عنوان مقاله:

Ionic liquids (ILs): advances in biorefinery for the efficient conversion of lignocellulosic biomass

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نویسندگان:

Aderemi T. Adeleye - *Department of Chemistry, University of Ibadan, Ibadan, Nigeria*

Hitler Louis - *CAS Key Laboratory for Nanosystem and Hierarchical Fabrication, CAS Centre for Excellence in Nanoscience, National Centre for Nanoscience and Technology, University of Chinese Academy of Sciences, Beijing, China | Department of Pure and Applied*

Hamzat A. Temitope - *Department of Chemistry, Faculty of Physical Sciences, University of Ilorin, Ilorin, Nigeria*

Monday Philip - *CAS Key Laboratory for Nanosystem and Hierarchical Fabrication, CAS Centre for Excellence in Nanoscience, National Centre for Nanoscience and Technology, University of Chinese Academy of Sciences, Beijing, China*

خلاصه مقاله:

Lignocellulosic biomass contains polymers of cellulose, hemicellulose, and lignin, bound together in a complex structure. Many physicochemical structural and compositional factors hinder the hydrolysis of cellulose present in biomass to sugars and other organic compounds that can later be converted to fuels. These factors hindering access to sugars contained in lignocelluloses are summed up as recalcitrance . As a result, pretreatment is required to allow liberal access to the full contents of lignocellulosic biomass. Production of value added co-products along with biofuels through integrated biorefinery processes create the need for selectivity during pretreatment. Pretreatment is an important tool for biomass-to-biofuels conversion processes and is the subject of this review article. The major target of pretreatment is to make the cellulose accessible to hydrolysis for conversion to fuels. Various pretreatment techniques change the physical and chemical structure of the lignocellulosic biomass and enhance the degree of hydrolysis. During the past few years a large number of pretreatment methods have been developed, including alkali treatment, ammonia explosion, and others. Many methods have been shown to result in high sugar yields, for lignocellulosic biomasses such as woods, grasses, corn, rice straw, etc. In this review, we discuss the ionic liquids (ILs) pretreatment method in biorefinery and the recent literature that has reported on the use of these so called green solvents for pretreatment of various lignocellulosic biomasses, ionic liquids have recently become very popular .solvents for the dissolution of biomass due to their unique features as compared to conventional solvents

کلمات کلیدی:

Lignocellulosic biomass, Ionic liquids (ILs), Biorefinery, Biofuels