

### Efficient visible-light photocatalytic H<sub>2</sub> generation of TiO<sub>2</sub> by CuPc modification

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The advantage of copper Pc (CuPc) deposition onto titanium dioxide (TiO<sub>2</sub>) semiconductor photocatalyst for enhanced hydrogen generation under irradiation at the visible-light range has been investigated. The deposition loading varied with different mass of CuPc. The resulting CuPc/TiO<sub>2</sub> composite photocatalysts were characterized by using transmission electron microscopy (TEM), electron energy loss spectroscopy (EELS), ultraviolet-visible diffuse reflection spectroscopy (DRS), and energy dispersive X-ray spectroscopy (EDS). The photocatalytic hydrogen evolution was investigated for CuPc/TiO<sub>2</sub> under visible-light irradiation (>420nm). The photocatalytic analysis revealed that the CuPc layer was crucial for higher hydrogen gas evolution. This result demonstrated CuPc/TiO<sub>2</sub> as a highly efficient visible-light photocatalyst for hydrogen-gas evolution.