

## Supplementary materials

### A. Figures

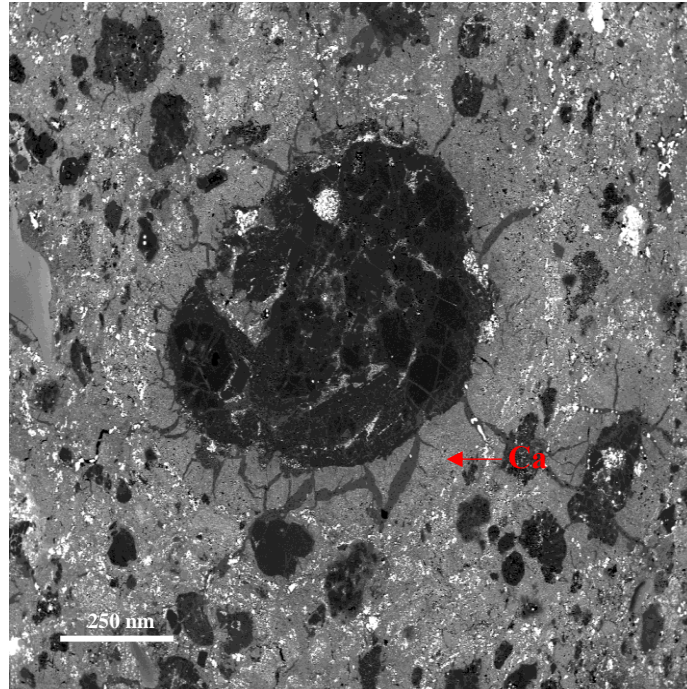


Figure S1: SEM-BSE image of a chondrule in NWA 11750. Notice the cracks filled with carbonates (Ca) in the fine-grained rim.

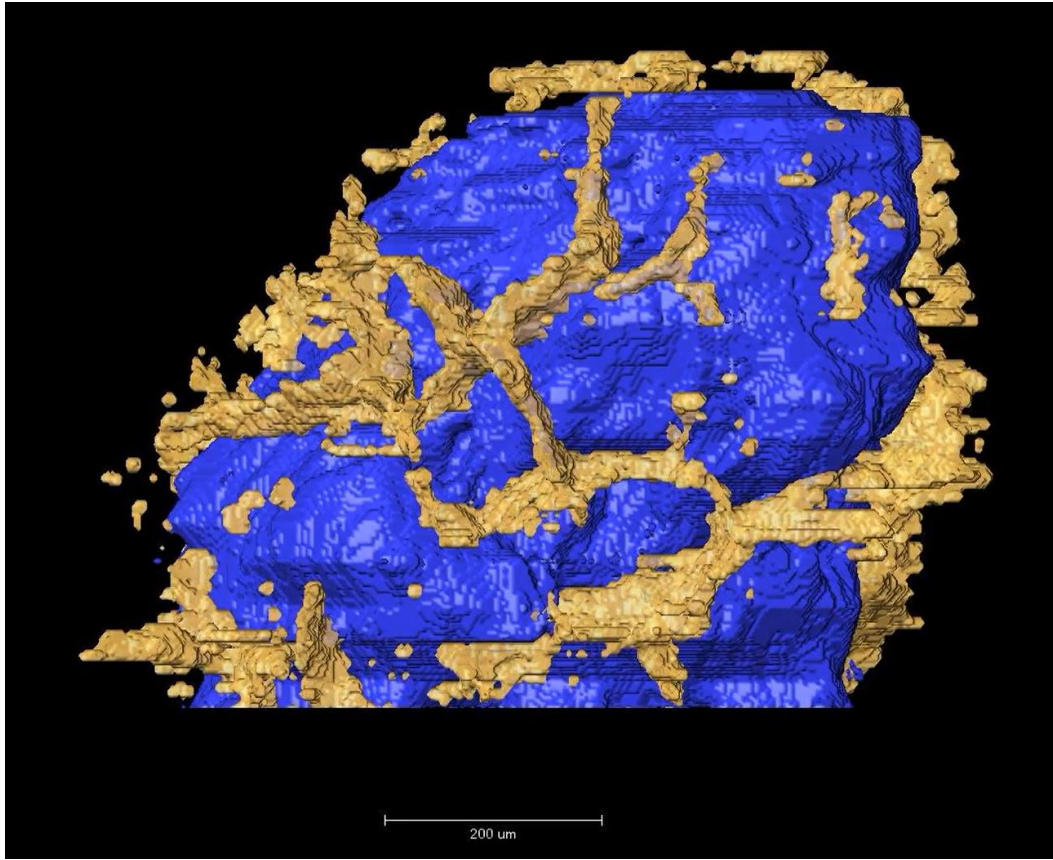


Figure S2: RX tomography mapping of carbonates veins around a chondrule of NWA 11750. Blue is the chondrule and yellow represents the carbonates. The hexagonal shapes of the carbonates, resembling desiccation patterns, can be observed.

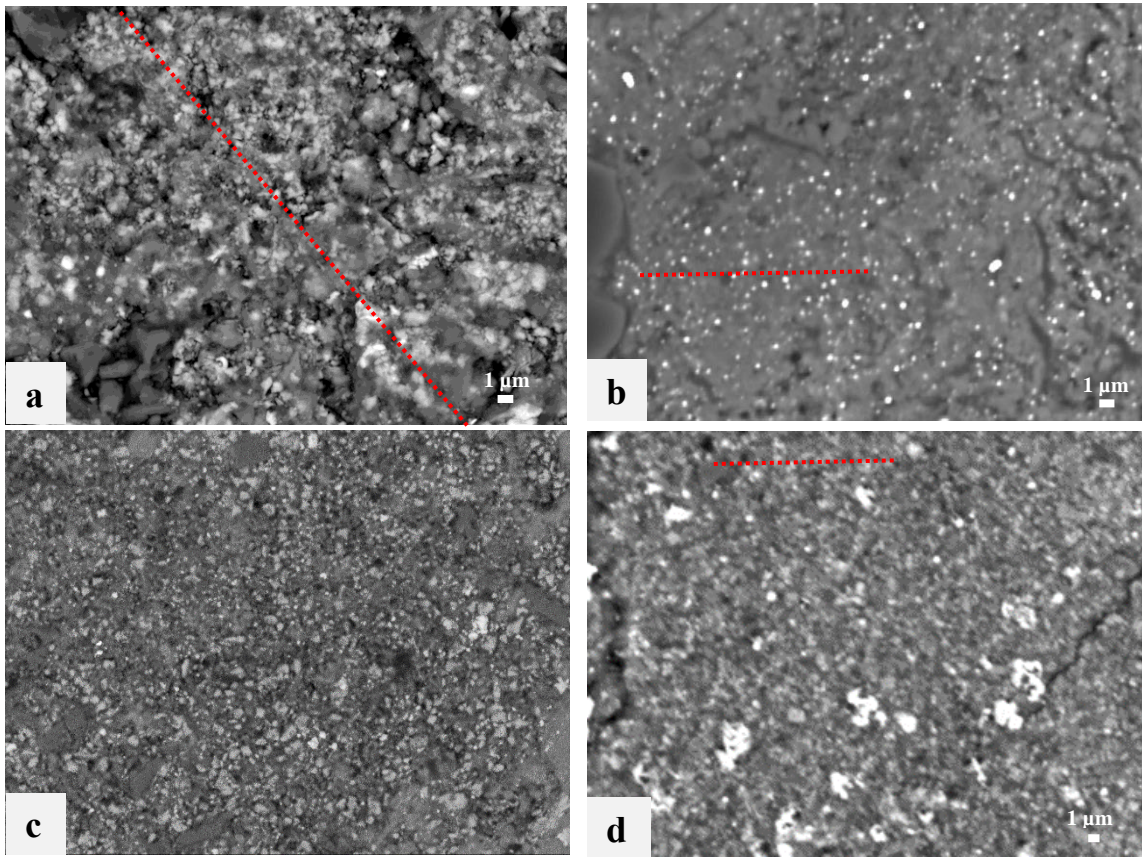


Figure S3: FEG-SEM-BSE images of the matrix of the four studied chondrites **with positions of extracted FIB sections of Figure 8, Figure 9 and Figure 10 (dashed red lines)**: a: Chwichiya 002 (C3.00-ung); b: NWA 11750 (C3.00-ung); c: NWA 12957 (C3.00-ung); d: EM 200 (C3). Scale is identical for all images.

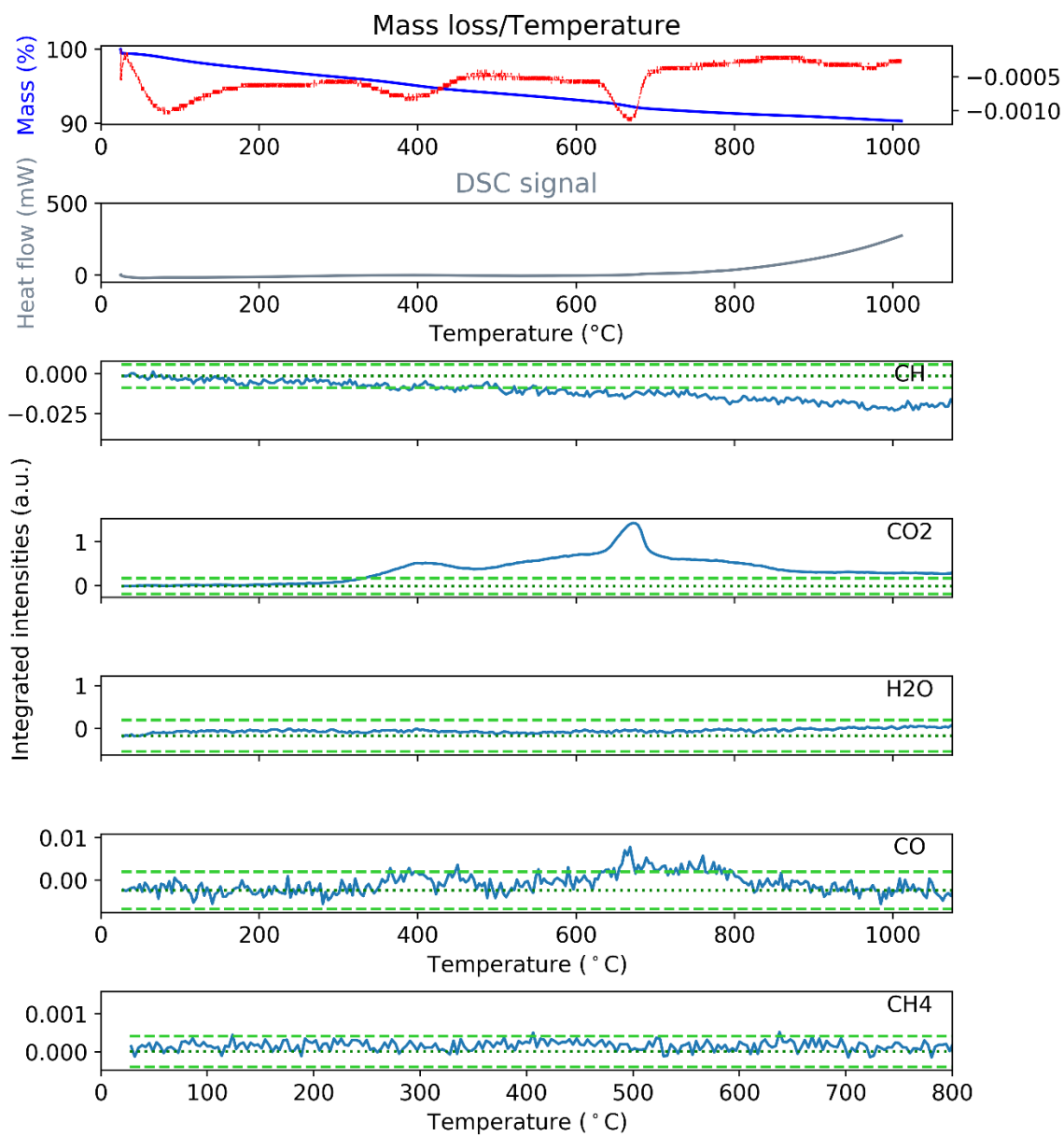


Figure S4: NWA 12957 TGA analyses

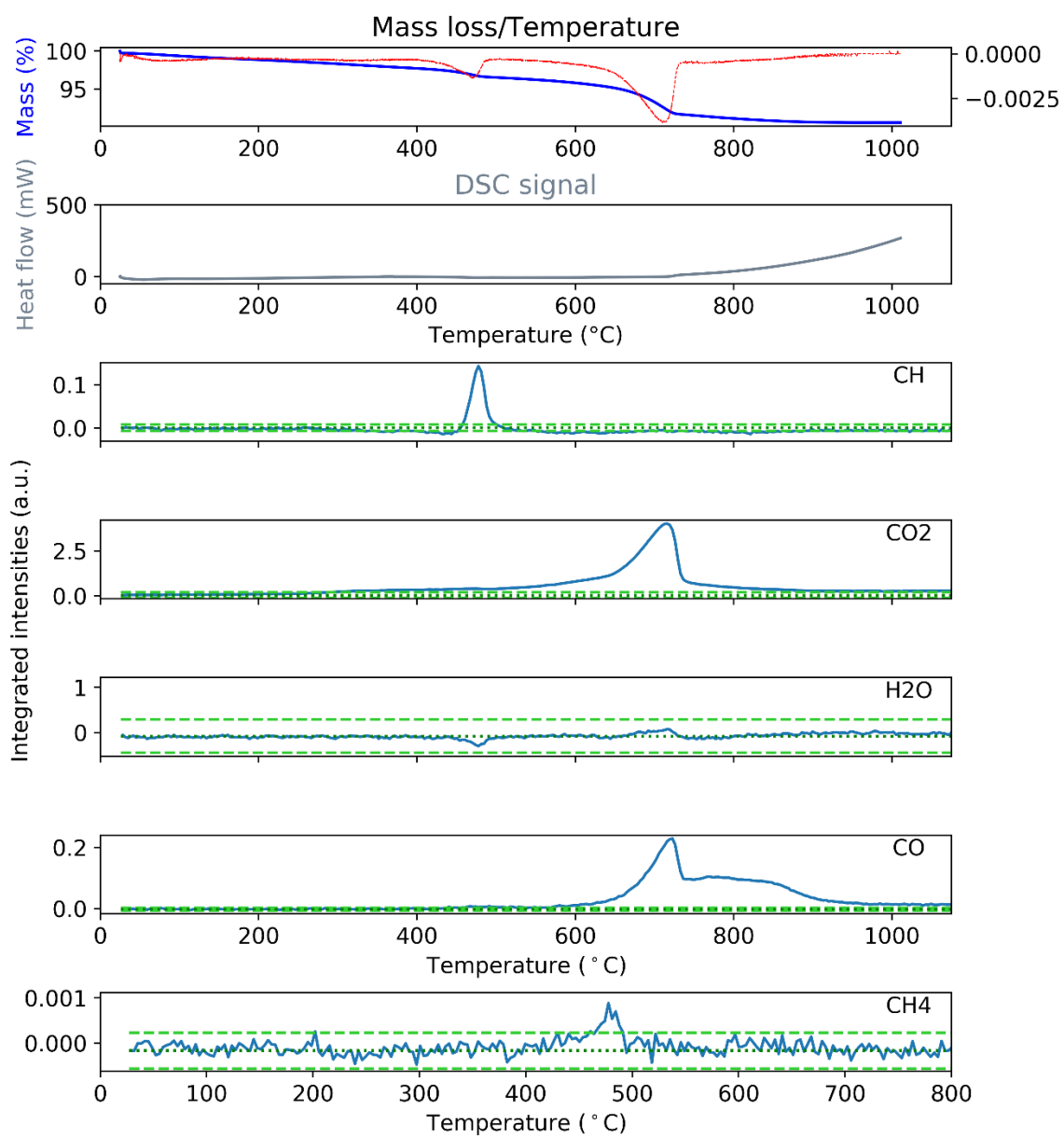


Figure S5: NWA 11750 TGA analyses

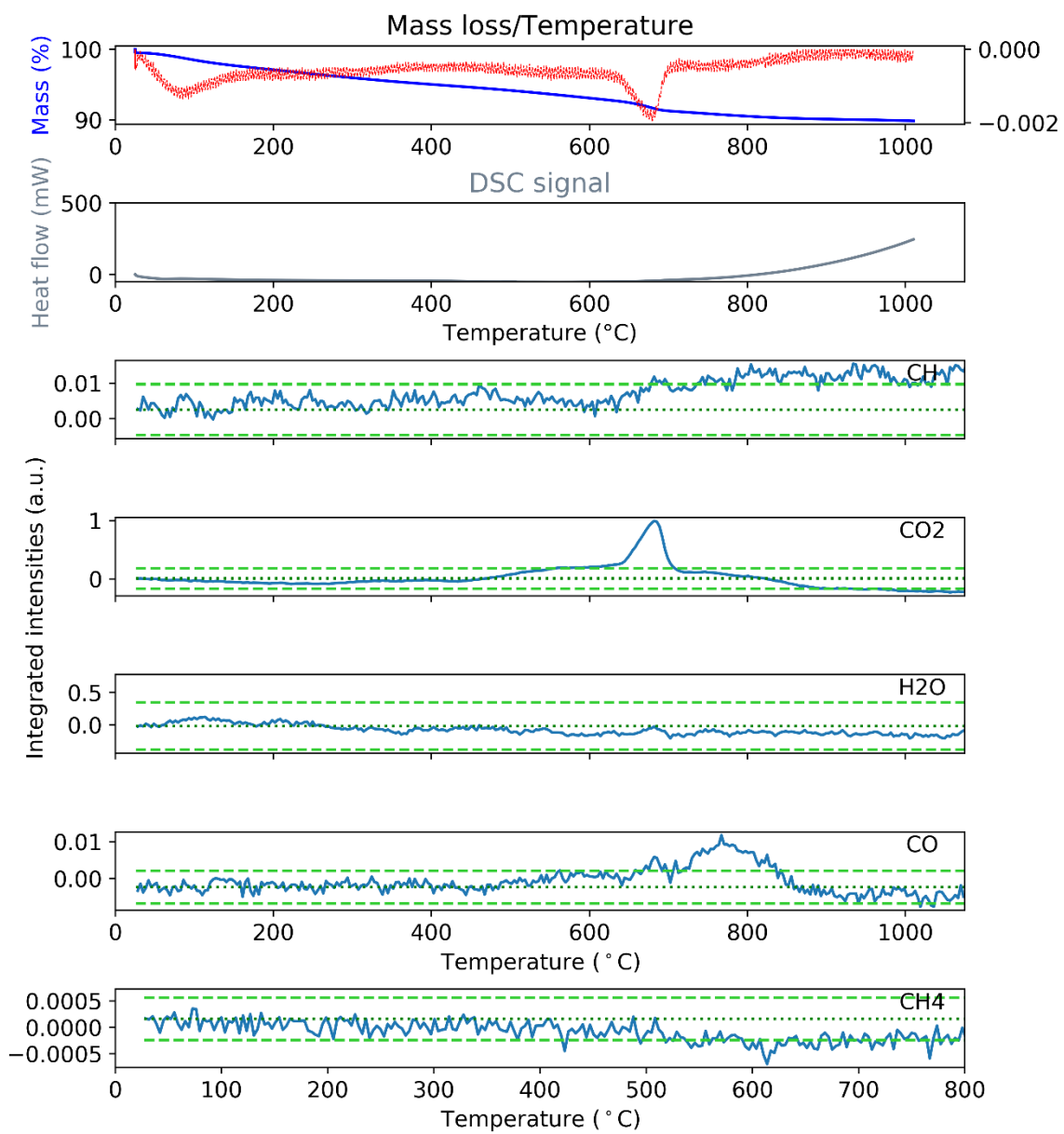


Figure S6: Chwichiya 002 TGA analyses

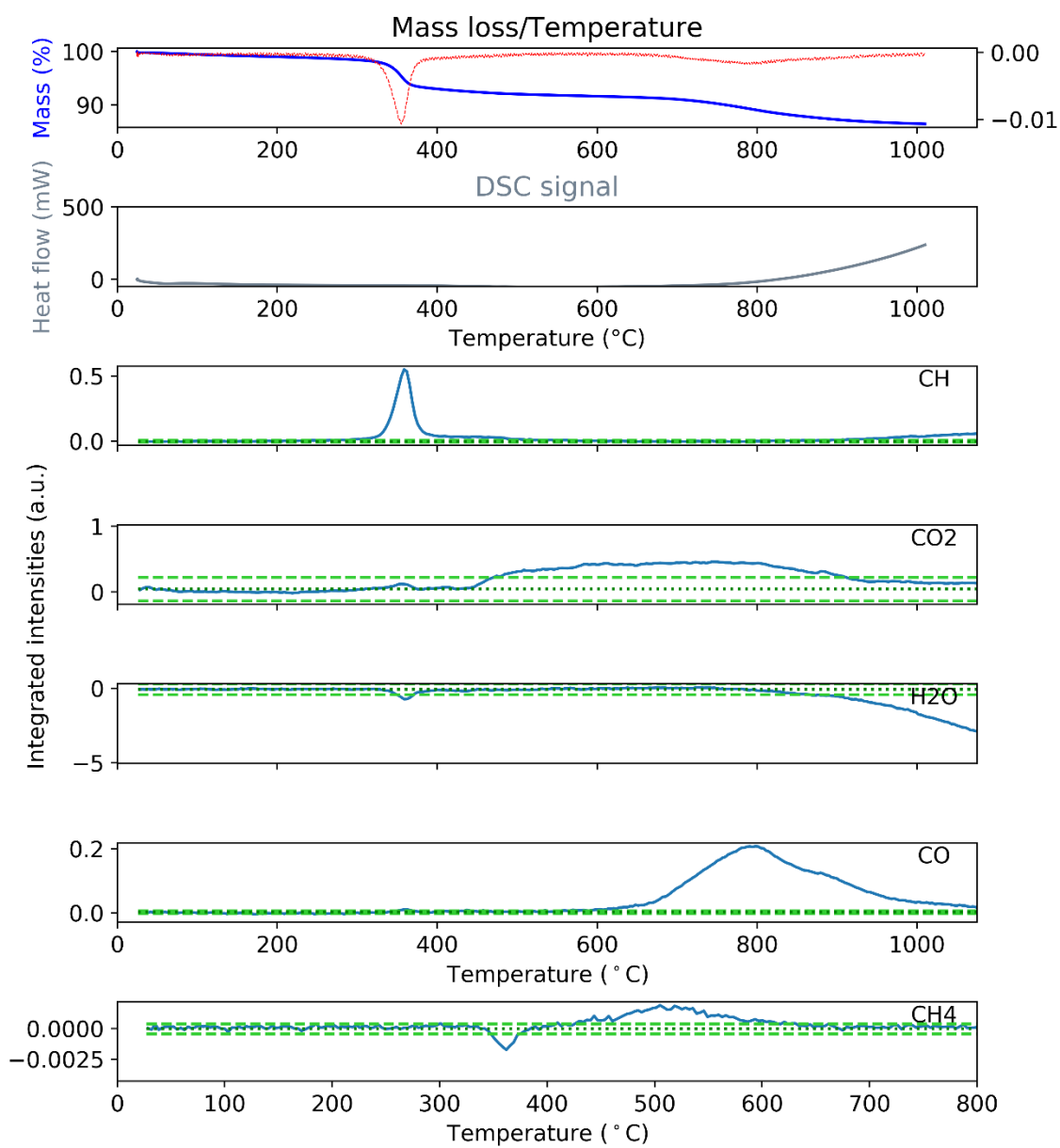


Figure S7: EM 200 TGA analyses

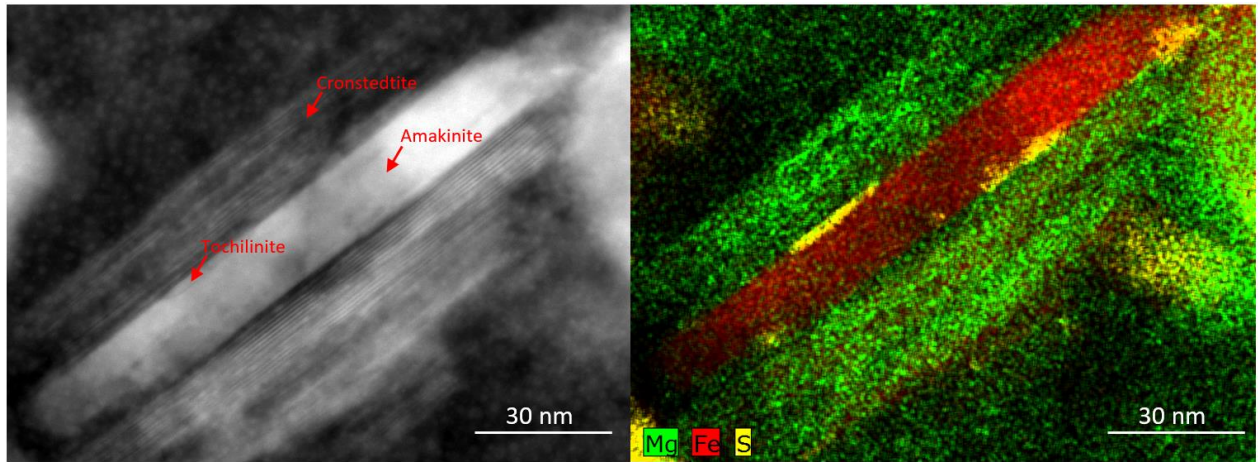


Figure S8: HR-TEM image (left) and EDS-TEM (right) images of tochilinite-cronstedtite intergrowths with amakinite  $\text{Fe}(\text{OH})_2$  interlayered in EM 200's matrix.