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## Enhanced photocatalytic degradation of methyl violet on TiO<sub>2</sub>/N-MWCNTs

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Textile industries are amongst the top environs of water polluters. They release complex organic pollutants (such as organic dyes) that are resistant to conventional water purification methods. Lately, TiO<sub>2</sub>-based photocatalytic degradation method has been successfully used to ravage the organic dye pollutants in aqueous medium at a low cost. However, the efficiency and turnover number of TiO<sub>2</sub> is limited due to its low surface area, sintering, and the electron-hole recombination. Thus, multiwalled carbon nanotubes (MWCNTs) can be used to enhance the photocatalytic activity of TiO<sub>2</sub> by increasing the catalyst surface area and also acting as photo-generated electron capturers. Moreover, the MWCNTs can be modified with nitrogen dopants to create more defects on the carbon lattice and a net positive charge to strengthen the TiO<sub>2</sub>-C interaction. We herein report on the competence of CVD-synthesized nitrogen doped MWCNTs (N-MWCNTs) in the enhancement of TiO<sub>2</sub> photocatalytic activity for the degradation of methyl violet. Our results showed that N-MWCNTs supported TiO<sub>2</sub> photocatalyst exhibit a large surface area, good TiO<sub>2</sub>-C interaction, and a reduction in the electron-hole recombination. Consequently, the photocatalytic activity of raw TiO<sub>2</sub> was drastically increased after the inclusion of N-MWCNTs. Furthermore, the N-MWCNTs showed a great potential of improving the photocatalytic stability of TiO<sub>2</sub> and its reusability.

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