Abstract Book

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Utilization of zeolite H-MOR based on bagasse ash silica as a catalyst for the hydrolysis reaction of cassava peel cellulose for glucose production

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ABSTRACT

Bagasse and cassava peel are waste that can be increased economic value. In this study, we have successfully synthesized zeolite H-MOR from sugarcane bagasse ash (SCBA) silica using the Steam-Assisted Crystallization (SAC) method at 170˚C for 120 hours and determined its catalytic activity on the hydrolysis of cassava peel starch to produce glucose. H-MOR synthesized using LUDOX (commercial silica) was used as a comparison. The results showed that the MOR zeolite synthesized using SCBA and LUDOX silica had a crystallinity of 92.12% and 81.17%, respectively. The cellulose content in cassava peel flour is 57.8%. Optimization of the catalytic test variable showed that the hydrolysis of cellulose occurred at 140˚C for 4 hours with a 1: 1 ratio of catalyst and substrate. The glucose concentrations obtained from cellulose hydrolysis using zeolite H-MOR catalyst from SCBA and LUDOX were 398.5 ppm and 237.45 ppm with conversion degrees of 60.4% and 61.2%, respectively

keyword : H-MOR, sugarcane bagasse ash, hierarchically porosity, steam-assisted crystallization, cellulose and glucose