

## **SUPPLEMENTARY MATERIAL**

### **Characterization of CeO<sub>2</sub> doped MgAl<sub>2</sub>O<sub>4</sub> prepared by the chelating agents-assisted impregnation method**

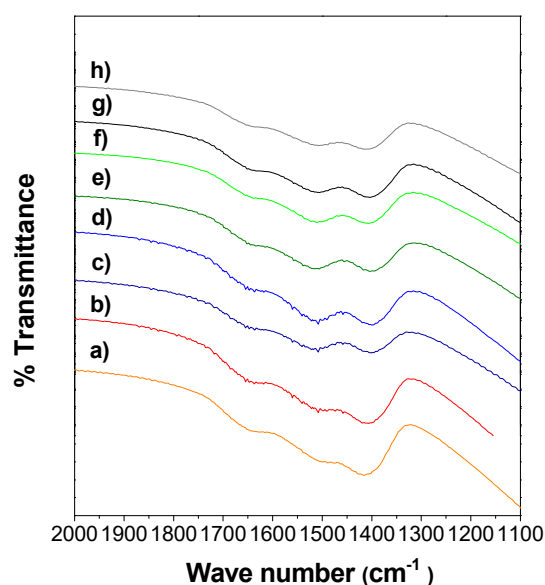
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Carbon contamination in calcined samples was confirmed by IR spectroscopy. IR spectra were recorded by a Nicolet Protegè 460 infrared spectrometer, in the region 4000-250  $\text{cm}^{-1}$  with a resolution of 4  $\text{cm}^{-1}$ . Compressed KBr (spectroscopy quality) disks containing 1 wt% of sample were employed. The disks were prepared by applying a pressure of 200  $\text{kg m}^{-2}$  for 5 min. Each spectrum was collected by co-adding of minimum 64 scans.

IR spectra are shown in Figure 1S. Bands between 1600 and 1400  $\text{cm}^{-1}$  clearly reveals the presence of organic remains. In all samples, multiples bands in the COO band region are observed (1640, 1520 and 1400  $\text{cm}^{-1}$ ).<sup>1S</sup>



**Figure 1S.** IR spectra of calcined samples: **a)**  $\text{MgAl}_2\text{O}_4$ , **b)** Cenitrate, **c)**  $\text{CeEDTA}(a)$ , **d)**  $\text{CeEDTA}(b)$ , **e)**  $\text{CeNTA}(a)$ , **f)**  $\text{CeNTA}(b)$ , **g)**  $\text{CeCA}(a)$ , and **h)**  $\text{CeCA}(b)$

## REFERENCES

1S. Kock, E. M.; Kogler, M.; Bielz, T.; Klotzer, B.; Pennier, S.; *J. Phys. Chem. C* **2013**, *117*, 17666.

