

### Supporting information

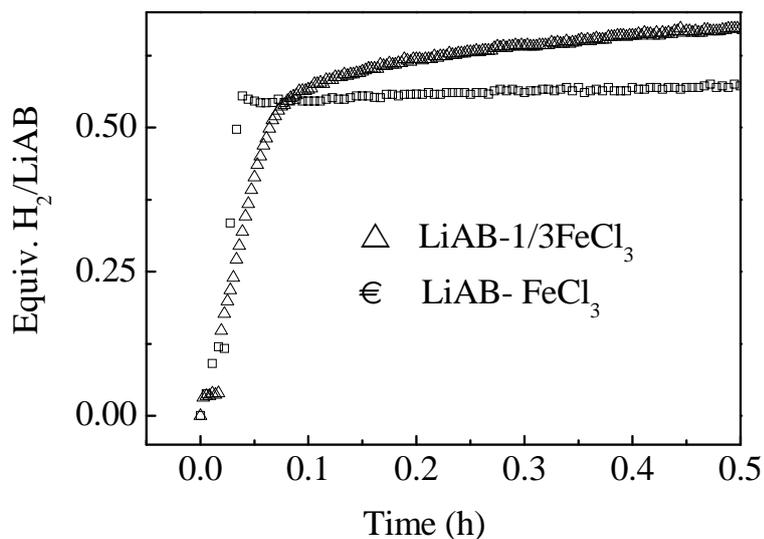


Figure S1. Time-dependent hydrogen desorptions from LiAB-1/3FeCl<sub>3</sub> and LiAB-FeCl<sub>3</sub> THF solutions at ambient temperature within a narrowed time scale (0-0.5 h).

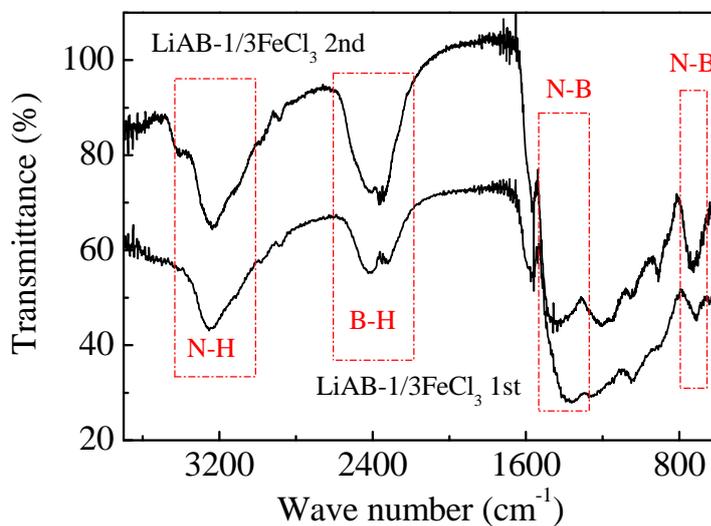


Figure S2. FTIR spectra of precipitates of LiAB-1/3FeCl<sub>3</sub> collected at the end of first and second desorption steps