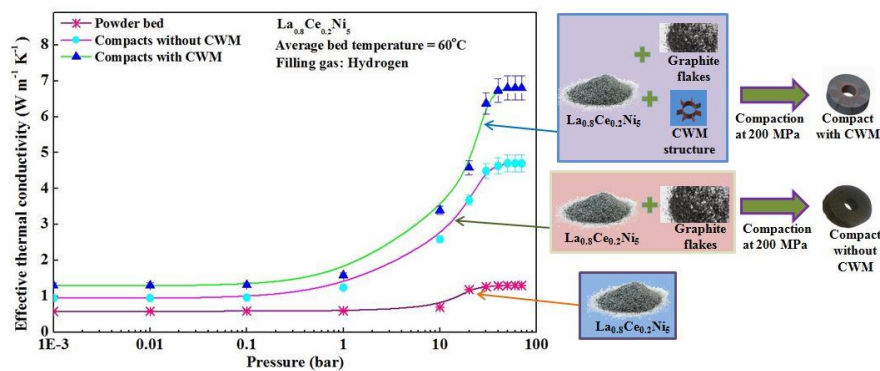


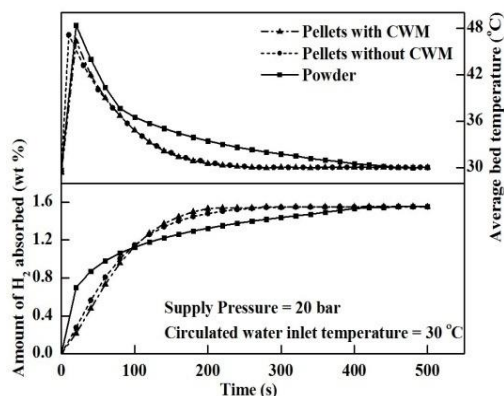
Improving the heat transfer characteristics of metal hydride beds without any negative effect on hydrogen absorption and desorption rates .

An experimental set was developed for measuring Effective Thermal Conductivity (ETC) of metal hydride beds. Two different types of metal hydride pellets were developed. Graphite flakes were mixed with $\text{La}_{0.8}\text{Ce}_{0.2}\text{Ni}_5$ hydride for the first type of pellets. While in the second type, an augmentation structure made with copper wire mesh was embedded with the mixture of $\text{La}_{0.8}\text{Ce}_{0.2}\text{Ni}_5$ hydride and graphite flakes. The ETC and hydrogen absorption and desorption rates of all the three types of $\text{La}_{0.8}\text{Ce}_{0.2}\text{Ni}_5$ hydride beds namely, with loose MH powder (LMHP), pellets of MH powder and graphite fibers (PMHGF), and pellets of MH, graphite fibers with embedded copper wire mesh structure (PMHGFCu) were measured. The proposed structure are found promising to augment the ETC without loss in absorption and desorption rates.

<http://www.sciencedirect.com/science/article/pii/S0360319915311289>



Variation of effective thermal conductivity with hydrogen gas pressure



Variation of amount of hydrogen absorbed and average bed temperature during absorption