**Introduction:**

Fossil fuels, such as coal, natural gas, and oil, as well as products made from them, provide the world's energy needs. These limited resources contribute to a country's existence. But they still remain critical due to their impact on pollution, global warming, and climate change by releasing CO2 and other greenhouse gases [1]. Nations that have identified the challenges associated with these resources have begun to try to minimize their economic reliance on fossil fuels. Renewable resources are already a significant component of the world's energy mix. A number of individuals who are interested in energy believe that one day we will be able to obtain energy from H2 in a sustainable and clean way [2]. Because of its numerous applications, H2 is increasingly in demand over other traditional fuels. Hydrogen has a high energy content, which provides a comprehensive benefit, as it has a lower heating value (LHV)/kg than its fossil fuel-based counterparts like methane and gasoline, which have LHVs that are 2.4 and 2.8 times greater, respectively [3-4]. Hydrogen is a component of power-to-gas technology, which is a power grid balancing mechanism used to collect and preserve surplus energy for usage during periods of limited supply (e.g., at night or when solar and wind are employed as energy sources) [5]. Hydrogen is gaining popularity as an energy carrier due to its several unique features. It can be created or transformed into electricity using electrochemical systems such as fuel cells and electrolysers with comparatively high energy conversion efficiencies. Hydrogen can be stored in a variety of ways including compressed gas, Cryogenic Liquid and Solid State [6-9]. In addition, hydrogen can be produced cleanly and emits no greenhouse gases. Hydrogen has also the ability to supply energy to the primary economic sectors of transportation, construction, and industry [10-11].

At present, Hydrogen is considered as an essential commodity that is used in various industrial processes, including the food industry, petrochemical and petroleum refining, ammonia production, and Hydrogenation process [12]. It can also be used in the production of power from fuel cells, transportation, and energy storage [13].

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