



## Enhance photocatalytic Activity of TiO<sub>2</sub> by Carbon Nanotubes

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**Abstract:** Two types of composites consisting of single-walled carbon nanotubes (SWNTs) and multi-walled carbon nanotubes (MWNTs) with titanium dioxide (TiO<sub>2</sub>-P25) were synthesized by simple evaporation methods. These composites were characterized by UV-vis diffuse reflectance, XRD, Raman spectroscopy, Fluorescence spectroscopy and Surface area (S<sub>BET</sub>). The results show that Carbon Nanotubes (CNT) which used to synthesis composites (TiO<sub>2</sub>/CNTs) has succeeded in increased the activity of TiO<sub>2</sub> when exhibits higher photocatalytic activity than TiO<sub>2</sub>. The multi-walled carbon nanotubes MWNTs were succeeded to increase the adsorption for synthesis composites more than SWNTs, while SWNTs succeed to improve the activity of photocatalytic degradation of TiO<sub>2</sub>. The enhancements of the activity for the composites by the two types of CNTs can explain by two parameters: the first were increased the surface area for synthesis composites and the second was translating the excited electron e<sup>-</sup> from conduction bands (CB) of TiO<sub>2</sub> to the surfaces of CNTs which causing reduces the recombination of e<sup>-</sup>/h<sup>+</sup>.

**Keywords:** SWNT, MWNT, P25, TiO<sub>2</sub>/CNTs composite, Cobalamin degradation, out situ activity.

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