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Photocatalytic Degradation of Methylene Blue Using Polyoxometalate as Photocatalyst

Abstract

Polyoxometalates (POM), Na2C6H4NO2. [PW12O40] have been synthesized under hydrothermal conditions and characterized. The SEM result indicates that morphology of photocatalyst was homogeneous. The performance of POM was then tested on photocatalytic degradation of methylene blue at different operating conditions. The degradation of methylene blue was dependent on several parameters, such as its initial concentration, HPOM loading and temperature. Langmuir–Hinshelwood model is usually used to describe the kinetics of this photocatalytic process. It was found that rate constant, kapp decreased with increasing initial concentrations of methylene blue. However, as increases in HPOM loading improved methylene blue degradation. The activation energy obtained was low due to this photocatalytic process being less dependent on temperature.