

Nano-MFC (Nano Microbial Fuel Cell): Utilization of Carbon Nano Tube to Increase Efficiency of Microbial Fuel Cell Power as an Effective, Efficient and Environmentally Friendly Alternative Energy Sources

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Abstract : Electricity is the primary requirement today's world, including Indonesia. This is because electricity is a source of electrical energy that is flexible to use. Fossil energy sources are the major energy source that is used as a source of energy power plants. Unfortunately, this conversion process impacts on the depletion of fossil fuel reserves and causes an increase in the amount of CO₂ in the atmosphere, disrupting health, ozone depletion, and the greenhouse effect. Solutions have been applied are solar cells, ocean wave power, the wind, water, and so forth. However, low efficiency and complicated treatment led to most people and industry in Indonesia still using fossil fuels. Referring to this Fuel Cell was developed. Fuel Cells are electrochemical technology that continuously converts chemical energy into electrical energy for the fuel and oxidizer are the efficiency is considerably higher than the previous natural source of electrical energy, which is 40-60%. However, Fuel Cells still have some weaknesses in terms of the use of an expensive platinum catalyst which is limited and not environmentally friendly. Because of it, required the simultaneous source of electrical energy and environmentally friendly. On the other hand, Indonesia is a rich country in marine sediments and organic content that is never exhausted. Stacking the organic component can be an alternative energy source continued development of fuel cell is A Microbial Fuel Cell. Microbial Fuel Cells (MFC) is a tool that uses bacteria to generate electricity from organic and non-organic compounds. MFC same tools as usual fuel cell composed of an anode, cathode and electrolyte. Its main advantage is the catalyst in the microbial fuel cell is a microorganism and working conditions carried out in neutral solution, low temperatures, and environmentally friendly than previous fuel cells (Chemistry Fuel Cell). However, when compared to Chemistry Fuel Cell, MFC only have an efficiency of 40%. Therefore, the authors provide a solution in the form of Nano-MFC (Nano Microbial Fuel Cell): Utilization of Carbon Nano Tube to Increase Efficiency of Microbial Fuel Cell Power as an Effective, Efficient and Environmentally Friendly Alternative Energy Source. Nano-MFC has the advantage of an effective, high efficiency, cheap and environmental friendly. Related stakeholders that helped are government ministers, especially Energy Minister, the Institute for Research, as well as the industry as a production executive facilitator. strategic steps undertaken to achieve that begin from conduct preliminary research, then lab scale testing, and dissemination and build cooperation with related parties (MOU), conduct last research and its applications in the field, then do the licensing and production of Nano-MFC on an industrial scale and publications to the public.

Keywords : CNT, efficiency, electric, microorganisms, sediment

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