

Photocatalytic decomposition of water-methanol solution over Pt/KNaNbTeO₆ under visible light irradiation ($\lambda > 400$ nm)

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Most of the applications have focused on TiO₂, which shows high activity and long-term stability, and is inexpensive. However, TiO₂ is active only under UV light due to its wide band-gap energy of ca. 3.2 eV. Since, the fraction of UV in solar spectrum is less than 5%, TiO₂ photocatalysis cannot efficiently exploit the abundant natural resource i.e. solar radiation which dominantly consists of visible light. In order to utilize the main part of solar spectrum, and even for indoor applications under weak interior lighting, photocatalysts absorbing visible light are required. Here we describe single-phase oxide photocatalyst, KNaNbTeO₆, cubic crystalline phase, which is an efficient photocatalyst for isopropyl alcohol degradation to CO₂, and decomposition of water-methanol solution into H₂ or O₂, all under visible light.