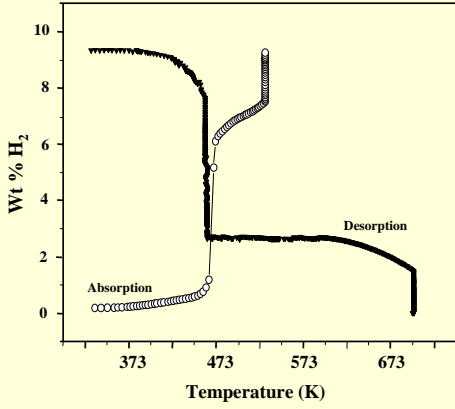
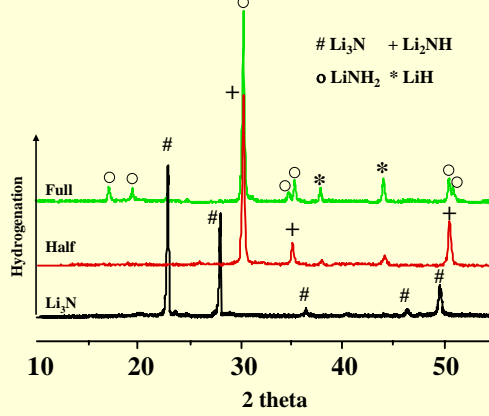


Amide/Hydride system for hydrogen storage

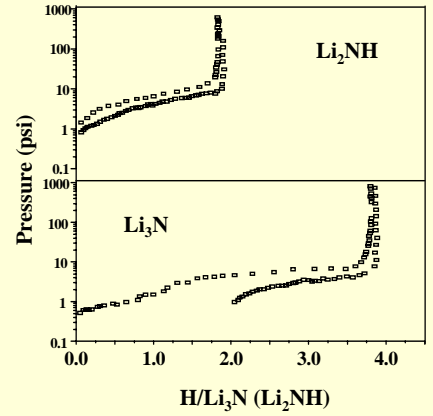
Li-N-H system — A milestone in the history of hydrogen storage materials



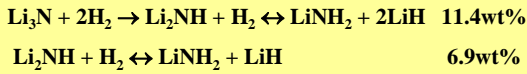
Gravimetric measurement of hydrogen absorption/desorption over Li_3N



X-ray diffraction patterns of hydrogenated Li_3N



Pressure Compositional Isotherm at 250 °C

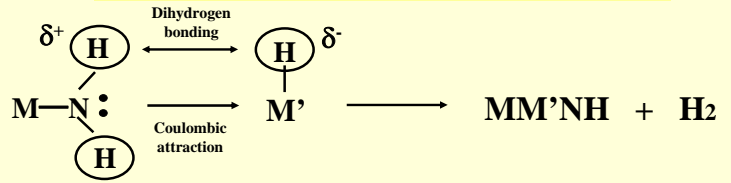


P. Chen, Z. T. Xiong, J. Z. Luo, J.Y. Lin and K.L. Tan, *Nature* 2002, 420, 302

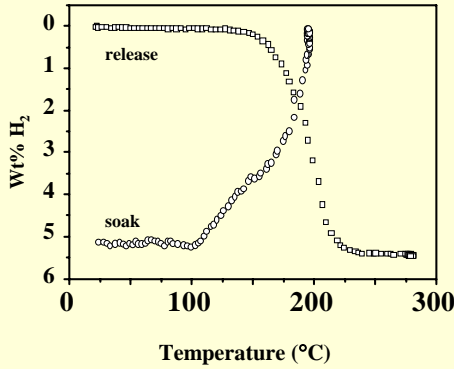
P. Chen, Z. Xiong, J. Luo, J. Lin and K. L. Tan, *J. Phys. Chem. B* 2003, 107, 10967

Xiong Z T, Chen P, Wu G T, et al., *J. Mater. Chem.* 2003, 13, 1676

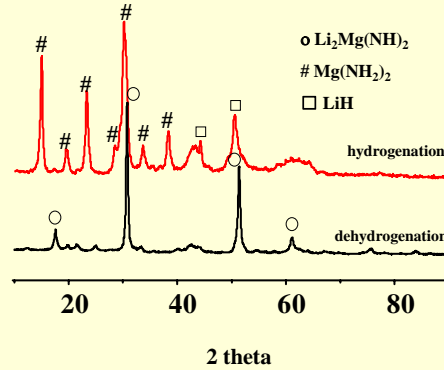
Mechanism — Interaction between Amides and Hydrides



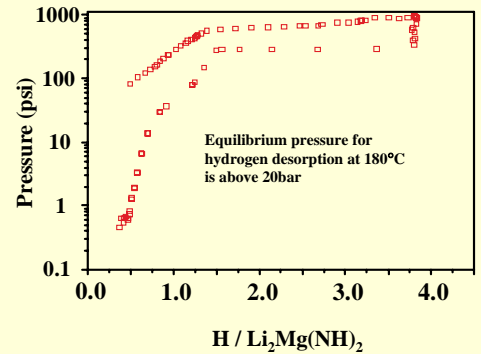
Li-Mg-N-H system — One of the most promising solid materials for on-board hydrogen storage



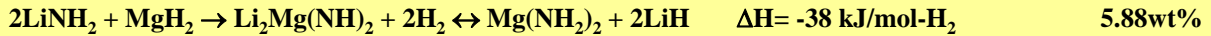
Volumetric measurement of hydrogen absorption/desorption over $\text{Li}_2\text{Mg}(\text{NH})_2$



X-ray diffraction patterns of $\text{Li}_2\text{Mg}(\text{NH})_2$ and its hydrogenation product



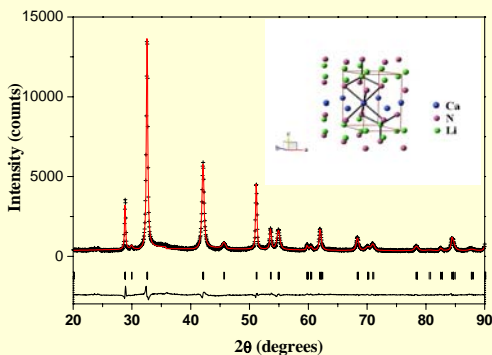
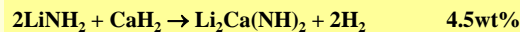
Pressure Compositional Isotherm of $\text{Li}_2\text{Mg}(\text{NH})_2$ at 180 °C



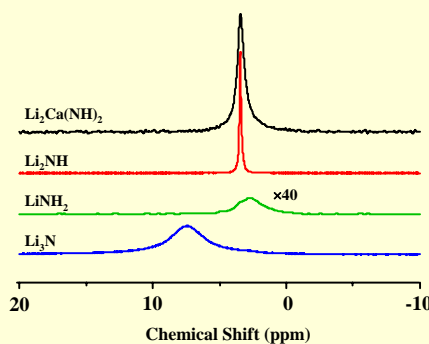
Z. T. Xiong, G. T. Wu, J. J. Hu and P. Chen, *Adv. Mater.* 2004, 16, 1522

Li-Ca-N-H system — Applying amide-hydride interaction into material synthesis

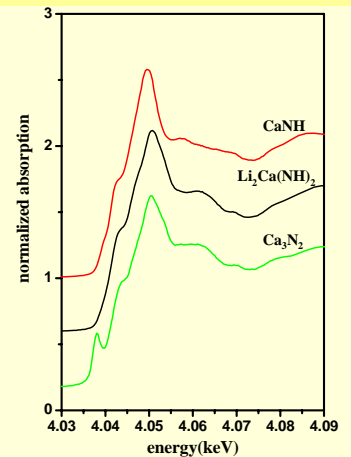
Imides used to be prepared from the thermal decomposition of corresponding amides. However, the lack of amide materials always leads to the unavailability of imides, especially in the case of ternary or higher imides. By dehydrogenation of lithium amide and calcium hydride mixture at given temperature new ternary imides, $\text{Li}_2\text{Ca}(\text{NH})_2$, were synthesized in our group and preliminary investigations over its unique structures have been carried out.



X-ray diffraction patterns of the ternary imide $\text{Li}_2\text{Ca}(\text{NH})_2$ + observed; — calculated; bottom line - the difference; and vertical tick - Bragg peak positions



^6Li MAS NMR spectra of $\text{Li}_2\text{Ca}(\text{NH})_2$



XANES transmission spectra at Ca K-edge of the $\text{Li}_2\text{Ca}(\text{NH})_2$