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Cover story

Microfluidic assembly of WO_3/MoS_2 Z-scheme heterojunction as tandem photocatalyst for nitrobenzene hydrogenation

(Qing Wang, Xuan-Xuan Cao, Tao Liu, Kang-Jie Wu, Juan Deng, Jing-Sheng Chen, Yue-Ji Cai, Meng-Qi Shen, Chao Yu*, Wei-Kang Wang* pp. 484–494)

Heterojunction-based photocatalyst plays an important role in the various heterogeneous catalysis. Z-scheme photocatalytic systems with two semiconductor materials are suitable for harvesting solar energy, while the advanced nanostructuring tools for the fabrication of Z-scheme heterojunction are limited. Influenced by the butterfly structure, we constructed a WO_3/MoS_2 ($\text{W}/\text{M}_{0.2}$) heterojunction composite in a microfluidic system with enhanced assembly efficiency. Additionally, in the tandem reaction of nitroaromatics transformation, the photogenerated hole (h^+) oxidation of formic acid (HCOOH) provides the hydrogen source and the deposited Pd nanoparticles are enriched with photogenerated electrons for improving the transfer hydrogenation efficiency.

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