

Abstract :

Solar hydrogen production by water splitting is one of the “holy grail” of chemistry listed in a special issue published by the Accounts of Chemical Research on 1995 by Allan Bard et al. Water splitting to hydrogen is yet to be exploited, in spite of the large amount of research work in the past five decades. We report a wireless device based on quasi-artificial leaf concept, comprising Au on TiO<sub>2</sub> electrode sensitized by PbS and CdS quantum dots (QD), was demonstrated to show solar hydrogen. A simple Mn-doping in CdS was sufficient to replace Au and PbS in the next device, by harvesting the light with high absorption coefficient as well as emitted light (or self-absorption). A simple comparison of solar hydrogen generation from thin film and powder based catalyst, demonstrates the former to outweigh the latter. There is a very good possibility that this device can be scaled to bigger sizes to produce large amount of hydrogen. However, many more challenges are ahead and some of them will be discussed.