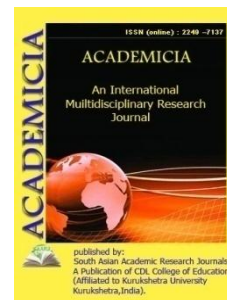


ACADEMICIA

An International Multidisciplinary Research Journal

(Double Blind Refereed & Peer Reviewed Journal)



DOI: **10.5958/2249-7137.2021.02360.0**

PRODUCTION OF HYDROGEN USING ALUMINUM AND ALUMINUM ALLOYS: A REVIEW

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ABSTRACT

Due to depletion of fossil fuels and the pollution caused by their burning, there is a pressing need for renewable, clean fuel alternatives for our future energy source. Scientists have been paying close attention to hydrogen, a regenerative and ecologically benign fuel with a high calorific value. The hydrogen economy idea proposes that, rather than fossil fuels, hydrogen fuel would be used to provide the majority of future global energy needs. Hydrogen production should be properly developed initially in order for the technology to be deployed in a sustainable, clean, and cost-effective way for a smooth transition to the hydrogen economy. The hydrogen industry has been recognized as a viable replacement for the non-sustainable fossil fuel economy. The development of ecologically safe and cost-effective hydrogen manufacturing techniques, which are critical for the hydrogen economy, is now ongoing. Using aluminum and its alloys to convert water or hydrocarbons to gas is one of the most promising methods to generate hydrogen. This article provides a review of aluminum-based hydrogen generation techniques, as well as their limits and commercialization difficulties. A recently developed idea for hydrogen and electromagnetic energy co-generation is also addressed.

KEYWORDS: *Aluminum, Aluminum Alloys, Alcohols, Hydrogen Production, Electricity Generation.*

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