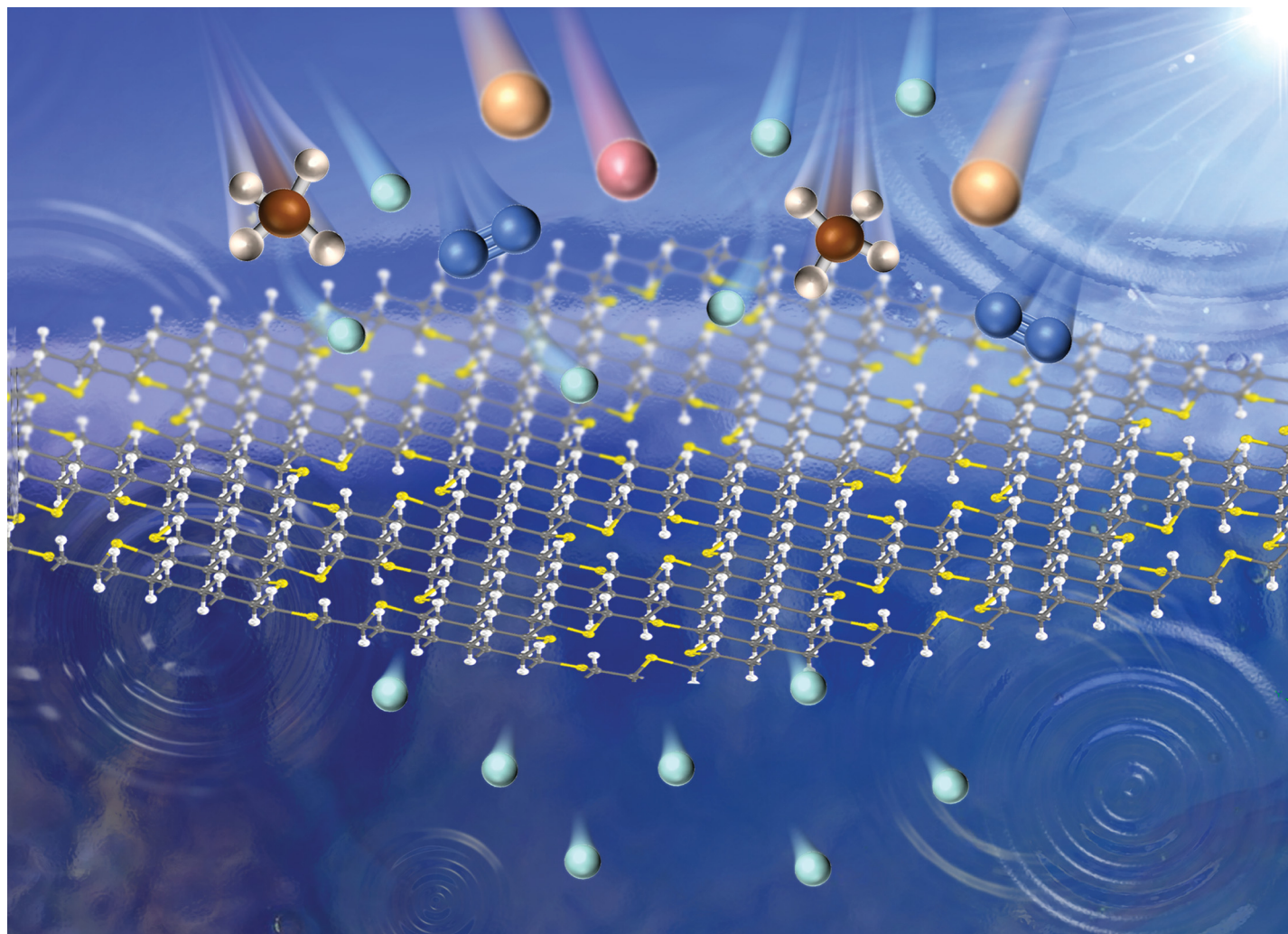




Showcasing research from the Group of Prof. Jing Xu and Prof. Wei Liu at Zhejiang A&F University, China

Sulfur-doped crown ether graphane for enhanced helium separation

This study reports a sulfur-doped crown ether graphane membrane (CG-S6) with an ultralow helium separation barrier of 0.20 eV and outstanding selectivity (331.15×10^{20}) over Ne, Ar, N₂, and CH₄ across 0–600 K. This work not only highlights the excellent potential of CG-S6 for high-performance He separation but also demonstrates that sulfur doping is an effective strategy to enhance the gas separation capabilities of two-dimensional materials, offering new opportunities to address a wide range of gas separation challenges.

Image reproduced by permission of Jing Xu from *Phys. Chem. Chem. Phys.*, 2025, **27**, 12152.

As featured in:



See Wei Liu, Jing Xu *et al.*,
Phys. Chem. Chem. Phys.,
2025, **27**, 12152.