

Valorization of alginate for the production of hydrogen via catalytic aqueous phase reforming

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Description

Alginate, a carbohydrate abundant in the outer cell wall of macroalgae, was subjected to catalytic aqueous phase reforming (APR) to produce hydrogen using a 3% Pt/C commercial catalyst. The performance of the process was evaluated according to the conversion of the carbon to gas, the hydrogen yield and the hydrogen selectivity. The catalyst and feed amount, temperature, reaction time, pH and the presence of H₂ were modified to understand the dependence of the outcome of the process on these parameters. The presence of the catalyst was fundamental in order to increase the hydrogen yield compared to the uncatalyzed reaction, and it can be reused without activity loss. In addition, it was observed that the increase in alginate loading led to a decreasing conversion of the carbon; the yield of hydrogen increases with the increasing temperature and the basic pH had a strong beneficial effect in terms of ...