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## Using of nanomaterial's TiO<sub>2</sub> and TiO<sub>2</sub>@SBA-15 for photo catalytic degradation of malachite green

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### Abstract

Malachite green is used as a fungicide, bactericide and parasitic ide in the aquaculture industry, which is influenced on the environment as a pollutant. In this study, the using of nano-photocatalysts TiO<sub>2</sub>@SBA-15 and TiO<sub>2</sub> they were developed for efficient photodegradation of malachite green. This Absorbents is Eco-friendly and the have high performance among nano-adsorbents. The nano-photocatalysts was evaluated by the decomposition of malachite green as a model organic pollutant under UV light irradiation. Effects of various process parameters including adsorbent dosage (40, 100, 200, 400), contact time (240 min), initial pH (4, 7, 10) of the solution and initial Malachite green concentration (10, 20, 30) were investigated under batch adsorption system. The results showed that the optimal conditions of removal percentage of TiO<sub>2</sub>@SBA-15 (98%) accrued at initial concentration of 10 mg/l, adsorbent dosage of 200 mg/l and solution pH of 10. the TiO<sub>2</sub>@SBA-15 nanoparticles removal rate of 98% in 90 minutes performed better than the TiO<sub>2</sub> nanoparticles removal rate of 60% in 240 minutes.

**Keywords:** Removal, Dye pollutions, Ultra violet