

Synthesis of metal coupled N-TiO₂ nanoparticles by using reductant for development of photocatalytic activity

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Titanium dioxide(TiO₂) is useful material which remove the organic pollutant from both air and water. Generally, catalytic activity increases as doping with non-metal or loading metal particles on the TiO₂. In this study, metal particles were attached on the N doped TiO₂ surface by using sodium borohydride as a reducing agent. Reducing agent has effects on the reduction rate that the more amount and smaller metal particle could be attached on the N-TiO₂ surface. The photocatalytic activity of metal coupled N-TiO₂ was also evaluated when using the reducing agent. Transmission electron microscope and UV-Vis spectrophotometer were used to observe the amount of metal particles attached on the surface. The photocatalytic activities of as-prepared samples were characterized by the decoloration of aqueous MO or MB solution under Xenon light source. Toluene or p-xylene were selected for target VOC material to measure of decomposition and monitoring the concentration under UVLED irradiation in a closed chamber system.