

Establishment testing standards for particulate photocatalysts in solar fuel production proposed

5 February 2021



Queensland, Prof. Kazuhiro Sayama from the National Institution of Advanced Industrial Science and Technology, and Prof. Gang Liu from the Institute of Metal Research, CAS, initiated the establishment of international efficiency accreditation and testing protocols for particulate photocatalysts toward solar fuel production.

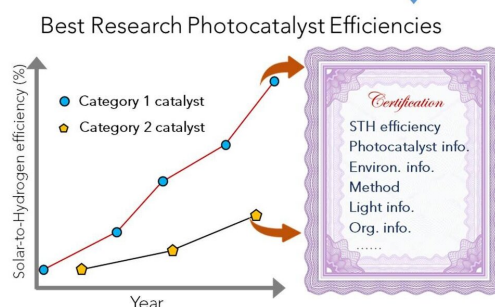
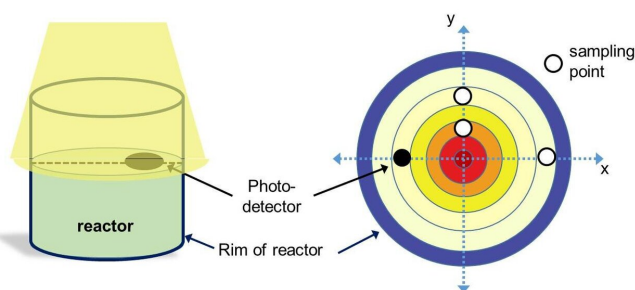
Their perspective, published in *Joule*, is expected to serve as a useful guide for developing a well-recognized testing standard and for further promoting research advances in the field of [photocatalytic](#) solar [energy](#) conversion.

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Utilization of renewable solar energy is crucial for addressing global energy and environmental concerns and achieving sustainable development in our society. In this regard, photocatalytic water splitting has attracted significant interest as a cost-effective means to convert sustainable solar energy into valuable chemicals.

However, efficiency is sensitive to [reaction conditions](#) and experimental setup, and it is difficult to compare the results obtained by different research groups or provide a reliable guide for large-scale implementation. Due to the lack of testing standards, it is difficult to compare the results obtained by different research groups or provide a reliable guide for large-scale implementation.

Recently, a research team led by Prof. Li Can and Prof. Li Rengui from the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of Sciences (CAS), in collaboration with Prof. Kazunari Domen from The University of Tokyo, Prof. Lianzhou Wang from The University of



Efficiency accreditation and testing protocols for particulate photocatalysts toward solar fuel production
Credit: DICP

The researchers discuss the protocols for the reliable determination of the efficiency of the overall

photocatalytic water splitting reaction based on particulate photocatalysts.

They also proposed to establish accreditation research laboratories for efficiency certification toward the launch of a figure of merit—a 'best research photocatalyst efficiencies' chart.

This initiative would provide an important platform for establishing standard testing protocols for photocatalytic water splitting and for improving the solar-to-hydrogen conversion efficiency in practical applications.

More information: Zhiliang Wang et al. Efficiency Accreditation and Testing Protocols for Particulate Photocatalysts toward Solar Fuel Production. *Joule*. February 02, 2021 DOI:doi.org/10.1016/j.joule.2021.01.001

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