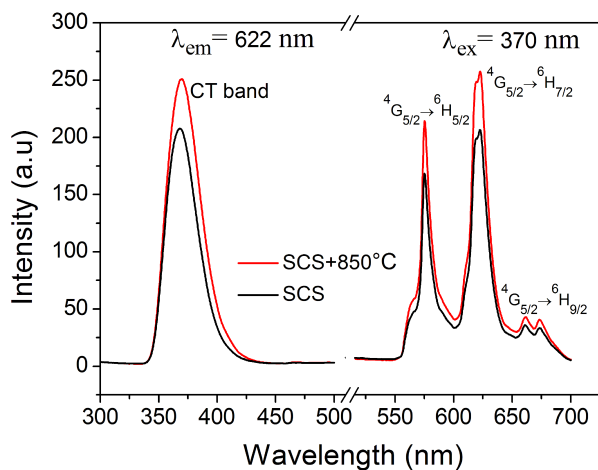


## Supplemental information 1



**Fig. 1** Excitation and emission spectra of  $\text{CeO}_2:\text{Sm}^{3+}$  ( $x=1.5$  mol%) prepared by SCS.

## Supplemental information 2

**Table 1.** The BET specific surface area of  $\text{CeO}_2:\text{Sm}^{3+}$  ( $x = 1.5$  mol%) samples prepared by different approaches

Preparation Approach	BET Specific Surface Area ( $\text{m}^2/\text{g}$ )
SCS	3.5600
SCS + 850 °C	3.2539
PVACS	30.7962
PVACS + 650°C	11.9390
PVACS + 700°C	2.4737
PVACS + 750°C	0.8464
PVACS + 800°C	0.2439
PVACS + 850°C	0.1245