

Abstract Submitted  
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**Reversible Hydrogen Storage in the Lithium Borohydride – Calcium Hydride Coupled System** FREDERICK PINKERTON, MARTIN MEYER, General Motors Research and Development Center — We report large reversible hydrogen storage in a new coupled system,  $\text{LiBH}_4/\text{CaH}_2$ , via the reaction  $6 \text{LiBH}_4 + \text{CaH}_2 \leftrightarrow 6 \text{LiH} + \text{CaB}_6 + 10 \text{H}_2$  having a theoretical hydrogen capacity of 11.7 wt% and an estimated reaction enthalpy of  $\Delta H = 59 \text{ kJ/mole H}_2$ . Samples that include 0.25 mole (18.2 wt%)  $\text{TiCl}_3$  reproducibly store 9.1 wt% hydrogen, corresponding to 95% of the available hydrogen.  $\text{H}_2$  is the only evolved gas detected by mass spectrometry. X-ray diffraction confirms that the sample cycles between  $\text{LiBH}_4$  and  $\text{CaH}_2$  in the hydrogenated state and  $\text{LiH}$  and  $\text{CaB}_6$  in the dehydrogenated state.

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