Sustainable Production of Hydrogen

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ABSTRACT

Hydrogen can be used in a variety of applications as the energy source. Hydrogen is mostly found in nature locked with other compounds. It can be extracted and obtained from water and water rich compounds like biomass. In this project we analyze the sustainability aspects of a process that will produce hydrogen from renewable feedstocks using light as a renewable energy source. Hydrogen from renewable sources such as biomass feedstocks using renewable energy is an important component in making chemicals and fuels. The goal of this study is to convert biosolids obtained as a by-product from water treatment plants and switchgrass into hydrogen by the sequential processes of thermal gasification in a fluidized bed reactor along with catalytic steam reforming of tars, and the use of water-gas shift catalysts to enhance the concentration of hydrogen and to compare its energy usage with pyrolysis-microbial electrolysis method used to produce hydrogen. The research is still going on and results are not reported yet.

Keywords: Water, biomass, steam reforming, hydrogen, renewable, solar energy

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