

Alkali Aminoboranes for Hydrogen Storage

Ping Chen

Department of Physics, National University of Singapore, Singapore 117542

The combinations of amides and hydrides Interactions between N-H contenting chemicals and hydrides produce hydrogen. Such strong interactions enable these substances potential hydrogen storage materials. In the previous investigations, ~ 10.5wt.% and 5.5 wt.% of hydrogen storage capacities have been achieved in lithium amide-lithium hydride and magnesium amide-lithium hydride systems, respectively. However, the dehydrogenation temperatures (180 – 300 °C) are somehow higher than the operation temperature of PEMFC (80 °C) due to thermodynamic and/or kinetic reasons. Through compositional and structural alterations, the thermodynamics and kinetics of subject material can be improved. Successful attempts have been achieved to alkali aminoborane systems, in which more than 10 wt% of hydrogen can be desorbed at temperatures around 90 °C. A few new structures have been developed and characterized.