

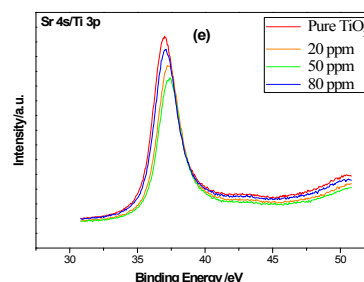
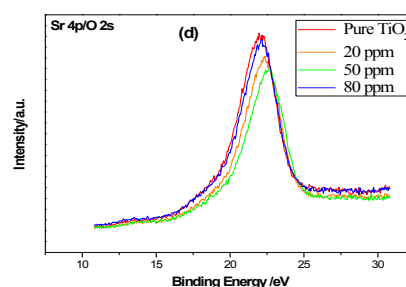
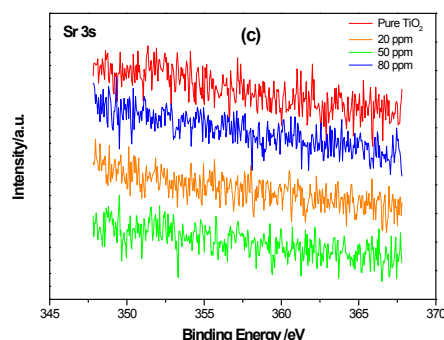
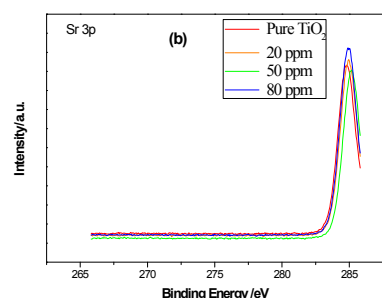
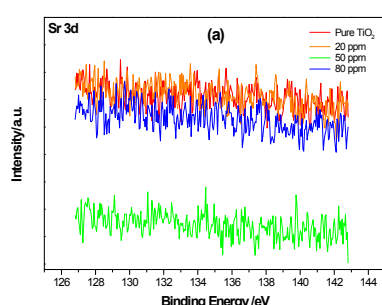
Supporting information Hydrothermal synthesis of Trace amount Strontium doped TiO_2 nanoparticle and their application as working electrode for dye sensitized solar cells: tunable electrical properties & enhanced photo-conversion performance

The ICP-AES test was carried out for Sr doped TiO_2 nanoparticles and it is found that the actual concentration of Sr is less than that we added to the precursor solutions. Accordingly the actual content of Sr in nanocrystalline TiO_2 is listed in Table below. The result confirmed the existence of trace amount Sr ions.

| Nominal content (ppm) | 20 | 50 | 80 |
|-----------------------|-------|-------|-------|
| Actual content (ppm) | 14.25 | 28.00 | 67.83 |

[Supporting information Table1]. Actual Content of Sr Ions in Undoped and Sr Doped TiO_2 Nanocrystallines Tested by ICP-AES

The content and the binding energy of the doping element are very important for the evaluation of the doping effect of the Sr on the TiO_2 . To check the binding energy of the elements in the films; we employed XPS measurements for finding Sr element. The results are given as follows:



[Supporting information Fig.1]. XPS core level spectra from the regions of (a) Sr 3d, (b) Sr 3p, (c) Sr 3s, (d) Sr 4p/O 2s, (e) Sr 4s/Ti 3p.

From the above from XPS core level spectra evidencing Sr from the regions of Sr 3d, Sr 3s, and Sr 3p is difficult as Sr is at ppm range and from the regions of O 2s and Ti 3p the peaks correspond to Sr 4p and Sr 4s is difficult as the peaks of Sr are super imposed by Ti peaks respectively. However it is found that peaks related to the O 2s and Ti 3p are shifted to higher binding energies up 50 ppm Sr and resumed to lower binding energy for 80 ppm which indicates the influence of incorporated Sr dopant