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Effect of structural changes of lignocelluloses material upon pre-treatment using green solvents (Conference Paper)Gunny, A.A.N.^a [✉](#) Arbain, D.^{bc} [✉](#) Jamal, P.^d [✉](#) [🔍](#)^aDepartment of Chemical Engineering Technology, Faculty of Engineering Technology, University Malaysia Perlis, Kampus UniCITI Alam, Sungai Chuchuh, Padang Besar, Perlis, Malaysia^bSchool of Bioprocess Engineering, University Malaysia Perlis, Kompleks Pusat Pengajian Jejawi 3, Arau, Perlis, Malaysia^cCenter for Renewable Energy, STT-PLN, Jalan Lingkar Luar Barat Kosambi, Jakarta, Indonesia[View additional affiliations](#) ▾

Abstract

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The Malaysia Biomass strategy 2020 stated that the key step of biofuel production from biomass lies on the pretreatment process. Conventional 'pre-treatment' methods are 'non-green' and costly. The recent green and cost-effective biomass pretreatment is using new generation of Ionic Liquids also known as Deep Eutectic Solvents (DESs). DESs are made of renewable components are cheaper, greener and the process synthesis are easier. Thus, the present paper concerns with the preparation of various combination of DES and to study the effect of DESs pretreatment process on microcrystalline cellulose (MCC), a model substrate. The crystalline structural changes were studied using using X-ray Diffraction Methods, Fourier Transformed Infrared Spectroscopy (FTIR) and surface area and pore size analysis. Results showed reduction of crystalline structure of MCC treated with the DESs and increment of surface area and pore size of MCC after pre-treatment process. These results indicated the DES has successfully converted the lignocelluloses material in the form suitable for hydrolysis and conversion to simple sugar. © 2017 Author(s).

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