

RSC Sustainability

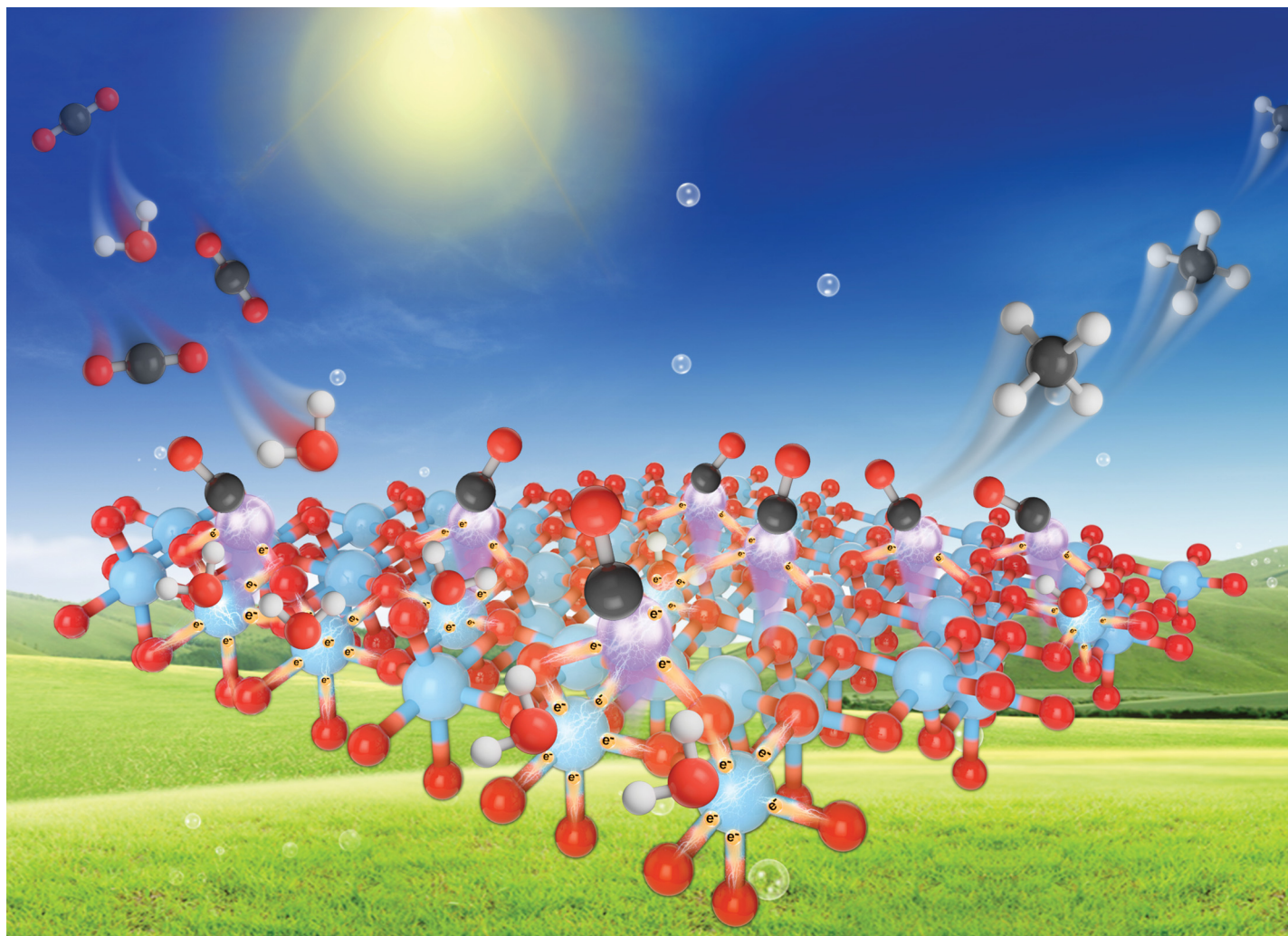
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Fundamental questions
Elemental answers



Showcasing research from Professor Xiaoyuan Zhou's laboratory, Chongqing University, Chongqing, China.

Photochromic single atom Ag/TiO₂ catalysts for selective CO₂ reduction to CH₄

CO₂ photoreduction to CH₄ is considered one of the most sustainable methods for addressing environmental and energy crises, but faces significant challenges due to low electron production efficiency, insufficient proton supply, and inadequate stability of critical intermediates. Herein, we propose a new all-in-one design concept: constructing photochromic dual-sites photocatalysts, to overcome these obstacles together and ultimately achieve both high activity and selectivity of photocatalytic CO₂-to-CH₄ conversion. Especially, the unique photochromic feature offers a macroscopic sign to readily recognize superior catalysts with extraordinary production efficiency of photogenerated electrons in photocatalysis.

As featured in:



See Liyong Gan, Guang Han, Xiaoyuan Zhou *et al.*, *Energy Environ. Sci.*, 2024, **17**, 518.