

HYDROGEN EVOLUTION FROM BIOMASS SOLUTION OF ILALANG GRASS (*Imperata cylindrica raeusch*) USING ELECTROLYSIS

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Abstact

There has been a research on hydrogen production from ilalang grass (*Imperata cylindrica*) by using biomass electrolysis. This method will dissolve the biomass through oxidation process by simple heating reflux at temperature 95 °C with FeCl₃(0,179 mol) 95 °C as oxidizer with biomass weight variation of 1,0 g; 2,5 g and 5,0 g for two hours during oxidation process then added with 5 mL HCl (37%) as stabilizer Fe³⁺. After that, it is analyzed using spectrophotometry UV-vis to identify biomass solubility against oxidizer. The resulted biomass solution is mixed with distilled water at the volume ratio 1:2, 1:5, 1:10, and 1:15. Then, it is electrolyzed on DC current of 15 V for approximately 25 minutes by using titanium as anode and stainless steel as cathode for the electrode. The hydrogen volume was analyzed qualitatively using chromatography gas and Bernoulli principle followed to determine quantitatively the transfer of mass gas in the vessel. The change of current effected by hydrogen production is used to calculate the hydrogen gas volume theoretically using Faraday law. The results showed that the acquisition of gas of 118 mL was obtained at a ratio of 1: 2 with a weight of 2.5 g of biomass which is the best weight to produce gas that is greater than the weight of other biomass. Gas analysis by gas chromatography (GC-TCD) shows that the biomass solution electrolyzed contains Hydrogen gas of 61.748% and CO gas of 6.109% with other gases such as CO₂.

keyword: *biomass electrolysis, hydrogen gas, ilalang grass*