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# Research on photocatalytic properties of TiO<sub>2</sub>-graphene composites with different morphologies

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## ABSTRACT

A series of TiO<sub>2</sub>-graphene composites have been successfully synthesized through a facile hydrothermal reaction. TiO<sub>2</sub>-graphene composites with different structures were obtained by minor modification using graphene oxide (GO) and different titanium sources as raw materials in different hydrothermal conditions. The physico-chemical properties of the target materials were characterized by BET surface area, scanning electron microscope (SEM), X-ray diffraction (XRD), Raman spectroscopy, Fourier transform infrared (FT-IR) spectroscopy, and X-ray photoelectron spectroscopy (XPS), and they showed different morphologies and photocatalytic properties. The results of ultraviolet-visible (UV-vis) absorption spectroscopy showed that TiO<sub>2</sub>-graphene composites with different morphologies performed different photocatalytic activities for the degradation of methylene blue (MB) in an aqueous solution.

**KEYWORDS:** TiO<sub>2</sub>-graphene composites, photocatalytic properties, morphologies