

Annual Biotechnology Congress

July 23-24, 2018 | Vancouver, Canada

Hydrolysis of lignocellulose and micro cellulose with novel ulfobetaine–tungstophosphoric acid catalyst

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Ionic liquid (IL) and heteropoly acid (HPA) composite catalyst were prepared for the hydrolysis of waste wood powder and microcellulose. Here in this study, the tungstophosphoric acid (H₃PW₁₂O₄₀, TPA) and pyridinium propyl sulfobetaine (PPS) were adopted as HPA and IL, respectively. The nuclear magnetic resonance (NMR) spectroscopy was adopted to examine the correlations between acidic strengths vs. water content of both H₂SO₄ and PPS-TPA solution. On the one hand, the acid strength of the prepared catalyst solution is the same with that of industry adopted sulfured acid (2 wt% in concentration) for glucose and xylose production. On the other hand, is also prepared with higher concentration for non-cellulose preparation. For this purpose, waste wood powder and microcellulose were adopted for hydrolysis. The results showed that PPS-TPA catalyst exhibits higher activity on lignocellulosic hydrolysis. Other than nanocellulose production, PPS-TPA has potential on glucose production yield without producing inhibitor, and exhibit potential for quick xylose production process.

Biography

An-Ya Lo has completed his PhD eight years ago from Department of Materials Science and Engineering, National Chiao-Tune University, Taiwan. He is the Head of Practicum Career Service Division of R&D office in NCUT. He has published more than 40 papers in reputed journals.

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