

HYDROGEN EVOLUTION FROM RICE STRAW (*Oryza sativa* L.) USING ELECTROLYSIS OF BIOMASS SOLUTION

SITI AMINAH
No. Mahasiswa : 14612181

ABSTRAK

Hydrogen gas production research had done by using electrolysis of biomass solution method by an oxidation process that used the oxidizer of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ (0.179 mol) and 5 mL 37% HCl as a catalyst for 2 hours at 95-97 °C. The electrolysis of biomass solution is a decomposition of compounds in biomass using direct electric current. Rice straw biomass is refluxed with a weight variation of 0.5 g; 5.0 g and 10 g and the obtained filtrate was analyzed by UV-vis spectrophotometer to measure Fe^{2+} concentration. Electrolysis of biomass solution was carried out by dilution of the solution at a ratio of 1: 5, 1:10, and 1:15, using a DC voltage of 15 V with titanium electrodes on the anode and stainless steel in the cathode. The volume of gas H_2 was an calculated using the principle of gas pressure in the water medium following the Bernoulli principle. Changing of the current following the gas for mation were then used to calculate the volume of gas obtained theoretically using Faraday's law. The results showed that in the similar dilution ratio but different weights biomass has conclude that the greater of the biomass weight the faster of the gas evolution formation of gas. In the case weight of 10 g of biomass was the best weight compared to the weight of other biomass. Hydrogen gas obtained from a biomass solution at a weight of 10 g of biomass uses gas chromatography analysis of 25.761% and at a weight of 20 g of 34.412%.

Keywords: electrolysis, biomass solution, hydrogen gas, rice straw