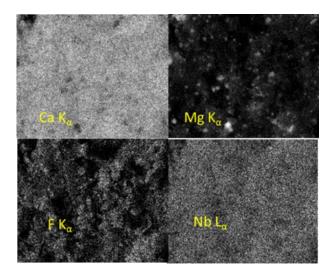
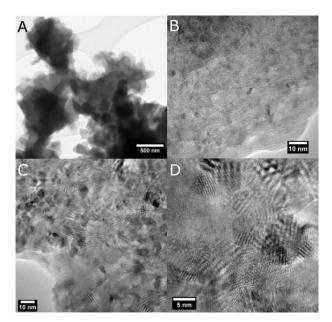
## **Electronic Supplementary Information**



**Figure S1.** Elemental maps obtained by EDS for the NbF $_5$  doped Ca-RHC sample after desorption.



**Figure S2**. TEM micrographs of Ca-RHC after the first desorption displaying A) large aggregates of smaller particles, B) multiphase regions of low crystallinity C) and D) multiphase region of high crystallinity.