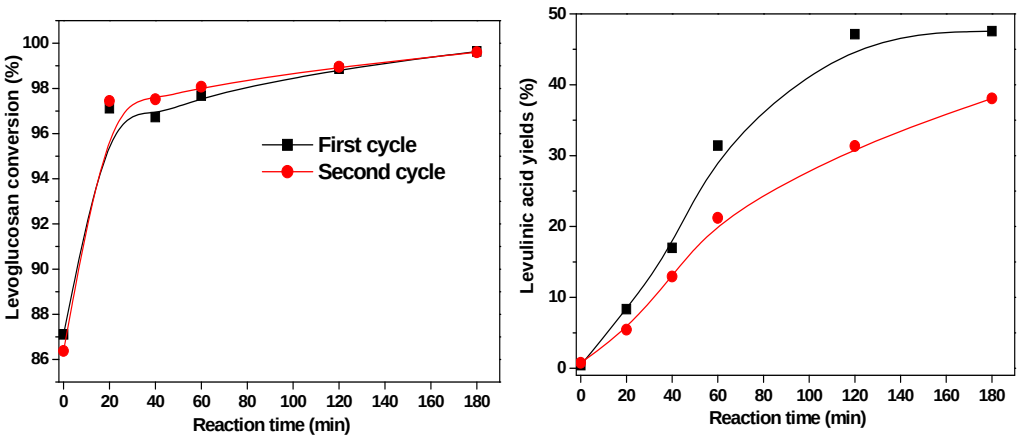


Figure S1 Evaluating the catalytic activity of Amberlyst 70 in the acid-catalyzed conversion of levoglucosan in water for two cycles. Fresh catalyst was used in the first cycle while the used catalyst in the first cycle was in the second cycle. Experimental conditions: Levoglucosan loaded: 9.5 g; Catalyst loaded: 9.5 g; Water: 90 g; Reaction temperature: 170°C; Stirring rate: 500 rpm. “0 min” means the reaction temperature just reached 170°C.

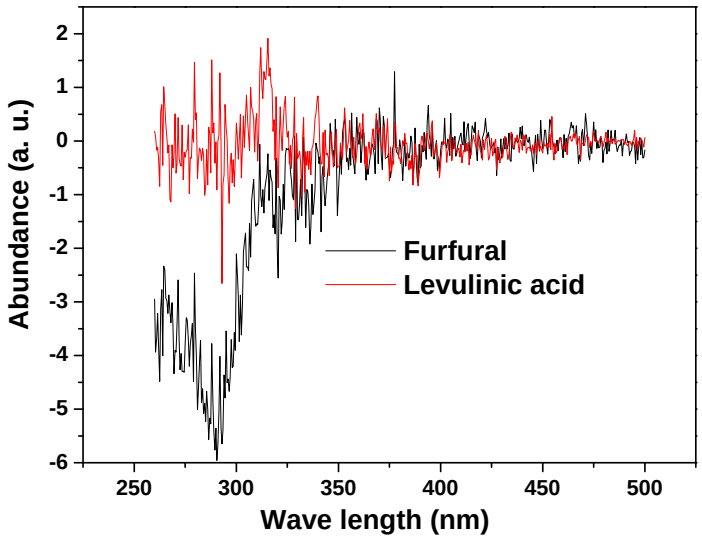


Figure S2 Excitation fluorescence spectra for the furfural and levulinic acid.

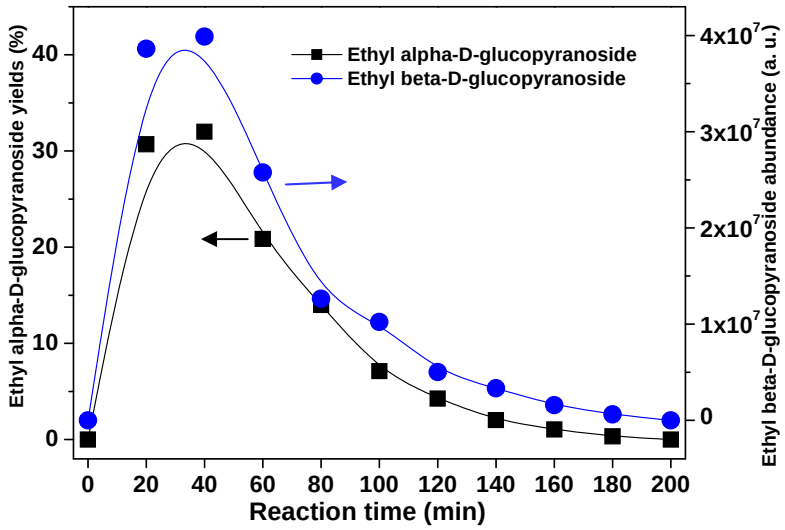


Figure S3 Yields/abundance of the sugar ethyl glucosides in the acid-catalyzed conversion of levoglucosan in ethanol.

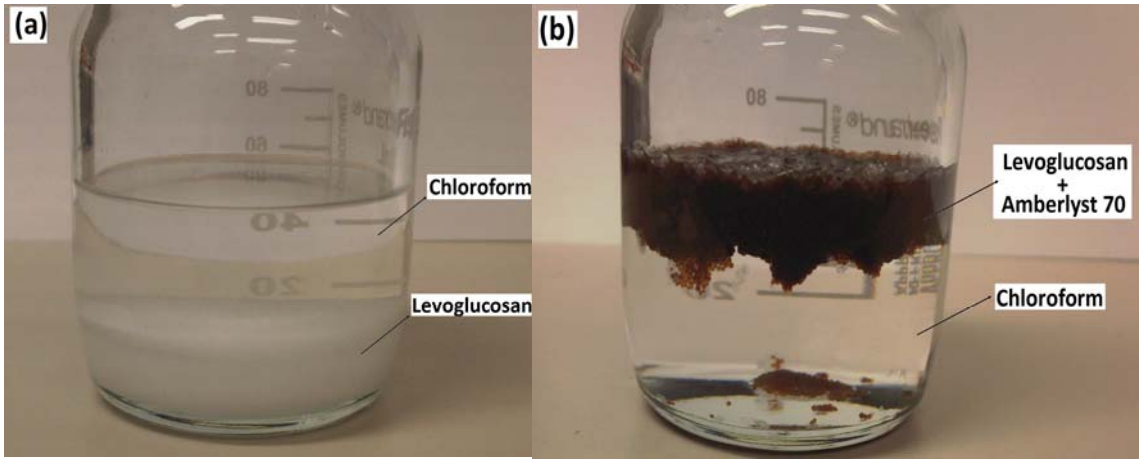


Figure S4 Images for the mixture of levoglucosan/chloroform (bottle a) and the mixture of levoglucosan, chloroform, and Amberlyst 70 (bottle b). Chloroform: 50 ml; Levoglucosan: 10 g; Amberlyst 70 in bottle b: 10 g.

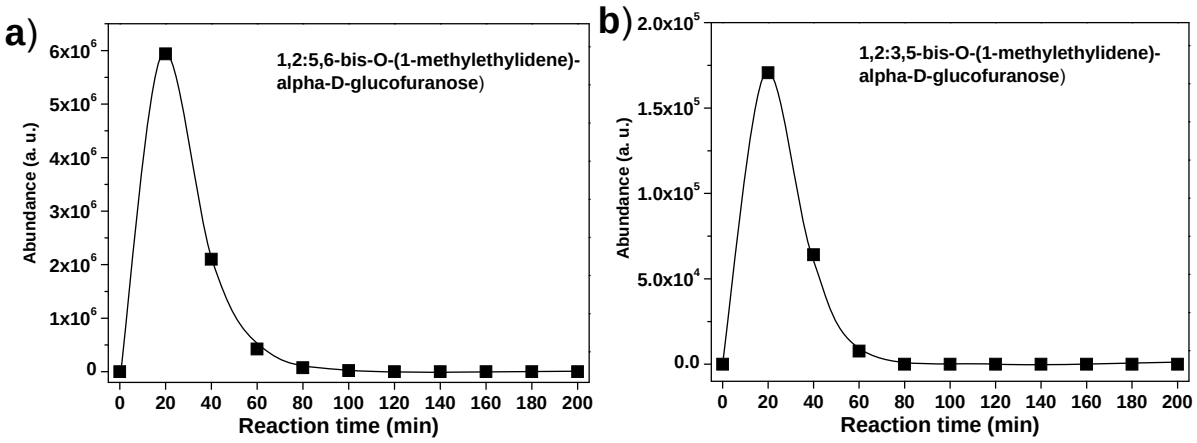


Figure S5 Abundance of the sugar derivatives versus reaction time in the acid-catalyzed conversion of levoglucosan in acetone.

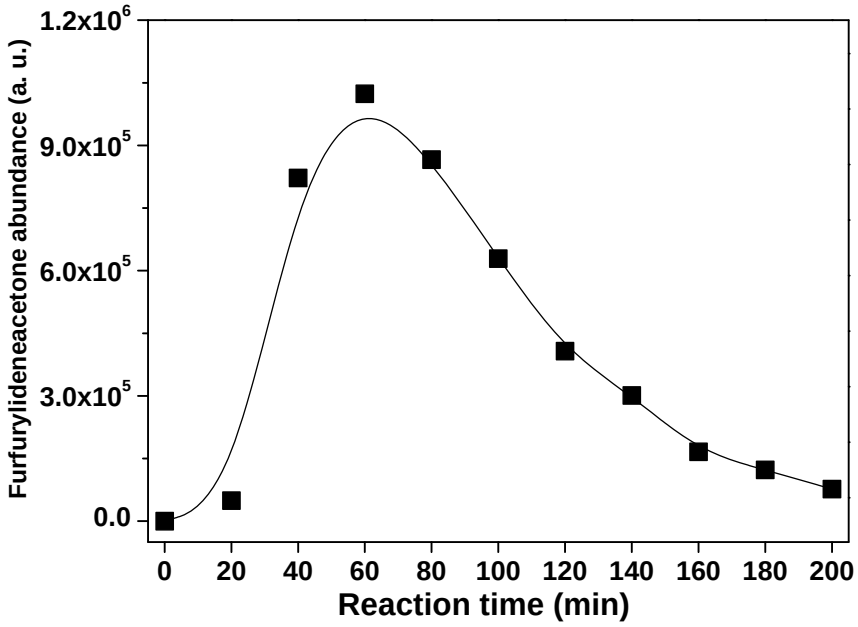


Figure S6 Abundance of furfurylideneacetone versus reaction time in the acid-treatment of levoglucosan in acetone.