Morphological properties

The SEM images of the fractured cross-sectional view of pure CCO, Cd$_{x=0.5}$ and 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 Ca$_3$Co$_4$O$_9$ ceramics](image-url)

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