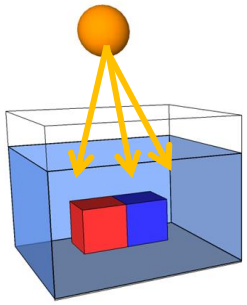
Biphasic photocatalytic materials MoS_2/WO_3 for Solar energy harvesting and enhanced photocatalysis

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Abstract

Biphasic nanoparticle is a single particle containing two materials with corresponding distinct sets of properties for use in photo-catalysis. These particles have been generated by a new synthetic method such as sol-gel and sequential layer deposition. The new synthetic approach consists of using sol-gel chemistry and specially made substrate in order to sequentially layer different photocatalytic materials together followed by depositing them onto the soluble substrate. After sequential deposition, the substrate is dissolved in water leading to layered assembly automatically split into individual biphasic Janus particles. In this project, the bi-phasic nanoparticles of MoS_2/WO_3 were observed to enhance the photocatalytic properties for water purification and photocatalytic hydrogen production.

Image



Recent Publications (minimum 5)

1. Gomez V, Rome B, Barron A.R, Dunnill C.W (2016) Bi-Phasic photocatalytic particles prepared by sequential layer depositions for water cleaning and purification. Nano Energy Systems: 5-13.
2. Fujishima A, Zhang X, Tryk D.A (2007) Heterogeneous photocatalysis: from water photolysis to applications in environmental cleanup. International journal of hydrogen energy, 2007.32(14): 2664-2672.
3. Kudo V, Miseki Y (2009) Heterogeneous photocatalyst materials for water splitting. Chemical Society Reviews 2009. 38(1): 253-278.
4. Gomez V, et al (2015) Bi-phasic titanium dioxide nanoparticles doped with nitrogen and neodymium for enhanced photocatalysis. Royal Society of Chemistry
5. Reza Gholipour M, et al. (2015) Nanocomposite heterojunctions as sunlight-driven photocatalysts for hydrogen production from water splitting. Nanoscale 2015.7(18):8187-8208.



Biography (150 word limit)

Lisa Kong is a Chinese student working with Dr. Dunnill in the ESRI labs at Swansea university. The topic of her studies is to investigate biphasic materials for water splitting and water cleaning purposes. The concept of green energy harvesting into hydrogen to power things is one that the world can rely on to meet future energy demand.

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