



Showcasing research from Professor Abe's laboratory, Department of Energy and Hydrocarbon Chemistry, Graduate School of Engineering, Kyoto University, Kyoto, Japan. Image created by Art Action Inc., Takahiro Tamura.

Manipulation of charge carrier flow in $\text{Bi}_4\text{NbO}_8\text{Cl}$ nanoplatform photocatalyst with metal loading

Separation of photoexcited charge carriers in a semiconductor particle is crucial for efficient photocatalysis such as water splitting. Here, a spatial charge separation in $\text{Bi}_4\text{NbO}_8\text{Cl}$ nanoplatforms *via* site-selective deposition of cocatalyst is demonstrated. Although both photoexcited electrons and holes travel along the in-plane direction in the layered crystal structure and recombine at the edge of the nanoplatform without a cocatalyst, Rh particles loaded on the edge extract electrons selectively from the photocatalyst and thereby enable the remaining holes to move along the out-of-plane direction, affording efficient charge separation for H_2 evolution.

As featured in:



See Hiroshi Kageyama, Ryu Abe *et al.*, *Chem. Sci.*, 2022, 13, 3118.