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Principle, Application and Prospects of continuous catalytic production of bio-based furan core Panorama

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Abstract

The present concepts of sustainable development, bio-economy and circular economy are increasingly being applied to the synthesis of molecules of industrial interest. Among these molecules, furfural as a platform molecule is the subject of various research approaches to improve its synthesis and productivity, and also to extend its transformation for the production of molecules of interest. Due to the current momentum in promoting green chemistry for sustainable development, chemists have recently established catalytic reactions based on alternative technologies such as continuous flow.

The present study showed recent breakthroughs obtained in the production of furfural [1], hydroxymethylfuran [2], methylfuran [2], methyl levulinate [3] and □-valerolactone [4] starting from lignocellulose in the presence of homogeneous catalysts and heterogeneous catalysts using either batch process or continuous flow process. Various reaction parameters in dependence of time such as temperature, catalyst and feedstock loadings as well as solvent types have been optimized.

Conception, synthesis and physico-chemical properties will be detailed.

Biography

Prof. Dr. Christophe Len became full Professor in 2004 at the Université de Poitiers (France). In 2010, he moved as full Professor at the Université de Technologie de Compiègne – UTC (France). In 2017, he developed his research in Chimie ParisTech (France). He has published almost 180 original publications and review articles, 8 book chapters and 9 patents. Among recent awards and recognition to his scientific career, he was promoted Fellow of the Royal Society of Chemistry (FRSC, 2015). In 2017, he has been honored with 2017 Glycerine Innovation Award sponsored by the American Cleaning Institute and the National Biodiesel Board. (Up to 100 words)

Recent publication data:

1. C. Len and coll., J. Mol. Catal. A: Chemical 2015, 410, 1; J. Mol. Catal. A: Chemical 2016, 423, 520; Molecules 2016, 21, 1102; ACS Sustainable Chem. Eng. 2017, 5, 392; Green Chem. 2017, 19, 164; Mol. Catal. 2017, 434, 80; Mol. Catal. 2017, 438, 167; Mol. Catal. 2018, 445, 73; Front. Chem. 2018, 6, 146; Molecules 2018, 23, 1973
2. C. Len and coll., Tetrahedron 2017, 73, 5599; ChemCatChem. 2018, 10, 3459; ACS Sustainable Chem. Eng. 2018, 6, 9831
3. C. Len and coll., ACS Sustainable Chem. Eng. 2018, 6, 6901
4. C. Len and coll., ACS Sustainable Chem. Eng. 2018, 6, 6746

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