Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics. This journal is © the Owner Societies 2015

## **Supplementary materials**

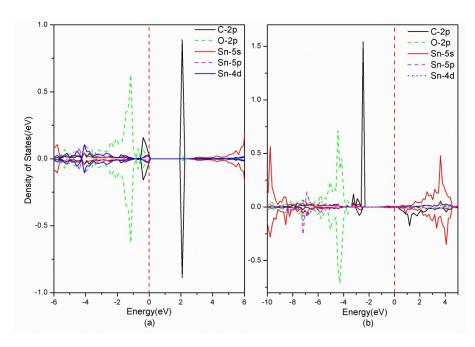


Figure S1. HSE06 function calculated PDOS of  $C_{\rm O}$  defects in (a) neutral and (b) -2 charge state, respectively. The vertical red dashed line represents Fermi level.

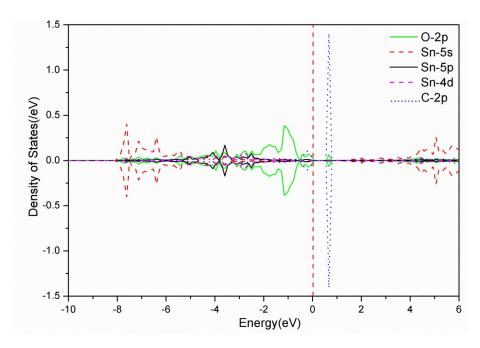


Figure S2. PDOS of bulk  $\rm SnO_2$ :C materials calculated by GGA function. The vertical red dashed line represents Fermi level.