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Contribution ID: **3650** Type: **Poster Competition (Graduate Student) / Compétition affiches (Étudiant(e) 2e ou 3e cycle)**

(G*) (POS-30) Enhancing Hydrogen Desorption Kinetics and Storage Capacity of Magnesium Hydride (MgH2) via Ball Milling and Cold Rolling Methods

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This study focused on investigating whether ball milling and cold rolling can improve the hydrogen absorption and desorption kinetics of magnesium hydride (MgH2) and reduce its process temperature. Despite having a high hydrogen storage capacity, good reversibility, and low cost, MgH2 has not been widely used due to its high temperature of operation and slow rate of hydrogen absorption and desorption. Four forms of MgH2 were investigated, including unprocessed, ball milled for 15 and 20 minutes, and cold-rolled 5 times. The experiments aimed to identify the temperature at which the MgH2 forms absorb and desorb within a temperature range of 25 to 450 degrees Celsius. Results showed that both ball milling and cold rolling improved the hydrogen absorption and desorption kinetics of MgH2 and lowered the required process temperature. Cold rolling was found to be more effective than ball milling in improving MgH239;s storage capacity and had a greater impact on hydrogen absorption and desorption kinetics. The study concludes that ball milling and cold rolling have the potential to improve hydrogen storage performance, with further optimization depending on the specific application and desired characteristics.

Keyword-1

Hydrogen Desorption Kinetics

Keyword-2

Ball Milling and Cold Rolling

Keyword-3

Hydrogen Storage

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