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Continuous Hydrogenation of Humins-derived 5-Methoxymethylfurfural

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PURPOSE OF THE ABSTRACT
Biomass valorization has proven to be one of the most promising routes toward sustainability within the chemical industry [1]. A key reaction has been the acid-catalyzed hydrolysis of bio-derived sugars, but the inevitable formation of humins has been a considerable drawback due to their complex nature [2]. We have found that furanic compounds, like 5-hydroxymethylfurfural (HMF) and 5-methoxymethylfurfural (MMF), can be extracted from humins. Unlike HMF [3], reactions with MMF have not been widely studied. We have extracted MMF from humins and valorized towards high value added furanics via hydrogenation in continuous flow. Commercial catalysts were employed and have demonstrated excellent conversion of MMF towards hydrogenation (>99%). We have also proposed a mechanism for MMF hydrogenation based on intermediate identification via GC-MS analyses.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

biomass valorization | continuous flow | hydrogenation | humin by-products

BIBLIOGRAPHY

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