Carbon quantum dots (CQDs) based composites photocatalyst for wastewater purification

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ABSTRACT
A comparative study of the Carbon Quantum Dots (CQDs) based composites photocatalyst for water purification was carried out. New finding of CQDs and TiO_2 have demonstrated significant advantage since it provides environmentally friendly for photocatalytic degradation of methyl orange (MO) dye. CQDS and TiO_2 were prepared by using hydrothermal method. The CQDs and CQDS/TiO_2 were fully characterized by using transmission electron microscope (TEM) to identify the size range and shape that involve in the adsorption process. The synthesized CQDs and CQDs/TiO_2 had small semi spherical morphology with 5 nm in size. The result of photocatalytic activity revealed that there is photocatalytic degradation of MO in the presence of only pure CQDs and CQDs/TiO_2 composites which the value of concentration decreased against time. CQDs/TiO_2 exhibited higher photocatalytic activity, which indicated that both CQDs and TiO_2 played important roles for the high photocatalytic activity under visible light irradiation.

KEYWORDS
Composite; CQDs; Photocatalyst; Wastewater

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