Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

$LiBH_4$+$Ca(BH_4)_2$ composite system for hydrogen storage JI YOUN LEE, YOONYOUNG KIM, YOUNG-SU LEE, JAE-HYEOK SHIM, YOUNG WHAN CHO, Korea Institute of Science and Technology, Republic of Korea , DORTHE RAVNSBK, TORBEN JENSEN, University of Aarhus, Denmark, YNGVE CERENIUS, Lund University, Sweden — $LiBH_4$ is one of the promising candidates for hydrogen storage materials because of its high gravimetric and volumetric hydrogen capacity. However, dehydrogenation of $LiBH_4$ occurs above 400°C, which limits its use in its pristine form. By mixing with $Ca(BH_4)_2$, we have tried to lower the dehydrogenation temperature. The underlying design principle of this composite system is the recently proven reversibility of $6LiBH_4$+CaH_2 composite and $Ca(BH_4)_2$ itself. Using differential scanning calorimetry and in-situ synchrotron XRD measurement, we observed eutectic melting of (1-x)$LiBH_4$ + $x$$Ca(BH_4)_2$ at around 200°C in a wide range of x. The decomposition characteristics and the hydrogen capacity of this composite vary with x, and at a certain value of x we found that decomposition was finished below 400°C showing more than 10 wt% hydrogen capacity. Reversibility of this system was also confirmed.

Ji Youn Lee

Date submitted: 07 Dec 2008 Electronic form version 1.4