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PRODUCTION OF METHYL LEVULINATE AND LEVULINIC ACID BY DIRECT CONVERSION OF α-CELLULOSE AND RAW BIOMASS USING A CHEAP HOMOGENEOUS CATALYST

Maricelly Martinez[1], Xavier Duret[1], Thierry Ghislain[1], Doan Pham[2], Ange Nzihou[2] and **Jean-Michel Lavoie[1]**

[1]University of Sherbrooke, Canada
[2]University of Toulouse, France

Production of methyl levulinate (ML) and levulinic acid (LA) through a direct conversion of α-cellulose and raw biomass in methanol was realized. The effect of acid concentration (0.04-0.24 mol/L), reaction time (0.5-7 hours), cellulose concentration (2.5-12% wt.) and temperature (180-200°C) for the conversion of α-cellulose and raw biomass to methyl levulinate and levulinic acid was analyzed with a central composite design (CCD) using the response surface methodology (RSM). Three dependent responses (ML yield, LA yield and residues yield) were studied to determine the optimum combination of the four factors. Results showed that the optimal conditions involved an acid concentration of 0.1796 mol/L, a biomass concentration of 2.5 wt% and a reaction time of 4.21 hours at 200°C. These conditions lead to a theoretical yield of methyl levulinate and levulinic acid of 68.14% and 14.30% respectively and experimental yield for methyl levulinate, levulinic acid and residues yield were 62.0%, 15.95% and 11.2% respectively.

Recent Publications

1. **Martínez M, Cortés F and Franco C (2013) Water treatment based on the adsorption of crude on polar & non-polar nanoparticles, Vol. 77 (1). ISSN 0122-056X-eISSN 2256-5035. Page. 59-68.**
2. **Cortés F, Ruiz M, Franco C, Martínez M, Benjumea P and Patiño E (2014) Water remediation based on oil adsorption using nano silicates functionalized with a petroleum vacuum residue. Adsorption Science and Technology 32(2):197-208.**

Biography

Maricelly Martinez holds a Bachelor's degree in Chemical Engineering from the University of America, Bogotá in 2012 and a Master's degree in Petroleum Engineering from National University of Colombia at Medellin in 2015. She has the experience of the production of bioproducts for the energy field. She joined the Biomass Technology Laboratory of University of Sherbrooke, Canada in August 2016 to do a PhD on the conversion of sugars of biomass into biobutanol by a thermochemical process.

maricelly.martinez.aguilar@USherbrooke.ca