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BIPHASIC PHOTO CATALYTIC MATERIALS MoS_2/WO_3 FOR SOLAR ENERGY HARVESTING AND ENHANCED PHOTO CATALYSIS

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Biphasic nanoparticle is a single particle containing two materials with corresponding distinct sets of properties for use in photocatalysis. 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 photo catalytic 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 biphasic nanoparticles of MoS_2/WO_3 were observed to enhance the photo catalytic properties for water purification and photo catalytic hydrogen production.

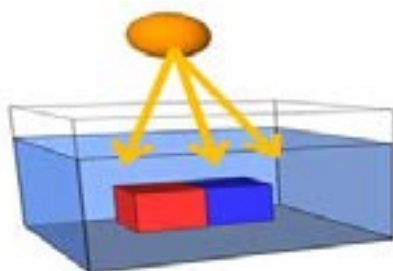


Figure 1: Individual biphasic Janus particles

Recent Publications

1. Gomez V, Rome B, Barron A R and 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 and Tryk D A (2007) Heterogeneous photocatalysis: from water photolysis to applications in environmental cleanup. *International Journal of Hydrogen Energy* 32(14):2664-2672.
3. Kudo V and Miseki Y (2009) Heterogeneous photocatalyst materials for water splitting. *Chemical Society Reviews* 38(1):253- 278.
4. Gomez V, et al. (2015) Bi-phasic titanium dioxide nanoparticles doped with nitrogen and neodymium for enhanced photocatalysis. *Nanoscale* 7(42):17735-44.
5. Reza Gholipour M, et al. (2015) Nanocomposite heterojunctions as sunlight-driven photocatalysts for hydrogen production from water splitting. *Nanoscale* 7(18):8187-8208.

Biography

Lisa Kong is a Chinese student and working as Research Assistant under Dr. Charles 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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