

Fundamentals and misconceptions in heterogeneous photocatalysis applied to CO₂ reduction.

Eric Puzenat

Institut de recherches sur la catalyse et l'environnement de Lyon (IRCELYON), Université Claude Bernard Lyon 1
69626 Villeurbanne, France.
eric.puzenat@ircelyon.univ-lyon1.fr

Abstract

Heterogeneous photocatalysis falls within the realm of catalysis; consequently, the fundamental principles of this discipline must be adhered to. It is therefore imperative to reformulate the approach to photocatalysis in order to avoid misinterpretations and misconceptions. Principles of photonics must also be taken into account. Genuine, standardized photocatalysis tests should be established to demonstrate the true catalytic activity of irradiated solids, independently of any non-catalytic side reactions. Thermodynamic principles must likewise be strictly observed. In light of all these recommendations, what questions does heterogeneous artificial photosynthesis raise ?

Keywords

CO₂-to-fuels; Photocatalysis; Solar fuels.