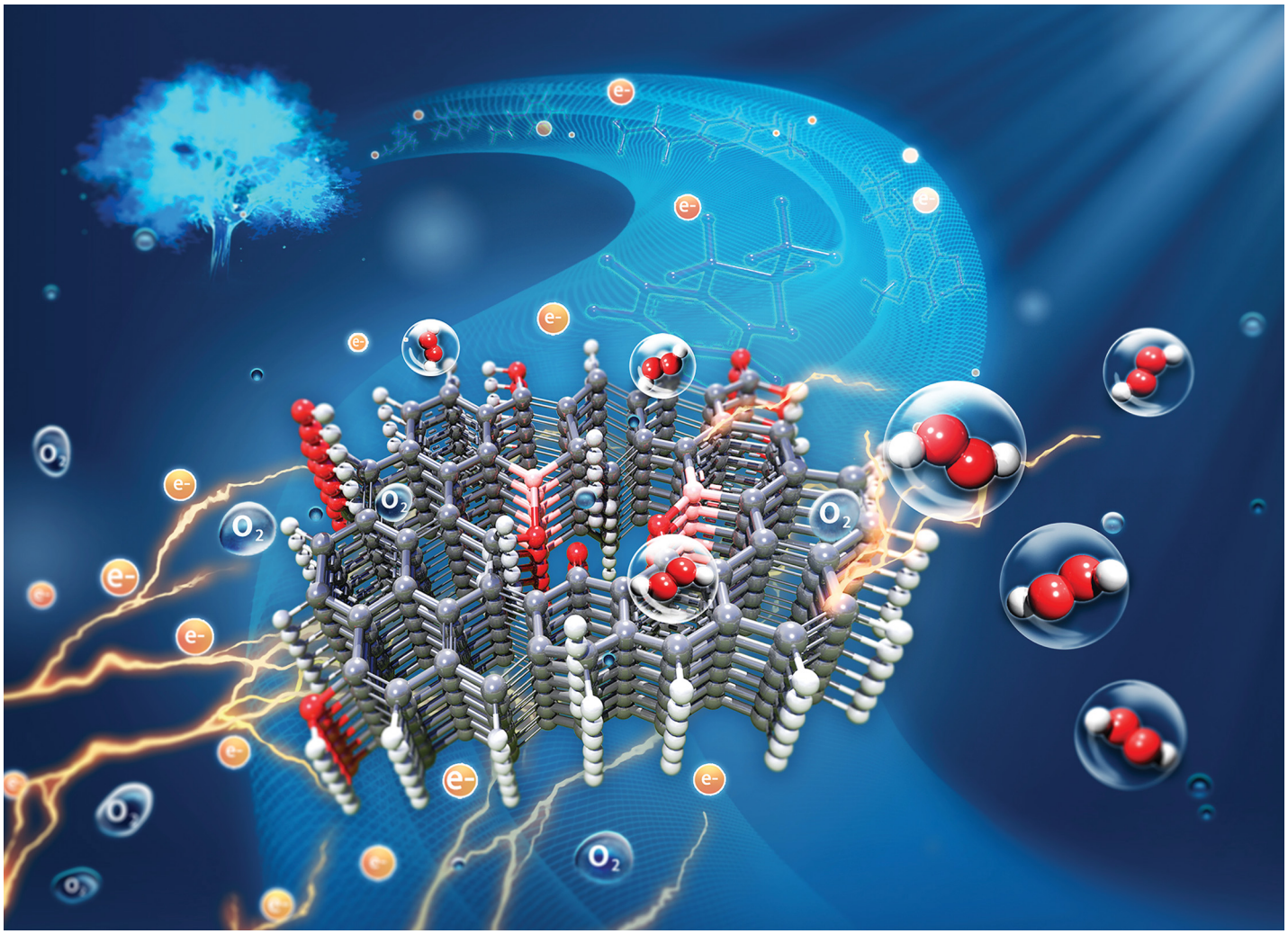

Showcasing research from Professor Xuebing Zhao's laboratory, Department of Chemical Engineering, Tsinghua University, Beijing, China.

Self-powered electrochemical synthesis of hydrogen peroxide from air and lignin

Lignin is a sustainable feedstock for production of carbon fuels and materials. Here, a novel coupled electrochemical system to achieve efficient production of H_2O_2 with air as the oxygen source and lignin as a carbon-based catalyst precursor and electron donor (fuel) has been developed. By using a direct lignin fuel cell to power a paired electrolytic cell, the endogenous electrons of lignin can be transferred to air. This novel self-powered system can achieve production of H_2O_2 without input of external electricity.

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See Xuebing Zhao *et al.*, *Energy Environ. Sci.*, 2025, **18**, 3633.

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