Avviso di Seminario

Prof. Kazunari DOMEN

Center for Energy & Environmental Science Shinshu University, Nagano 380-8553, Japan

8 Giugno 2018 ore 11.00
Dipartimento di Chimica, Aula Avogadro

“Development of particulate photocatalysts for overall water splitting”

Abstract. Sunlight-driven water splitting using particulate semiconductor photocatalysts has attracted much attention as a means of renewable hydrogen production on a large scale. A solar-to-hydrogen energy conversion efficiency (STH) of 5% or higher is needed for the practical operation of photocatalytic solar hydrogen plants. The scalability of water splitting systems is also an important factor when solar hydrogen is used globally because of the low energy density of sunlight. In this regard, the development of particulate semiconductors that are active in the visible-light-driven water splitting reaction without any external power supply has a significant impact. Various semiconducting materials have been studied for photocatalytic water splitting under visible light irradiation. The author has achieved overall water splitting on a single oxynitride photocatalyst under irradiation up to 600 nm. Two different photocatalysts can also be combined so that hydrogen and oxygen are generated on the different photocatalysts. Z-scheme-type photocatalyst sheets have shown a STH value of 1.0% at ambient pressure. In anticipation of large-scale application of photocatalyst sheets, the author has studied panel-type reactors that can accommodate photocatalyst sheets over large areas. In my talk, recent progress and future challenges in photocatalytic hydrogen production from water will be presented.

Invito a cura di: Elio Giamello