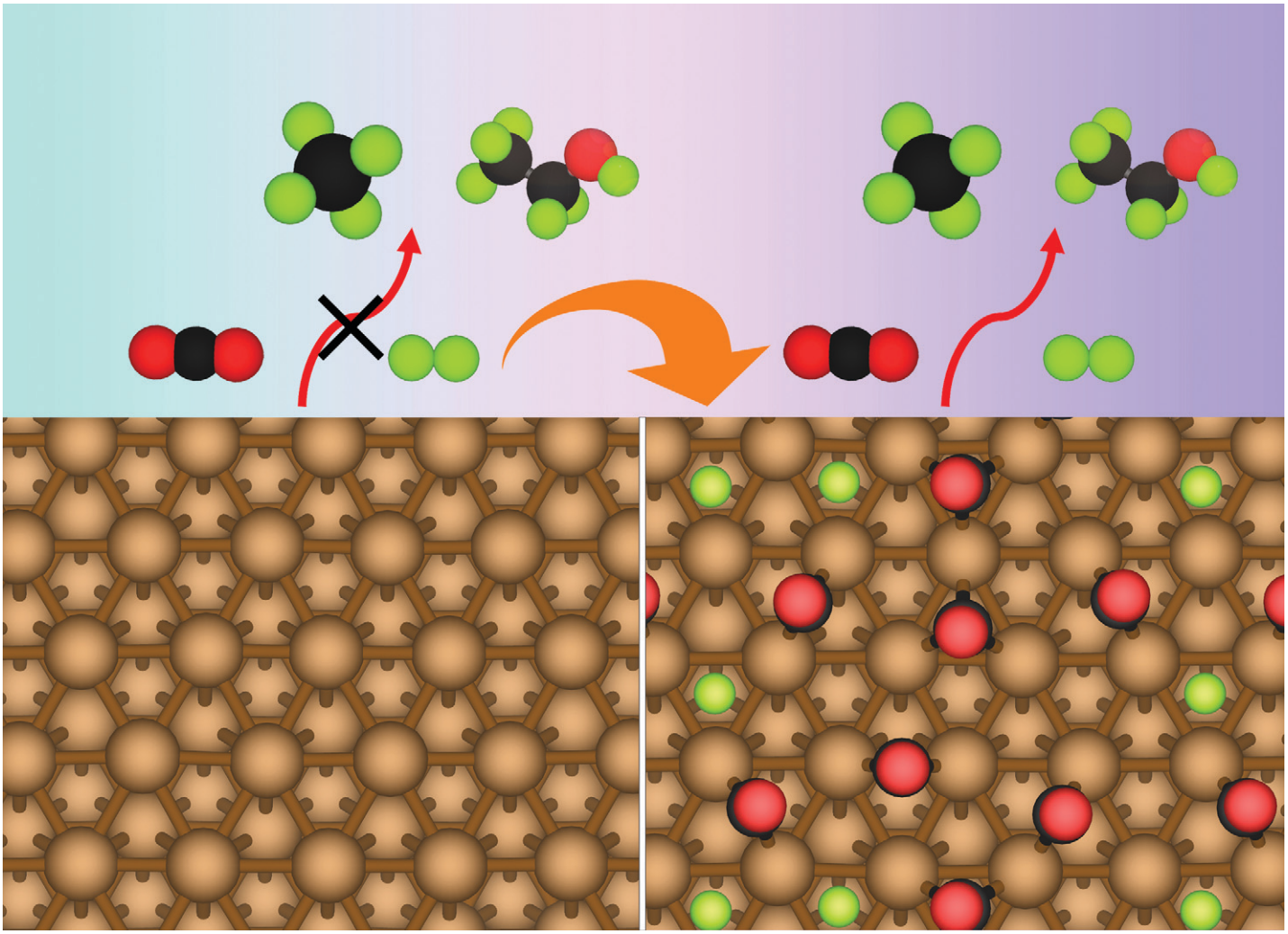

Showcasing research from Professor Yongjie Xi's laboratory, State Key Laboratory for Oxo Synthesis and Selective Oxidation, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lan Zhou, China.

Essential role of CO coverage in CO_2 hydrogenation over Pt(111)

We show that CO and hydrogen can be deposited on Pt(111) during CO_2 hydrogenation and the reaction will proceed by maximizing the adsorption free energy of CO and hydrogen. The role of CO coverage is manifested in two aspects. First, the CH-CO coupling and CH hydrogenation are facilitated by the increase of CO coverage. Second, the adsorption of CO on Pt(111) makes the coadsorbed H relatively positively charged, which is favorable for the H-assisted dehydroxylation of CHOH that produces CH, a key intermediate for the production of C_2H_5OH or CH_4.

As featured in:

See Yongjie Xi, Fuwei Li *et al.*, *Catal. Sci. Technol.*, 2023, **13**, 6153.

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