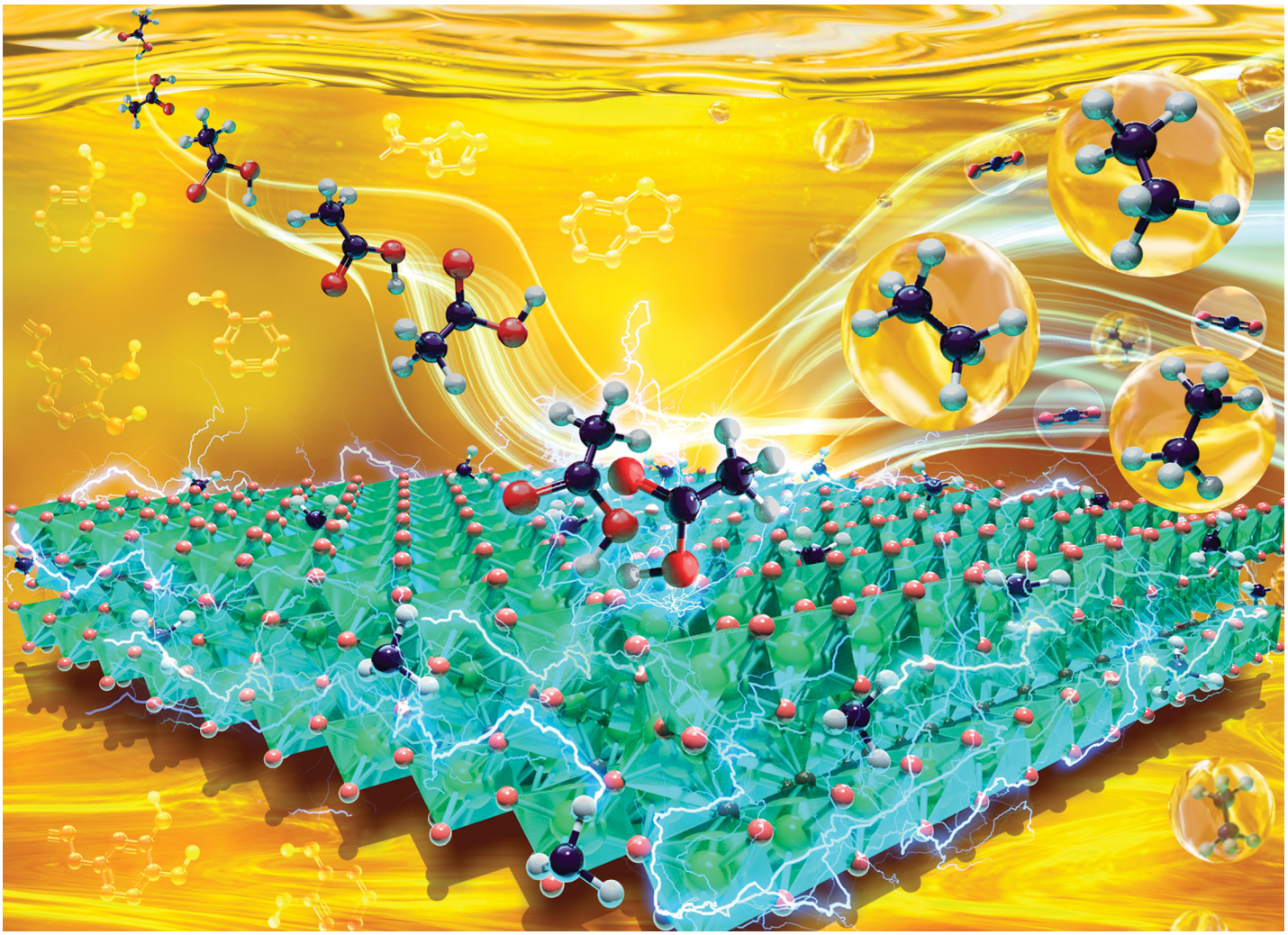

Showcasing research from Professor Jason Chun-Ho Lam's laboratory, School of Energy & Environment, City University of Hong Kong, Hong Kong, China.

Low-temperature highly selective Kolbe electrolysis of acetic acid in bio-oil on a stable *in situ* grown RuO_2/TiO_2 at industrial-level current

Acetic acid, an abundant yet low-energy-density component of biomass pyrolysis oil, poses significant storage challenges. This study presents a novel electrocatalytic approach to transform acetic acid into energy-dense ethane *via* Kolbe electrolysis. We developed an *in situ* grown RuO_2/TiO_2 anode to enable high current density operation, essential for efficient Kolbe electrolysis of acetic acid. The electrocatalytic system achieves a Faradaic efficiency of 74.1% for ethane production under acidic conditions and maintains high selectivity in complex, real aqueous bio-oil matrices.

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As featured in:

See Jason Chun-Ho Lam *et al.*, *Energy Environ. Sci.*, 2025, **18**, 7034.

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