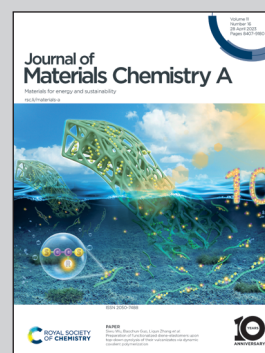


Highlighting a study on non-metallic plasmonic photocatalyst from Professor Zaizhu Lou's laboratory, Institute of Nanophotonics, Jinan University, Guangzhou, China.

Surface electron modulation of a plasmonic semiconductor for enhanced CO₂ photoreduction

Surface depletion layers of plasmonic semiconductors restricted hot electron generation for photocatalysis. Herein, Plasmonic semiconductor heterostructures were constructed by coupling plasmonic Bi₂WO₆ nanodots (BWO-NDs) with TiO₂ nanosheets (TO-NSs) for photocatalytic CO₂ reduction. Under full-spectrum light irradiation, photoelectrons generated on both TO-NSs and BWO-NDs were collected by oxygen-vacancy-induced electron trapping states of nanodots, leading to the strongest surface plasmon resonance in 5 s. It increased the electron density on plasmonic nanodots and broke the limitation of surface depletion layer on photocatalysis, boosting CO₂ reduction to CH₄.

As featured in:



See Juan Li, Zaizhu Lou *et al.*,
J. Mater. Chem. A, 2023, **11**, 8684.