Supporting Information

An Investigation into the Hydrogen Storage Characteristics of $Ca(BH_4)_2$:$LiNH_2$ and $Ca(BH_4)_2$:$NaNH_2$: Evidence of Intramolecular Destabilization

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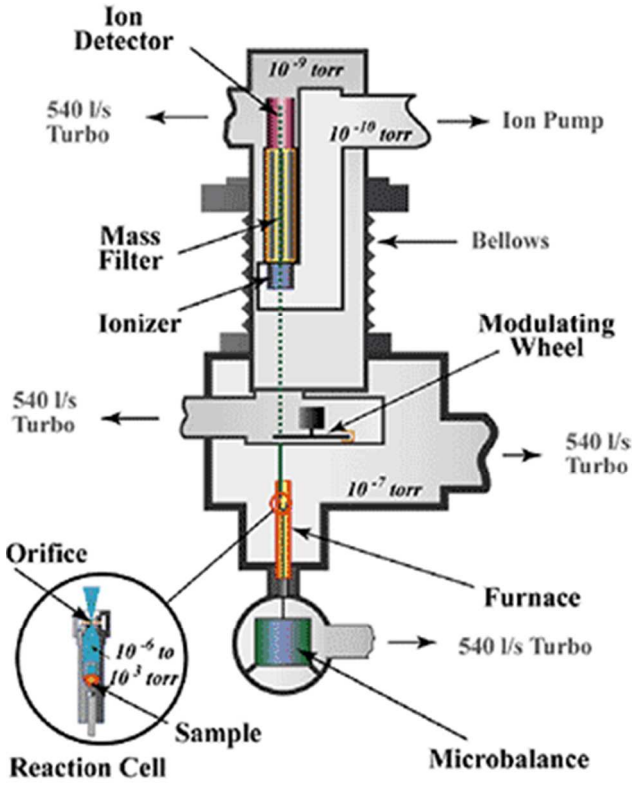

Figure S1. *Schematic representation of the STMBMS apparatus.*

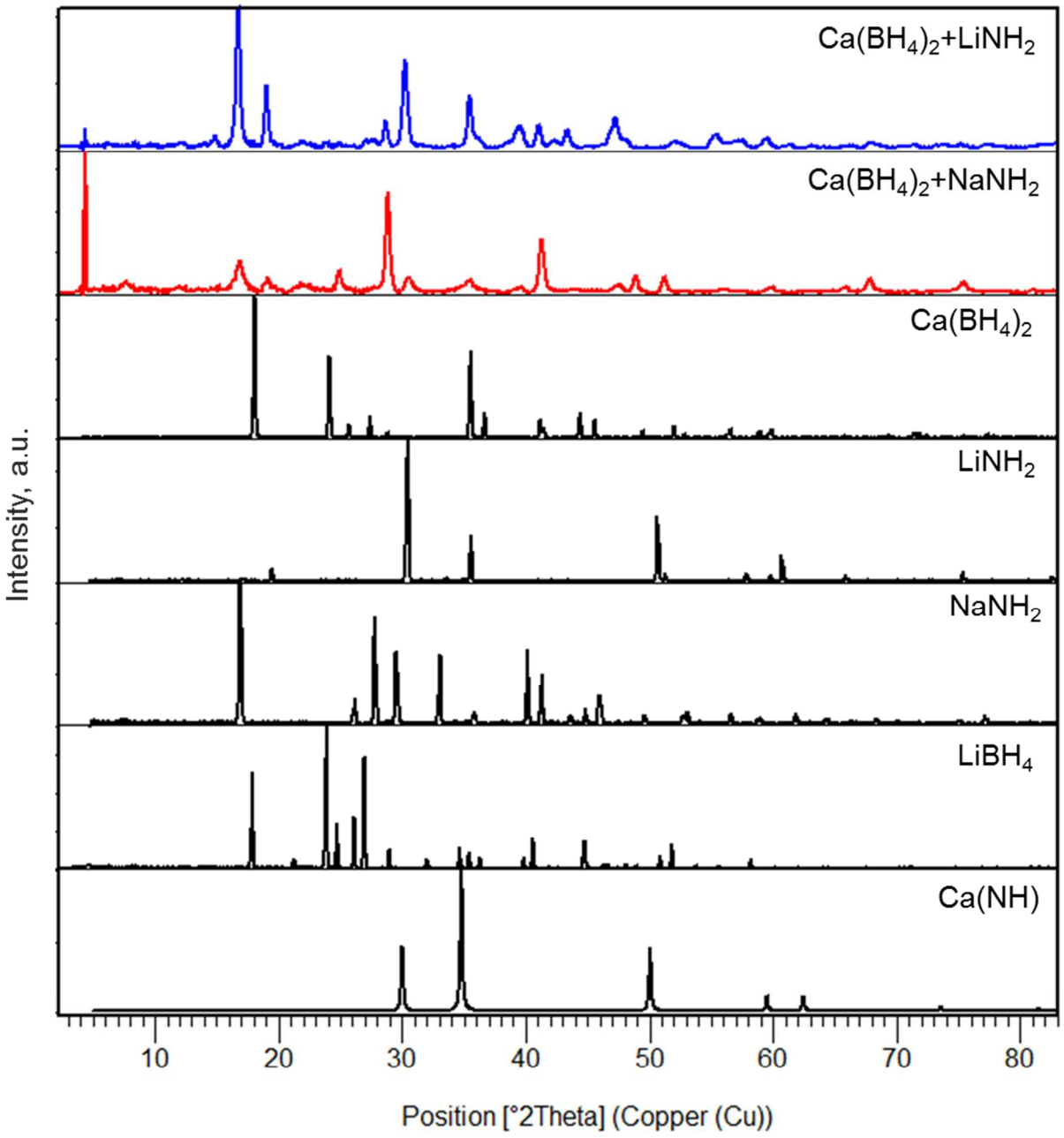

Figure S2. *XRD patterns of $Ca(BH_4)_2$ + MNH_2 systems, where M = Li, Na along with their starting materials and possible metathesis products.*

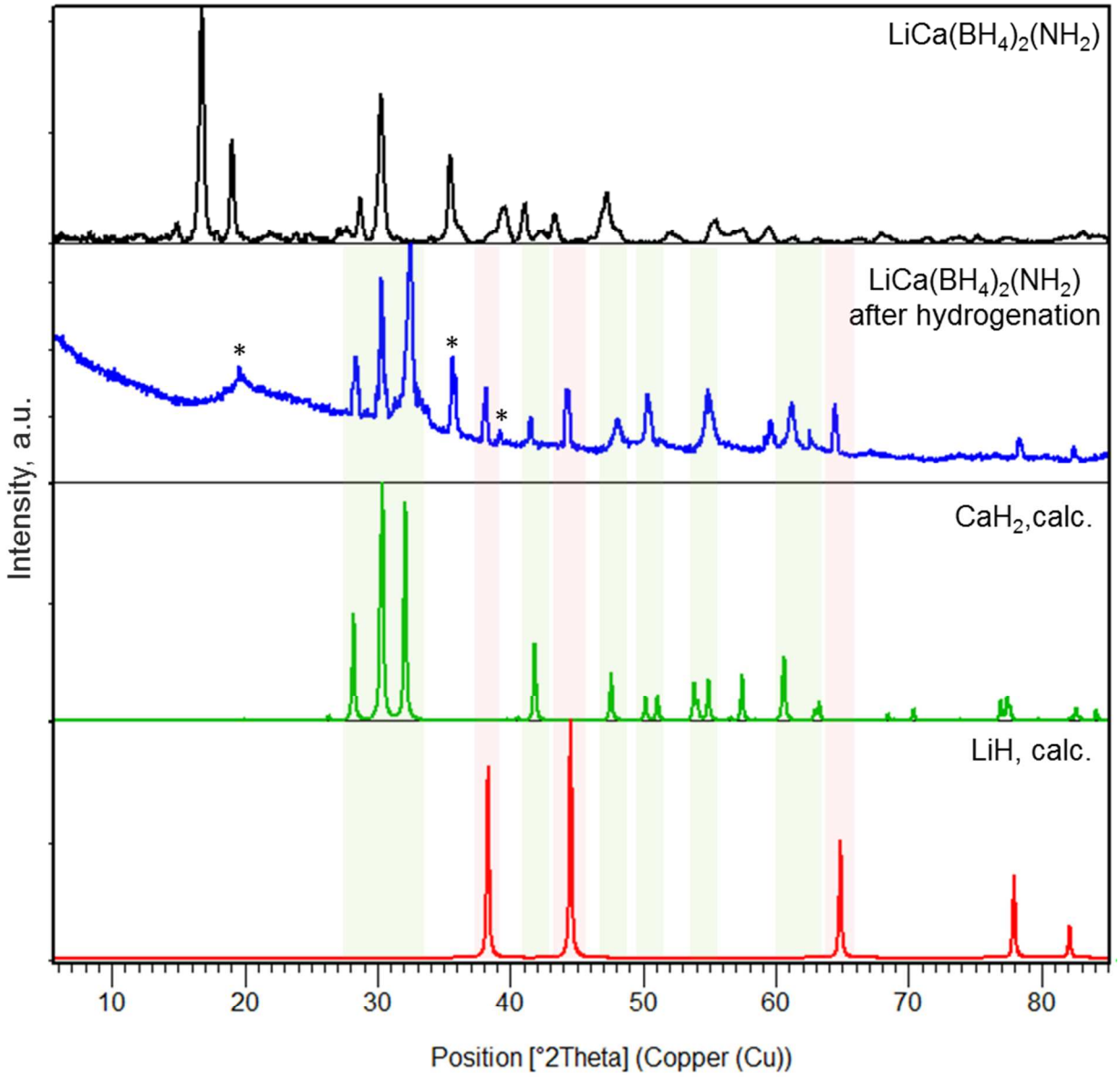

Figure S3. *XRD patterns of as synthesized $LiCa(BH_4)_2(NH_2)$, rehydrogenated $LiCa(BH_4)_2(NH_2)$ (under 106 bar H_2 pressure at 230 °C) in comparison with the calculated patterns of CaH_2 and LiH. The diffraction peaks corresponding to an unidentified phase (at 19.4°, 35.7° and 39.2°) are marked with asterisks.*

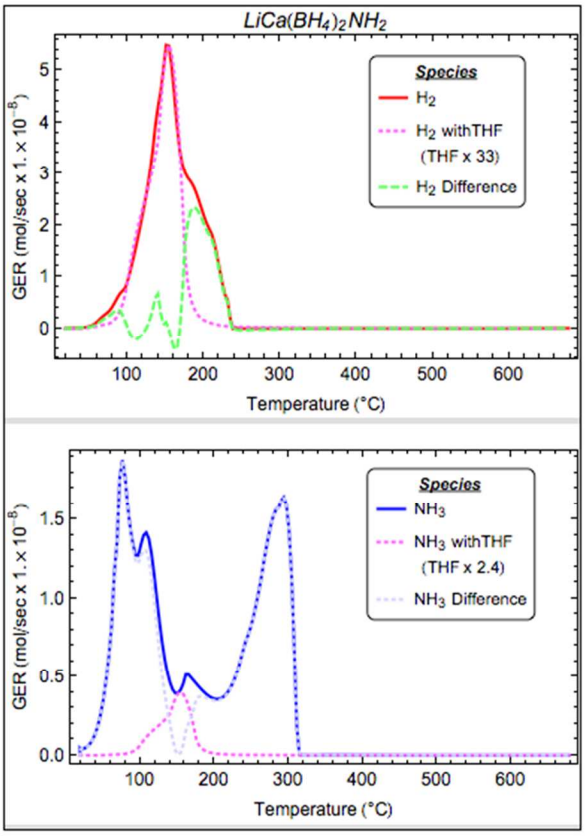

Figure S4: *STMBMS data examining the initial release of hydrogen (top) and ammonia (bottom) from $LiCa(BH_4)_2(NH_2)$. Both hydrogen and ammonia release associated with $LiCa(BH_4)_2(NH_2)$ are reported as the dotted difference curve, identifying gas release not associated with THF emission.*