Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Electronic Supplementary information

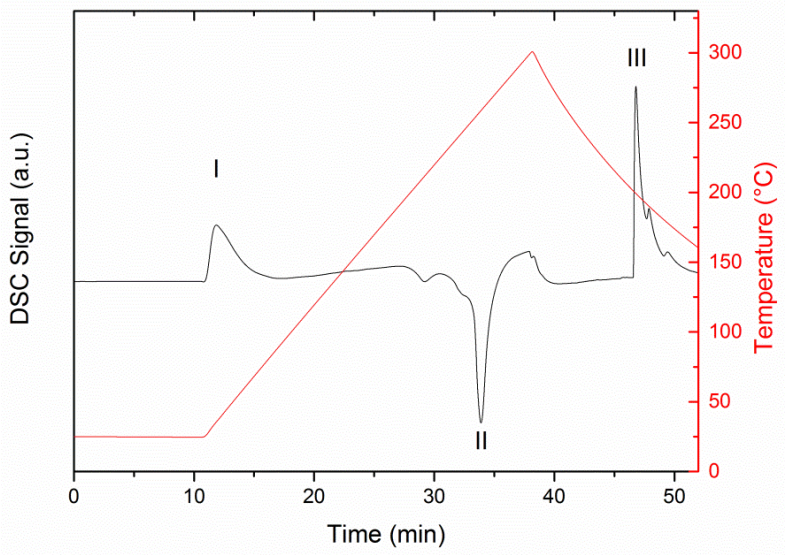

Figure S1 DSC traces of the $K_2Mg(NH_2)_4$ sample. The first event (I) was a false baseline due to the starting heating ramp. The other two sharp and similar signals (II) and (III) with opposite heat flow (endothermic and exothermic respectively) can be ascribed to the melting (onset 233 °C) and solidification with small undercooling effect (onset 202 °C). The experiment was performed in a Sensys DSC - Setaram at 10 °C/min under 1 bar of Argon atmosphere.

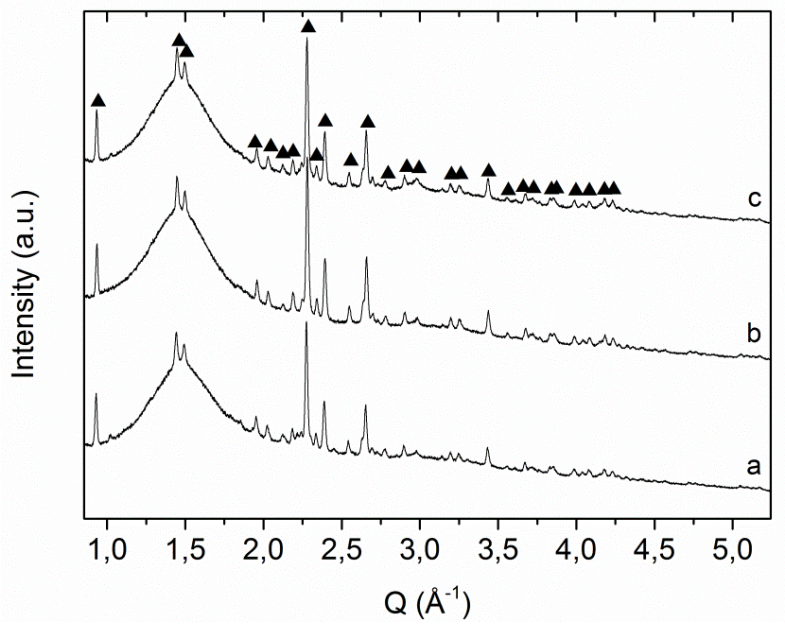

Figure S2 XRD patterns of $KMgNH_2NH$ obtained by: a)desorption of Sample A in the Sievert apparatus in heating ramp until 300°C, b) Thermal treatment of grinded $K_2Mg(NH_2)_4$+MgH_2at 280 °C, c) desorption of Sample C in the Sievert apparatus in heating ramp up to 300°C.

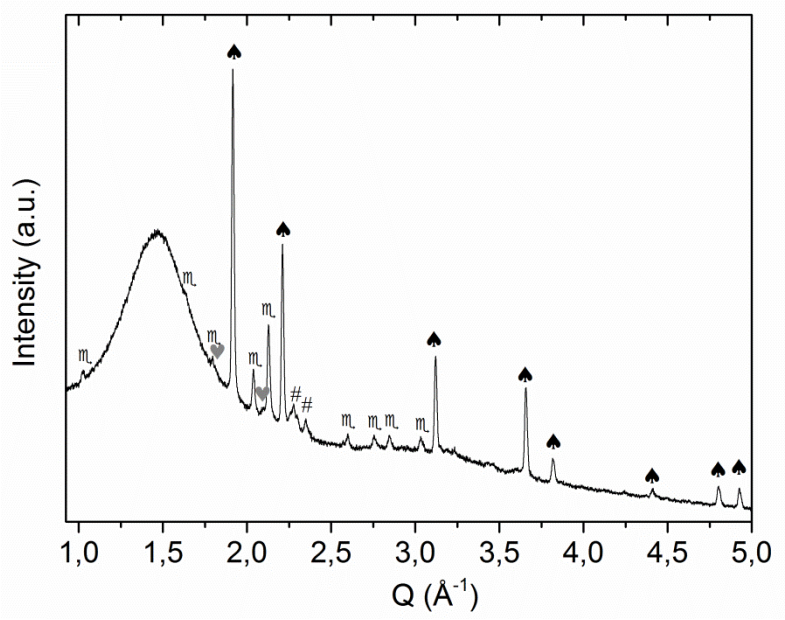

Figure S3 XRD pattern of KH ball milled under 1 bar of ammonia after 1h. ♏=KNH_2(P121/m1),♠=KH (Fm-3m)♥=$K(NH_2)_xH_{(1-x)}$ (Fm-3m), #=KOH (P121/m1). $K(NH_2)_xH_{(1-x)}$ appears already at the early stage of KNH_2 formation.