

A novel photocatalysts $\text{Bi}_3\text{TiNbO}_9$ prepared by Co-precipitation method for photo-degradation of methylene blue

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Heterogeneous photocatalysts have been used for the degradation of organic compounds/dyes to carbon dioxide, water and mineral ions and refreshed the environment. Perovskite materials are well known in this field because of their narrower band gap (>3.0 eV) which can be easily excited under visible light or UV light irradiation. In this work, we described the synthesis of single phase, nanoparticles $\text{Bi}_3\text{TiNbO}_9$ by simple co-precipitation method under basic condition (pH~ 9). The formation of prepared perovskites materials were confirmed by XRD patterns (JCPDS 7-192). The photocatalytic activity for degrading methylene blue over $\text{Bi}_3\text{TiNbO}_9$ under UV-illumination is comparatively well with respect to reported one. The rate of photodegradation of methylene blue was evaluated by using UV-Vis spectrophotometer. Co-precipitation is one of the simplest wet-chemical techniques to synthesize advanced ceramic powders with narrow particle size distribution. The synthesized materials were characterized by XRD, FT-IR, SEM, BET surface area, and UV-Vis spectrophotometer.