

Hydrogen generation from water using semiconductor septum electrochemical photovoltaic (sc-sep) cells

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Using sunlight to extract hydrogen from water has been the dream of generations of scientists and engineers, and remains the goal of researchers in the 21st century. That dream may at last be realized in the semiconductor septum electrochemical photovoltaic (SC-SEP) cell, which is modeled after nature's photosynthetic thylakoid membrane. This novel SC-SEP cell arose from studies of pigmented bilayer lipid membranes (p-BLMs). The cell is easy to construct and simple to operate. It appears to offer a practical approach to the photochemical conversion and storage of solar energy. In principle, one may say hydrogen can and indeed has been generated from water via a number of schemes, including the SC-SEP cell. In practice, however, ways need to be devised so that the process is competitive with the current technologies. This paper describes how hydrogen is produced from seawater when the visible light of the solar spectrum irradiates a SC-SEP cell. Recent work from other laboratories is delineated.