Controllable growth of three-dimensional CdS nanoparticles on TiO$_2$ nanotubes to enhance photocatalytic activity

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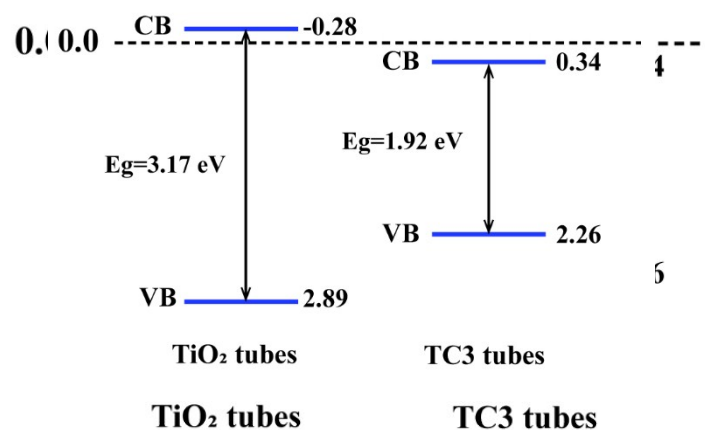*Corresponding Author

Fig.S1 Calculated band edge (VB, CB) position of TiO$_2$ tubes and TC3 tubes.

Fig. S1 shows the band edge of the samples TiO$_2$ tubes and TC3 tubes. The empirical formula for the edge calculation of semiconductors is:

$$E_{CB} = X - E_e - 0.5Eg$$

$$E_{VB} = E_{CB} + Eg$$

E$_{CB}$ is the CB edge potential, and X is the electronegativity of the semiconductor, which is the arithmetic mean of the electronegativity of constituent atoms and first ionization energy. E$_e$ is the energy of free electrons on the hydrogen scale (approximately 4.5 eV). The Eg values of TiO$_2$ tubes and TC3 tubes are 3.17 eV and 1.92 eV. The band edge position (VB, CB) of TiO$_2$ and TC3 were 2.89 eV and -0.28 eV, 2.26 eV and 0.34 eV.