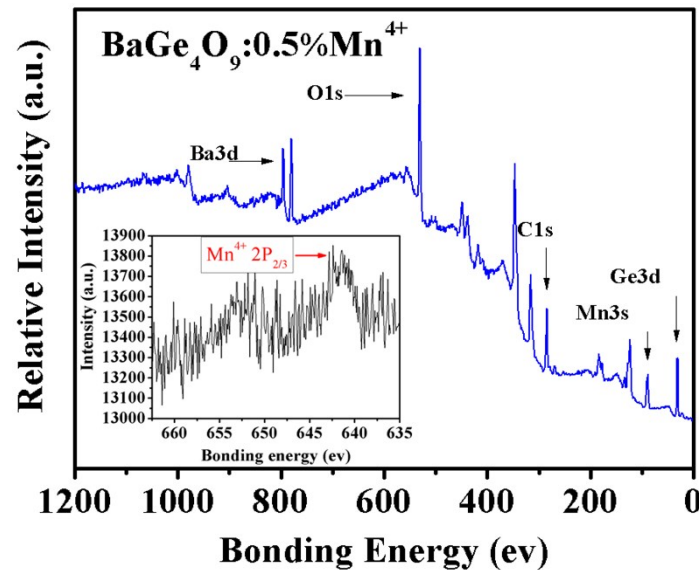


## Electronic Supplementary Information (ESI)



**Figure S1.** The high-resolution XPS spectra of sample  $\text{BGO}:0.5\%\text{Mn}^{4+}$ , the inset is  $\text{Mn } 2p$  XPS spectrum of  $\text{BGO}:0.5\%\text{Mn}^{4+}$  sample.