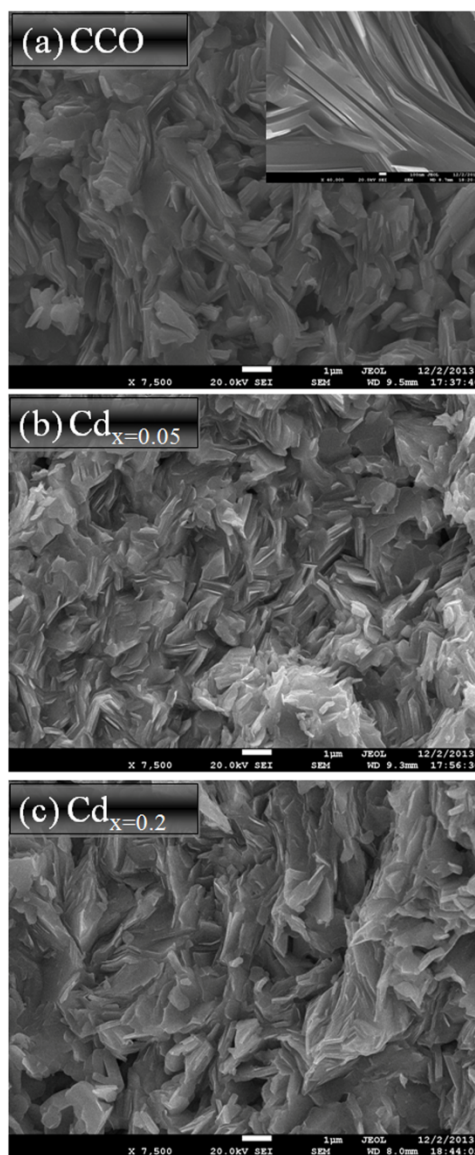


## Morphological properties

The SEM images of the fractured cross-sectional view of pure CCO,  $\text{Cd}_{x=0.5}$  and  $\text{Cd}_{x=0.02}$  are shown in Figure S1- a, b and c, respectively. In figure a, the inset shows a lamellar-like grain structure after SPS. For all the pure and Cd-doped specimens, the dense bulks with lamellar structure were observed. There was no obvious difference visible for lamellar grains of pure and Cd-doped specimens.



**Figure S1:** Typical SEM micrographs of pure and Cd-doped  $\text{Ca}_3\text{Co}_4\text{O}_9$  ceramics