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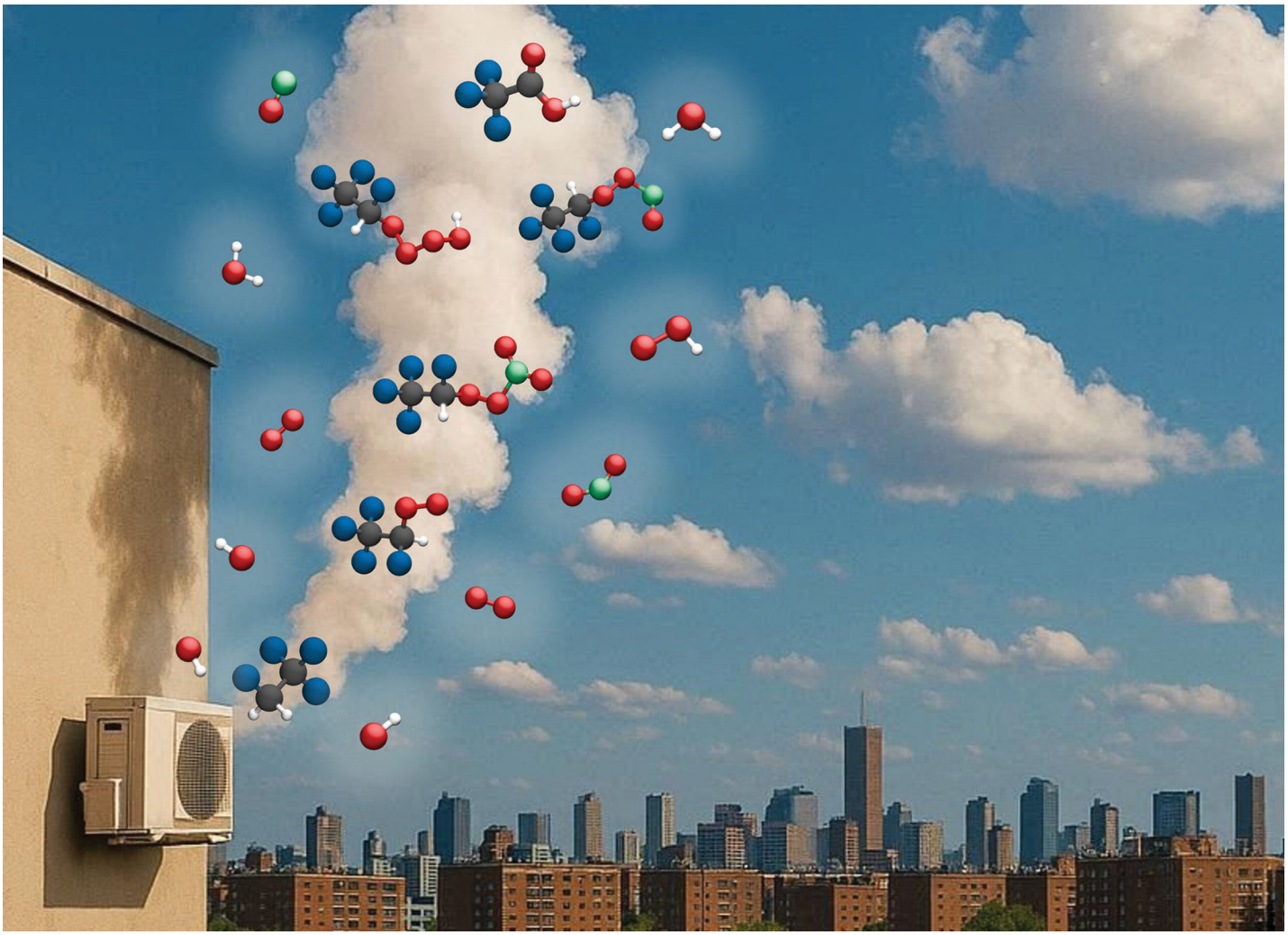

Showcasing research from Professor Sun's laboratory, University of Hawaii, USA.

Trifluoroacetic acid formation from HFC-134a under atmospheric conditions

Trifluoracetic acid (TFA) has long been considered a primary product of atmospheric oxidation of hydrofluoric refrigerants like HFC-134a. TFA poses a significant environmental challenge due to its extreme persistence and irreversible accumulation in water, soil, and even living organisms. While global atmospheric models employ speculative reaction pathways of forming TFA from HFC-134a, many proposed reactions lack theoretical foundation. This study outlines the potential energy profile of atmospheric radicals reacting with HFC-134a and subsequent reactions that form TFA. Kinetics studies suggests that neither TFA nor its precursor trifluoroacetyl fluoride (TFAF) could be formed *via* these speculative reaction pathways.

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As featured in:

See Rui Sun *et al.*, *Phys. Chem. Chem. Phys.*, 2026, **28**, 4433.