Supporting Information

Solid state structural transformation of tetraborate into monoborate in the interlayer galleries of reconstructed ZnAl layered double hydroxide

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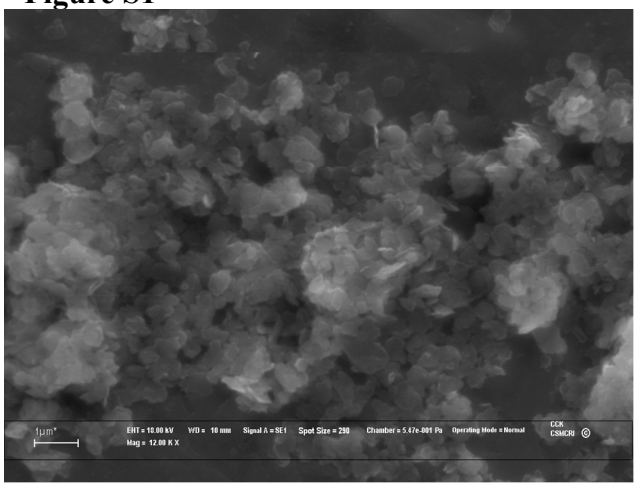
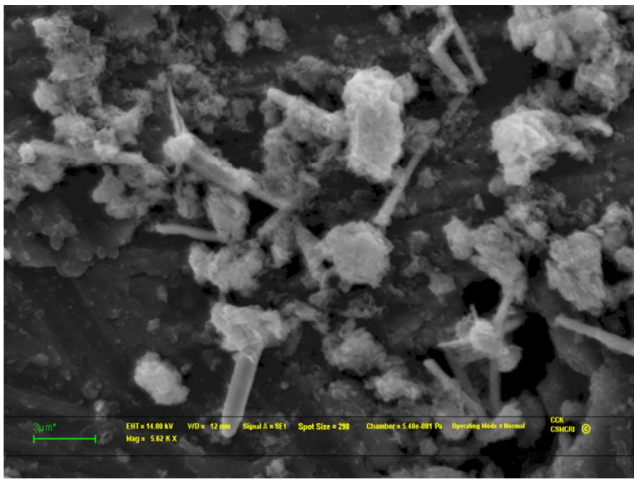
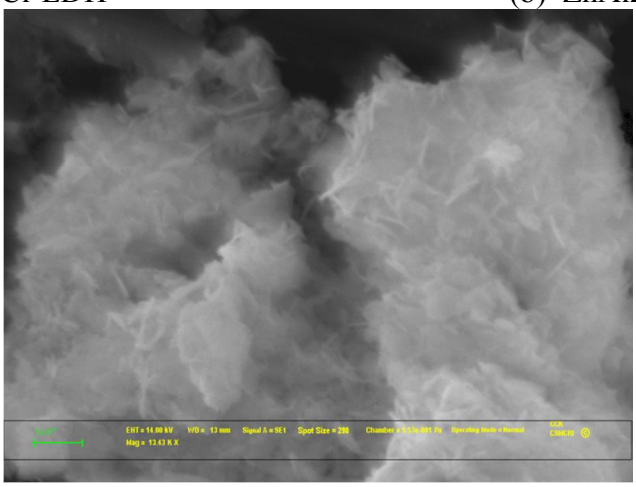
Figure S1



(a) ZnAl2-Cl-LDH



(b) ZnAl2-Cl-CLDH



(c) ZnAl2-Cl-CLDH after borate uptake

Figure S1. Scanning electron microscopic **(**SEM) images of (a) ZnAl2-Cl-LDH, (b) ZnAl2-Cl-CLDH and (c) 'b' after borate uptake.

Figure S2

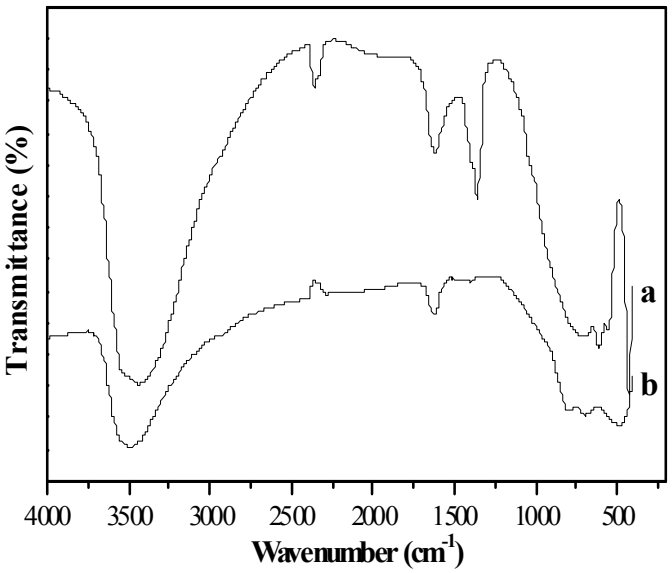


Figure S2. FT-IR spectra of (a) ZnAl2-Cl-LDH, and (b) ZnAl2-Cl-CLDH

Figure S3

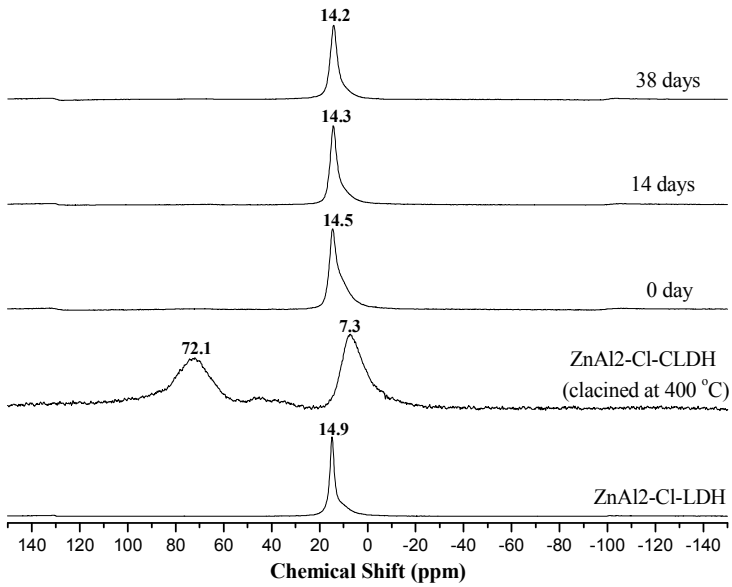


Figure S3. ^{27}Al MAS-NMR spectra of as-synthesized calcined and borate reconstructed ZnAl2-LDHs with different time intervals.

Figure S4

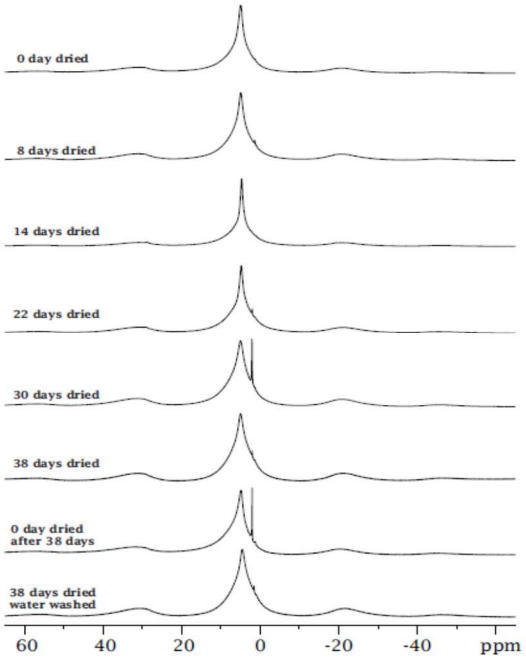


Figure S4. ^{1}H NMR (single pulse) spectra of ZnAl2-Cl-CLDH reconstructed with borate and dried at different time intervals

Figure S5

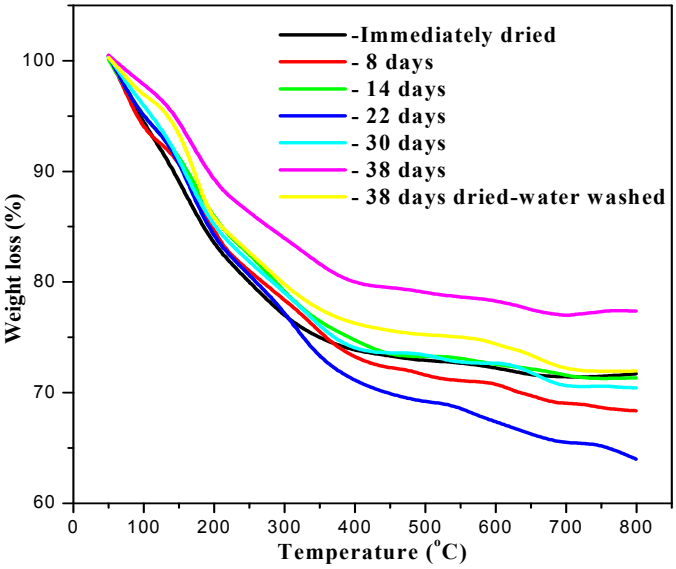


Figure S5. TGA profiles of ZnAl2-Cl-CLDH reconstructed with borate and dried at different time intervals

Figure S6

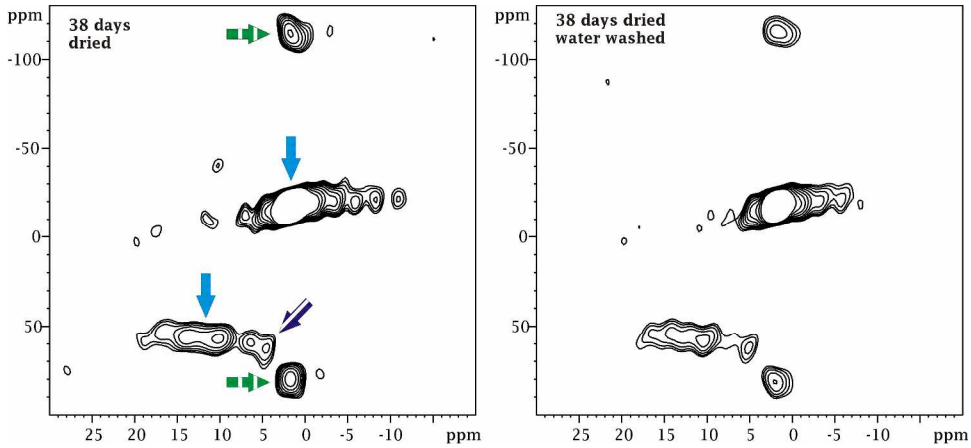


Figure S6. 3QMAS ^{11}B MAS-NMR spectra of (a) 38 day dried sample and (b) 38 day dried sample after water washing (arrow (➡) indicating (F2, F1; in ppm) isotropic $B(OH)_4$ peak (2, -10), isotropic $B(OH)_3$ peak (10, 60), The arrow (➡) at (5, 60) is the exchange correlation peak between trigonal and tetragonal boron. The arrow (➡) indicates spinning side bands which are prominently manifest along the indirect dimension).