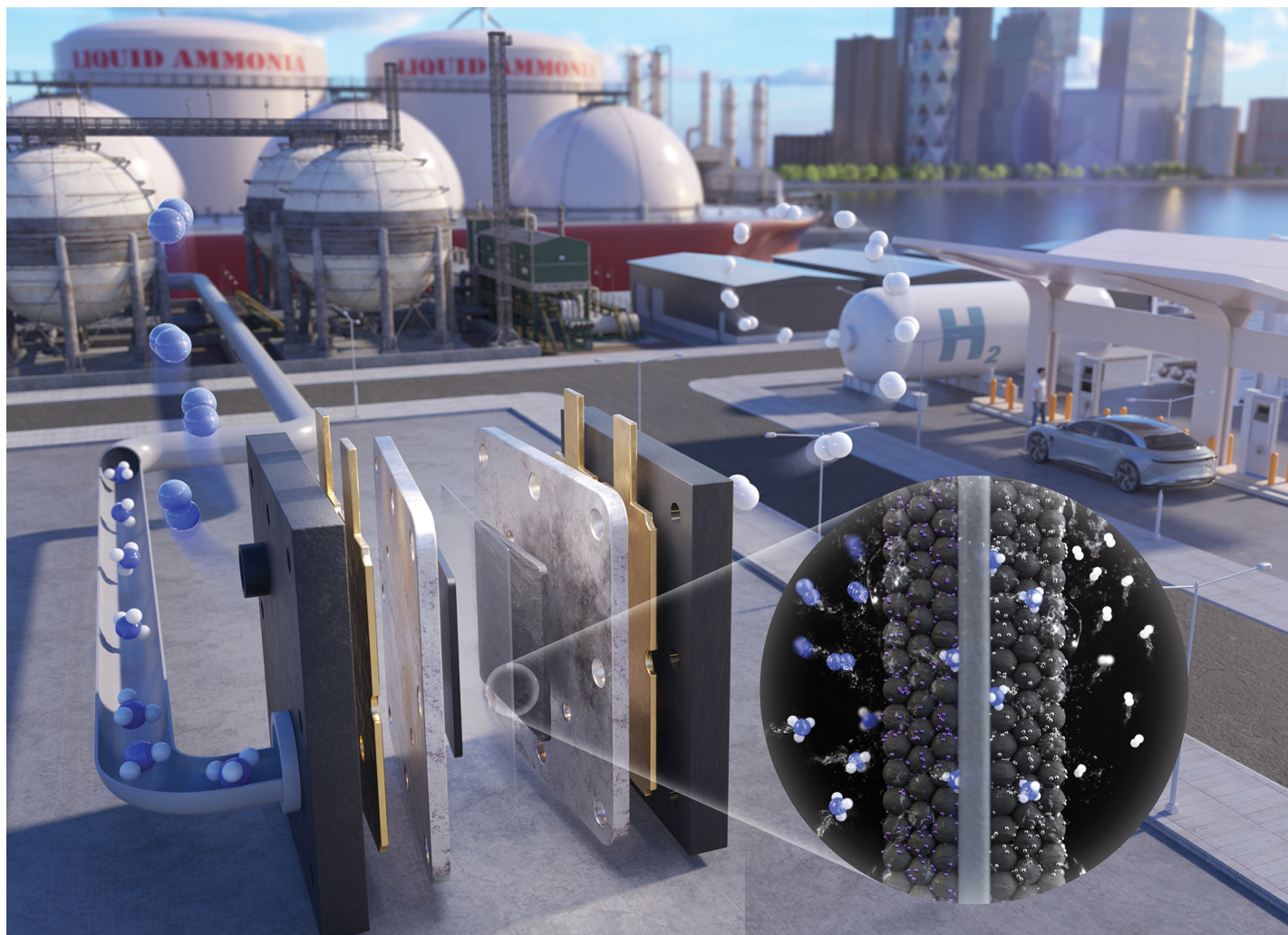




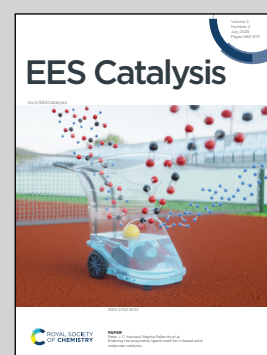
**Showcasing research from Prof. Chang Won Yoon's lab.,
Pohang University of Science and Technology,
Republic of Korea.**

**Direct electrolysis of liquid anhydrous ammonia for
continuous production of high-purity, pressurized
hydrogen at ambient temperature**

NH₃ is valued as a large-scale H₂ carrier due to its high H₂ storage capacities ($\geq 108 \text{ kg-H}_2 \text{ m}^{-3}$, 17.7 wt%) and simple liquefaction conditions (25 °C at 10 bar). However, producing high-purity and pressurized H₂ via catalytic NH₃(g) thermolysis requires high temperatures (>600 °C) with multiple purification and compression steps. Here, we present a proof-of-concept study using a zero-gap liquid anhydrous NH₃ electrolyzer comprising electrocatalysts and a cation exchange membrane that directly converts gap liquid anhydrous NH₃ into high-purity (>99.99%) and pressurized (>5.5 bar) H₂ at 10 °C with a Faradaic efficiency of >98.8%.

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See Chang Won Yoon *et al.*,
EES Catal., 2025, **3**, 694.