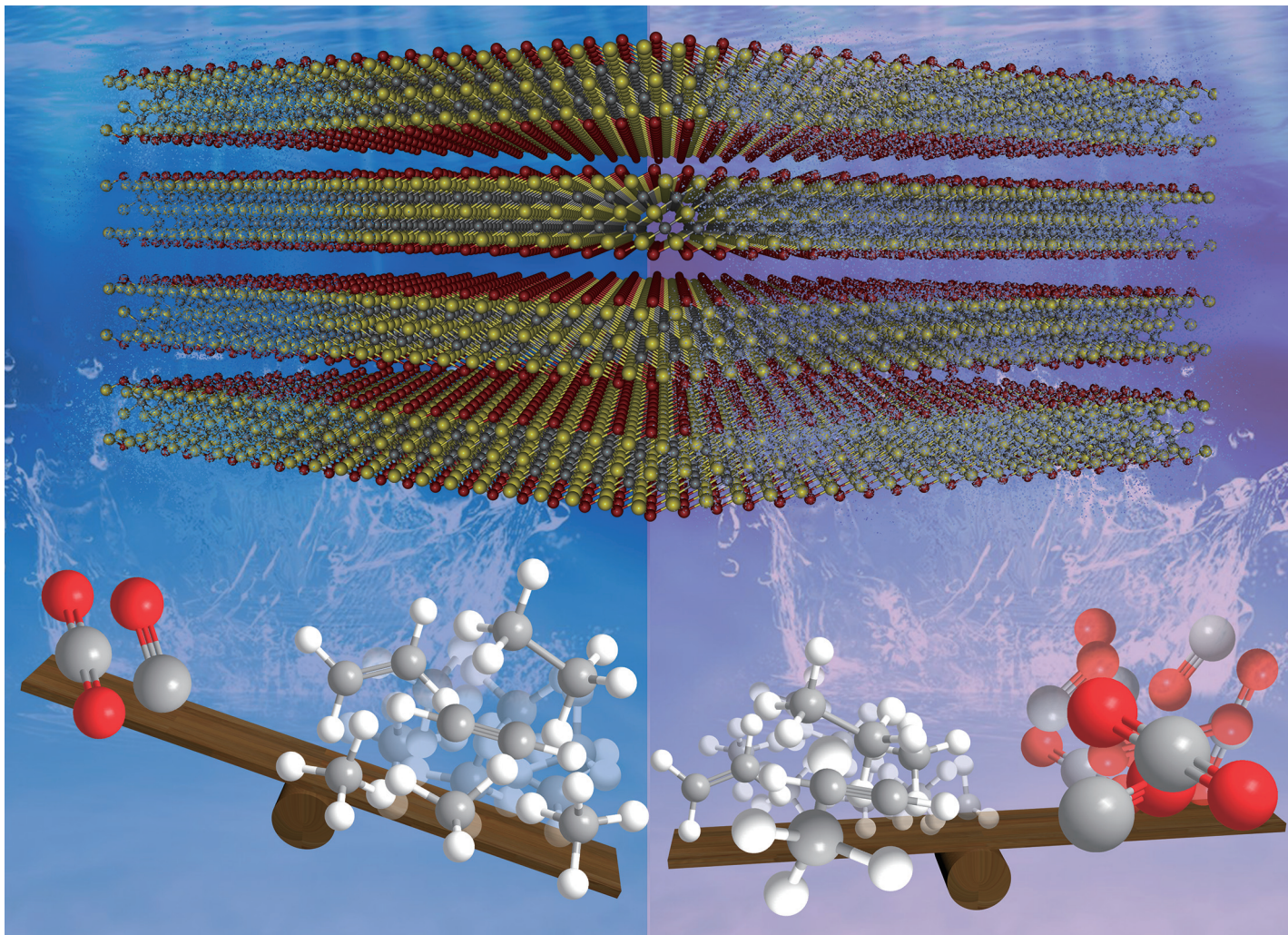




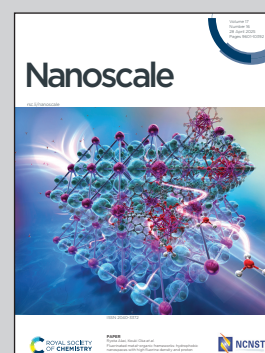
Showcasing collaborative research from Prof. Vadym Mochalin's laboratory, Department of Chemistry, Missouri University of Science and Technology, MO, USA and Prof. Shuohan Huang, College of Materials Science and Engineering, Donghua University, Shanghai, China.

Formation of hydrocarbons and carbon oxides in MXene reactions with water under varying oxidative conditions

We investigate reactions of 2D titanium carbide (MXenes) with water under varying oxidative conditions. Gas chromatography detected methane, carbon oxides, and, for the first time, C2 hydrocarbons. Methane dominates in low-oxidation environments (Ar-saturated water), while the concentration of carbon oxides increases with H_2O_2 addition. Formation of C2 hydrocarbons suggests radical recombination, challenging traditional carbide classifications and underscoring unique reactivity for application development.

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As featured in:



See Shuohan Huang, Vadym N. Mochalin *et al.*, *Nanoscale*, 2025, **17**, 9937.