

Fermentable Sugars from Palm Empty Fruit Bunch Biomass for Bioethanol Production

Authors : U. A. Asli, H. Hamid, Z. A. Zakaria, A. N. Sadikin, R. Rasit

Abstract : This study investigated the effect of a dilute acid, lime and ammonia aqueous pretreatment on the fermentable sugars conversion from empty fruit bunch (EFB) biomass. The dilute acid treatment was carried out in an autoclave, at 121°C with 4 % of sulphuric acid. In the lime pretreatment, 3 wt % of calcium hydroxide was used, whereas the third method was done by soaking EFB with 28 % ammonia solution. Then the EFB biomass was subjected to a two-stage-acid hydrolysis process. Subsequently, the hydrolysate was fermented by using instant baker's yeast to produce bioethanol. The highest glucose yield was 890 mg/g of biomass, obtained from the sample which underwent lime pretreatment. The highest bioethanol yield of 6.1mg/g of glucose was achieved from acid pretreatment. This showed that the acid pretreatment gave the most fermentable sugars compared to the other two pretreatments.

Keywords : bioethanol, biomass, empty fruit bunch (EFB), fermentable sugars

Conference Title : ICCBE 2014 : International Conference on Chemical and Bioprocess Engineering

Conference Location : Penang, Malaysia

Conference Dates : December 16-17, 2014