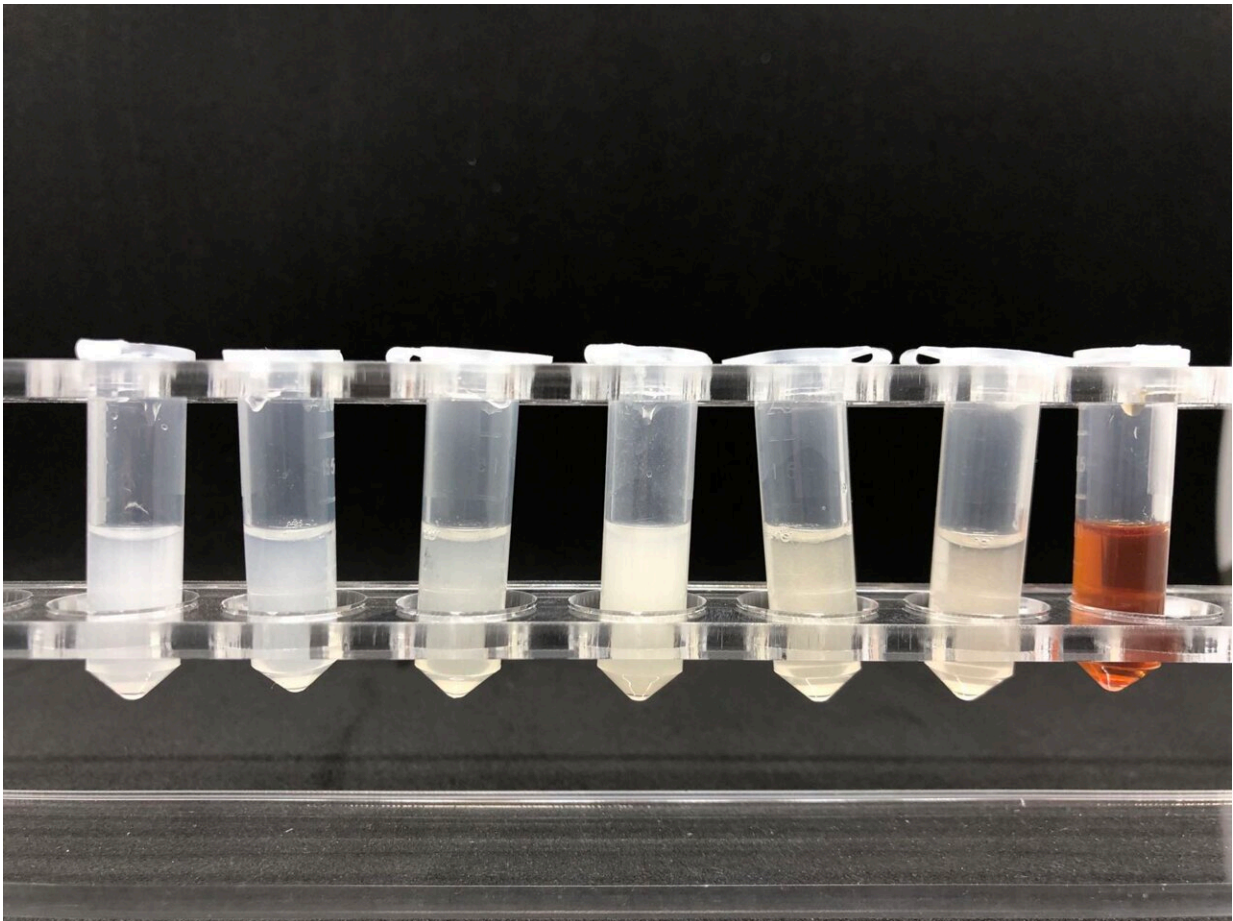


Photocatalysts with built-in electric field helps to remove pollutants from water

April 11 2022, by Zhang Nannan



The prepared CdTeQDs/2DBWO photocatalyst with different proportions.
Credit: Yang Pengqi

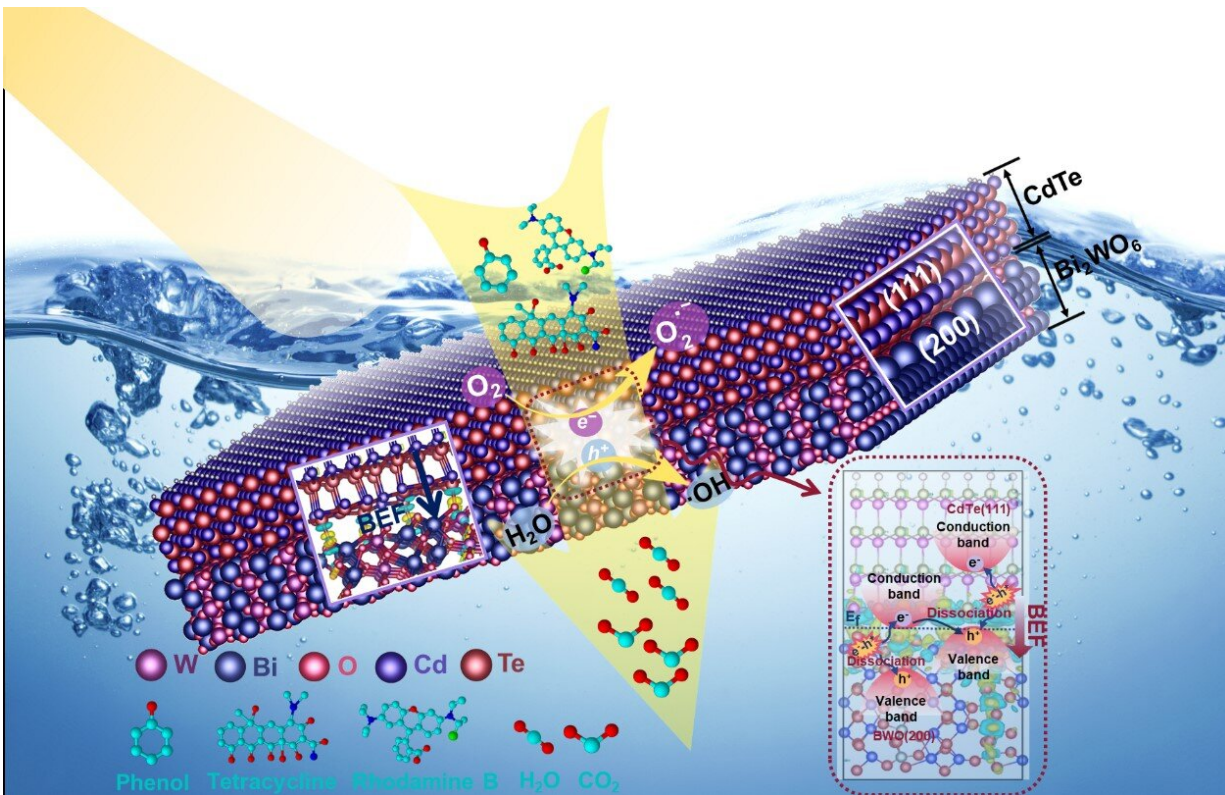
A research team led by Prof. Wu Zhengyan from the Hefei Institutes of Physical Science of the Chinese Academy of Sciences (CAS) has recently introduced a high-efficiency Z-scheme photocatalyst to deal with contaminants in water. This new solution has been published in *ACS Applied Nano Materials*.

In recent years, rapid industrialization has caused increasingly severe environmental pollution. Therein, various organic pollutants in water have become major threats for [human health](#) and ecosystem security worldwide. Therefore, an effective treatment approach has become an urgent task for elimination of organic pollutants at present.

In this [research](#), the $\text{Bi}_2\text{WO}_6(\text{CdTeQDs}/2\text{DBWO})$ photocatalyst with a giant built-in [electric field](#) (BEF) was proved to extremely promote the dissociation of exciton and generation of reactive oxygen species. The researchers demonstrated that BEF plays a positive role in photocatalytic process, and the photodegradation efficiency of phenol, rhodamine B and tetracycline by BEF is much higher than that of pure Bi_2WO_6 under [visible light](#).

Compared with the commercial TiO_2 photocatalyst, the self-prepared CdTeQDs/2DBWO photocatalyst has a slight advantage in photocatalytic efficiency for pollutants. However, due to the complicated synthesis process and high cost, there are still some difficulties in the practical application of self-prepared photocatalyst.

This study opens up a new route for designing high-efficiency photocatalysts.



Schematic illustration of photocatalytic degradation mechanism. Credit: Yang Pengqi

More information: Pengqi Yang et al, CdTe Quantum Dot/Bi₂WO₆ Nanosheet Photocatalysts with a Giant Built-In Electric Field for Enhanced Removal of Persistent Organic Pollutants, *ACS Applied Nano Materials* (2022). [DOI: 10.1021/acsnam.2c00155](https://doi.org/10.1021/acsnam.2c00155)

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