



Correction: Lithium-mediated electrochemical dinitrogen reduction reaction

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Correction for 'Lithium-mediated electrochemical dinitrogen reduction reaction' by Muhammad Saqlain Iqbal et al., *Ind. Chem. Mater.*, 2023, DOI: <https://doi.org/10.1039/D3IM00006K>.

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Fig. 1 Projected global ammonia demand growth from 2021 to 2030.² Copyright 2023, Precedence Research.

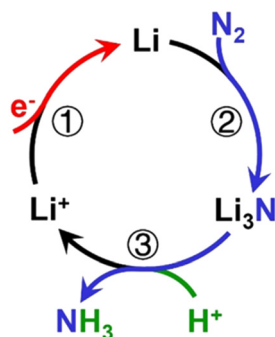


Fig. 2 Mechanism of catalytic recycling of lithium intermediates. Reproduced with permission.²³ Copyright 2021, Wiley-VCH.

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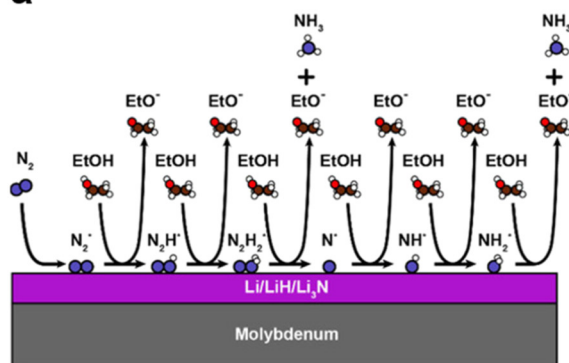
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a Heterogeneous Mechanism



b

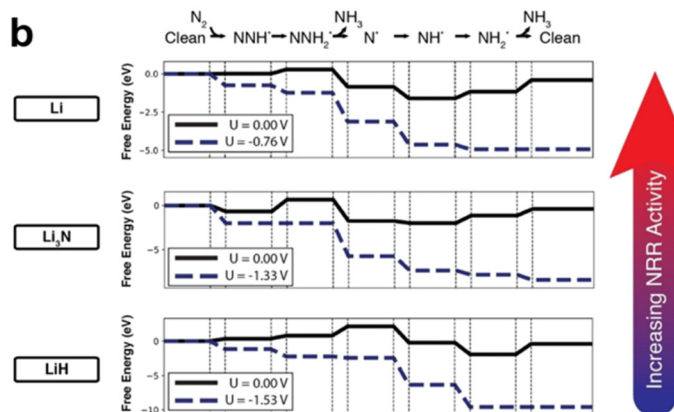


Fig. 3 (a) A 'Heterogeneous mechanism', in which there is a stable amount of lithium on the electrode at all times; (b) free energy diagram of NH_3 formation on the surfaces of Li, Li_3N , and LiH. The free energy diagram is represented through dash lines when the limiting potential is switched on. All of these surfaces are active for NH_3 synthesis. Reproduced with permission.⁴¹ Copyright 2020, Wiley-VCH.

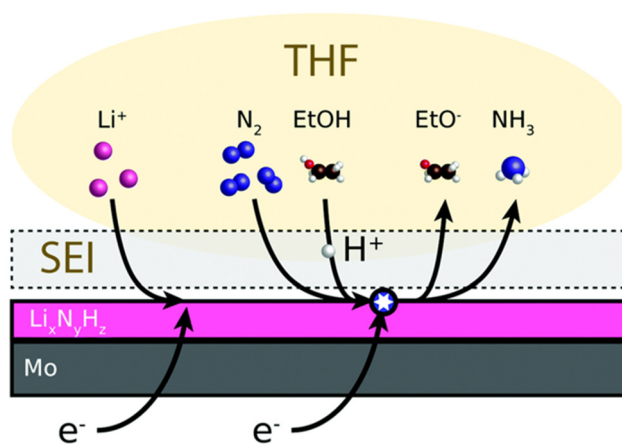


Fig. 4 Schematic of the mechanism for Li-e N_2 RR to NH_3 . A non-aqueous electrolyte (THF) contains lithium salt which is electrodeposited onto a metal electrode (Mo) as metallic Li. Reproduced with permission.³⁸ Copyright 2020, Royal Society of Chemistry.

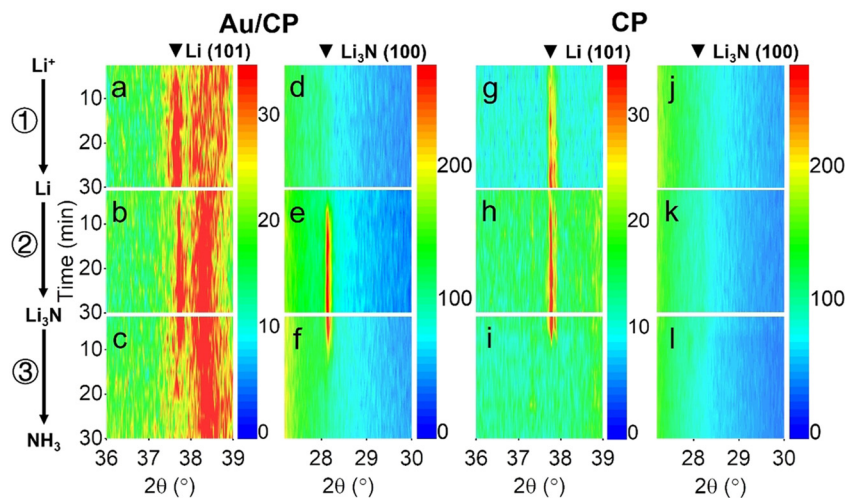


Fig. 5 *In situ* XRD contour maps of (a) and (d) Au/CP and; (g) and (j) CP under Ar atmosphere; (b) and (e) Au/CP and (h) and (k) CP under N_2 atmosphere without EtOH; (c) and (f) Au/CP and (i) and (l) CP under N_2 atmosphere with EtOH. Reproduced with permission.²³ Copyright 2021, Wiley-VCH.



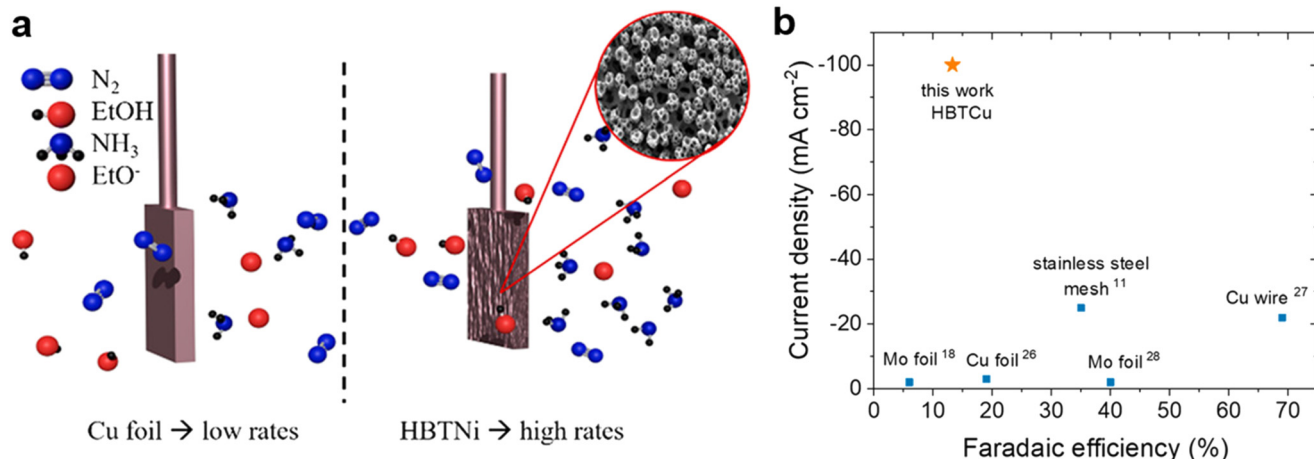


Fig. 6 (a) Illustration of Cu foil and HBT Cu for Li-mediated eN_2RR ; (b) comparison of HBT Cu and previously reported electrode materials in terms of current density and NH_3 FE. Reproduced with permission.⁵⁸ Copyright 2022, American Chemical Society.

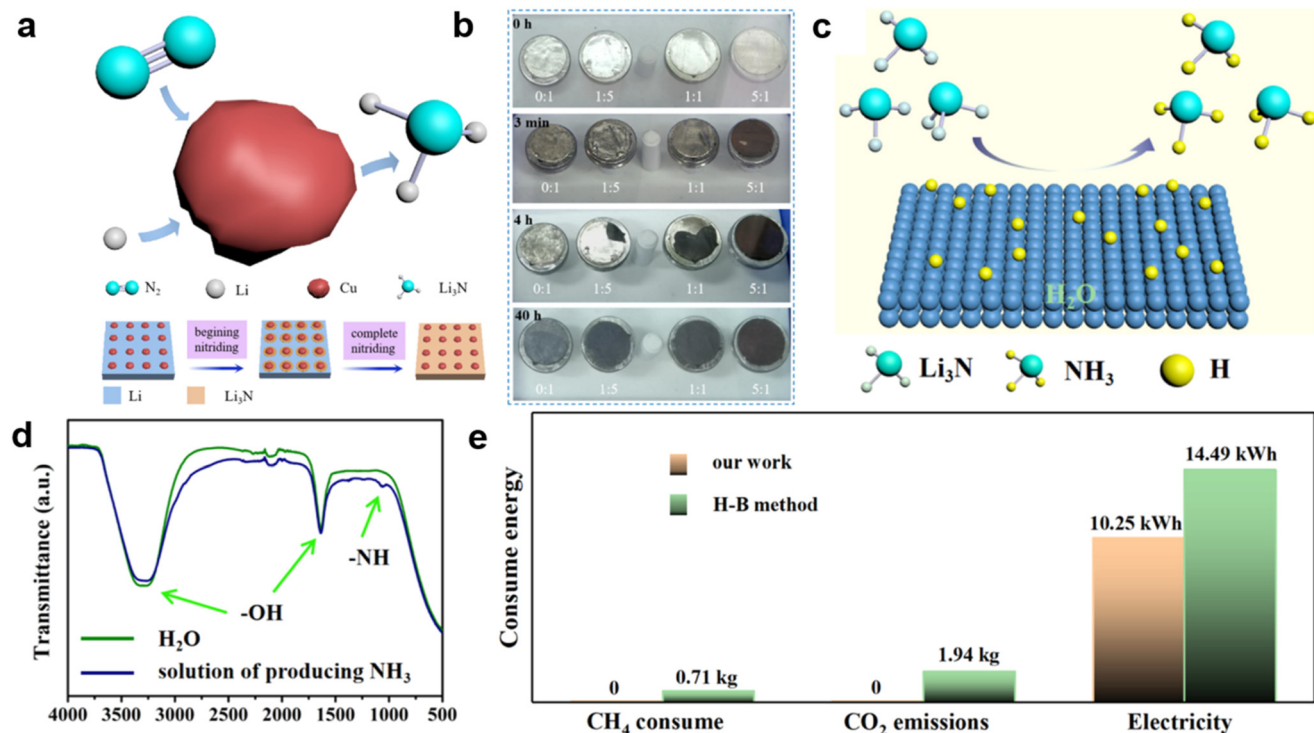


Fig. 7 (a) Illustration of Cu-catalyzed lithium nitridation (top panel) and steps for the formation of Li_3N/Cu from Li/Cu (bottom panel); (b) catalytic effect of Cu-to-Li mass ratio on the nitridation process; (c) illustration of NH_3 synthesis from the reaction of Li_3N and H_2O ; (d) infrared spectra of H_2O and the electrolyte solution after reaction; (e) comparison of this work with the H-B process in terms of energy consumption for production of 1 kg of NH_3 . Reproduced with permission.¹⁴ Copyright 2022, American Chemical Society.



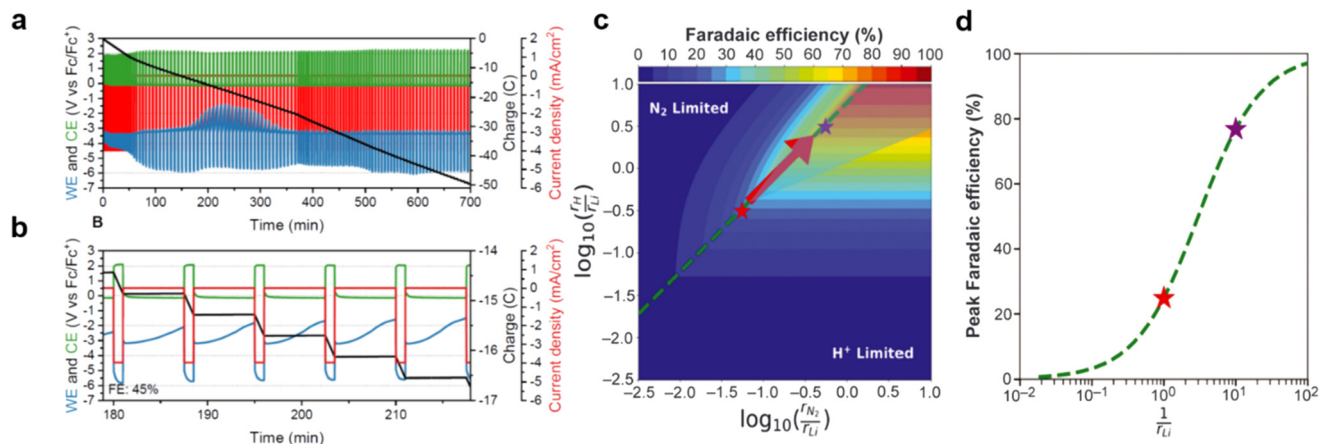


Fig. 8 (a) Cycling method between -2.0 and 0.0 mA cm^{-2} (red) for a total of 100 C of charge passed (black); (b) a close-up of the cycling; reproduced with permission.³⁸ Copyright 2020, Royal Society of Chemistry; (c) heatmap of the predicted FE against the ratio of N_2 to lithium (x axis) and proton to lithium (y axis) diffusion rates; (d) a one-dimensional plot of NH_3 FE cut along the optimal $r_{\text{N}_2}/r_{\text{H}}$ ratio. Reproduced with permission.⁵⁹ Copyright 2021, American Association for the Advancement of Science.

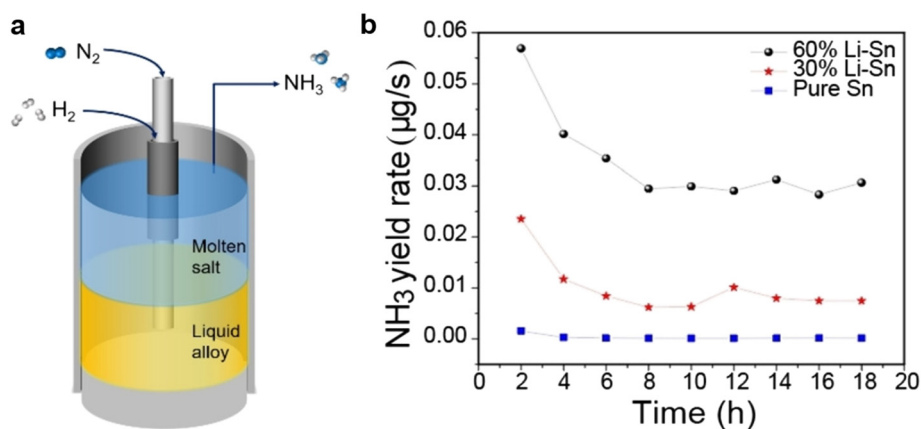


Fig. 9 (a) Graphical illustration of Li-eN₂RR containing Li-Sn alloy and molten LiCl-KCl salt forming a biphasic system; (b) NH_3 yield rate against electrolysis time on Li-Sn and pure Sn. Reproduced with permission.⁶² Copyright 2021, Wiley-VCH.

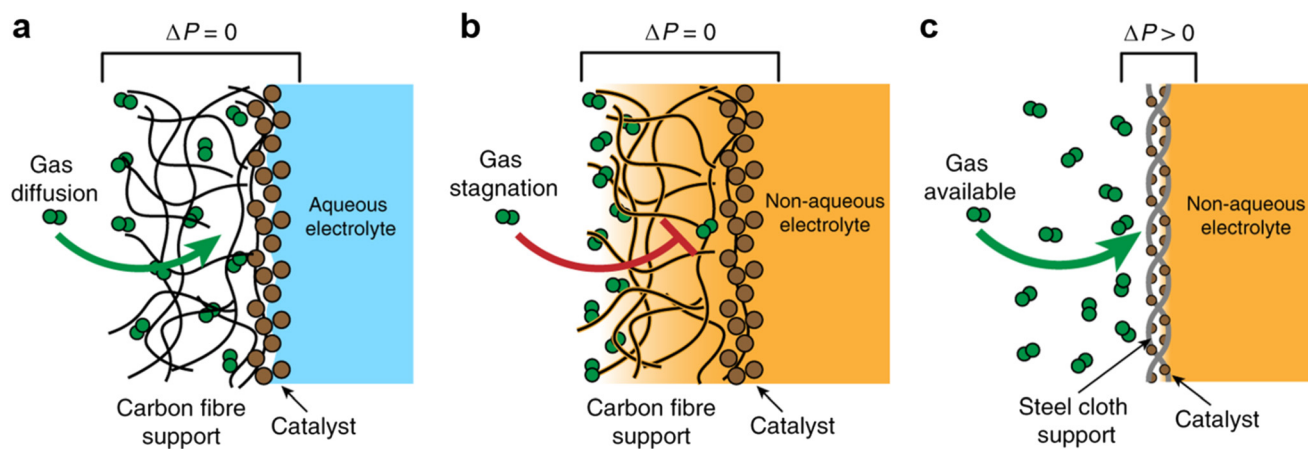


Fig. 10 (a) A hydrophobic GDE with an aqueous electrolyte; (b) a hydrophobic GDE with a non-aqueous electrolyte; (c) a catalyst-coated (SSC) GDE with a non-aqueous electrolyte. Reproduced with permission.²² Copyright 2020, Springer Nature.



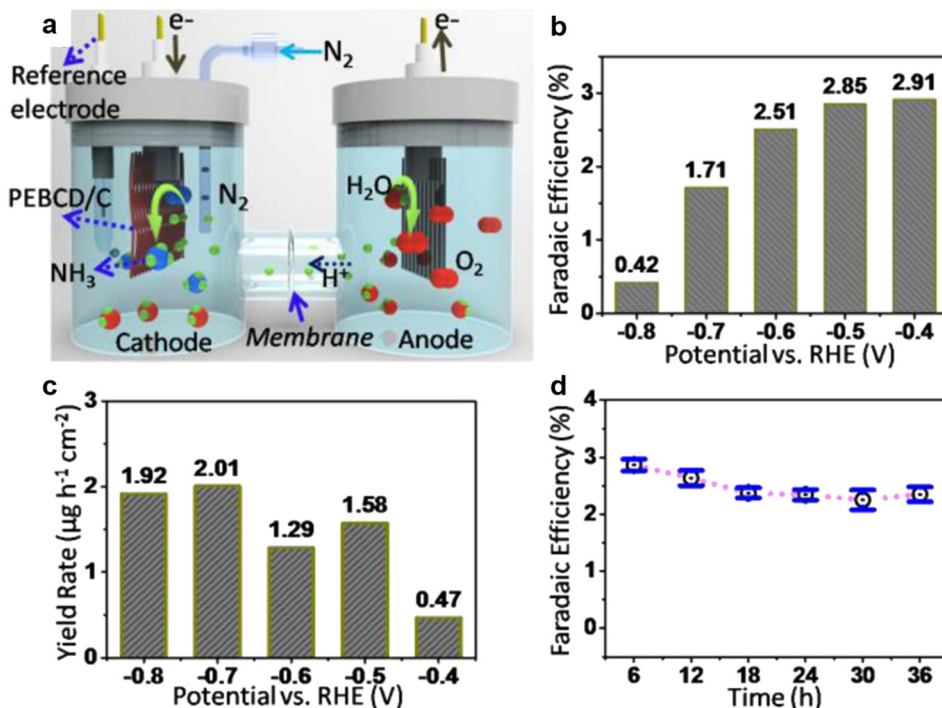


Fig. 11 (a) The graphic illustration of the configuration of the electrochemical cell for the eN₂RR process; (b) FEs of the Li⁺-PEBCD/CC catalyst at different potentials during the eN₂RR; (c) NH₃ yield rate against applied potential during the eN₂RR; (d) durability test results for Li⁺-PEBCD/CC. Reproduced with permission.³ Copyright 2017, American Chemical Society.

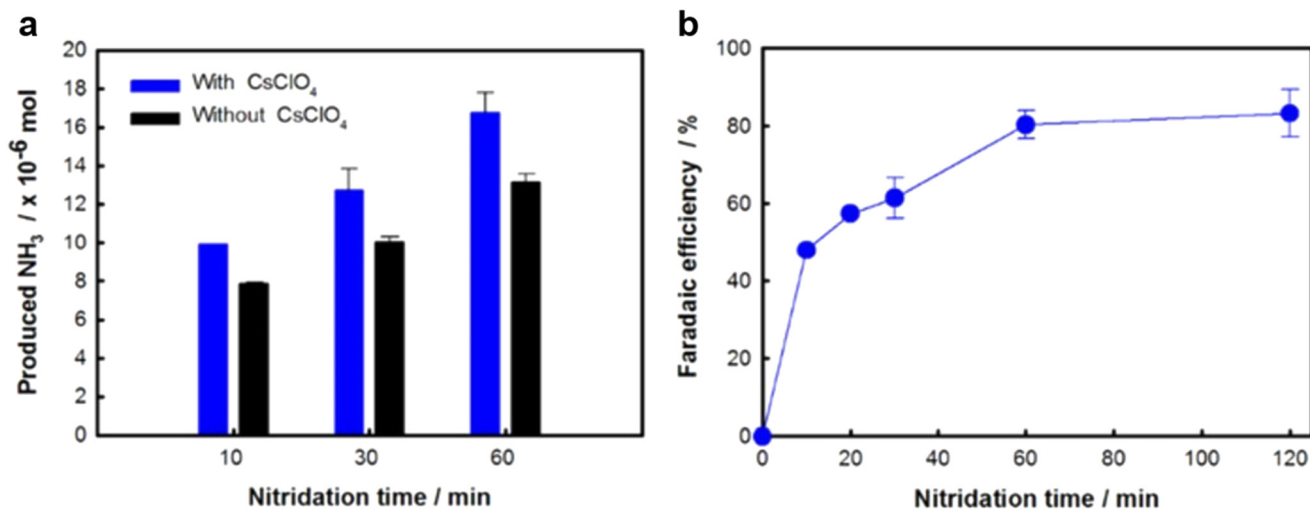


Fig. 12 (a) NH₃ yield and (b) NH₃ FE in the presence and absence of 0.03 M CsClO₄ at 220 °C over time. Reproduced with permission.⁸ Copyright 2018, IOP Publishing.



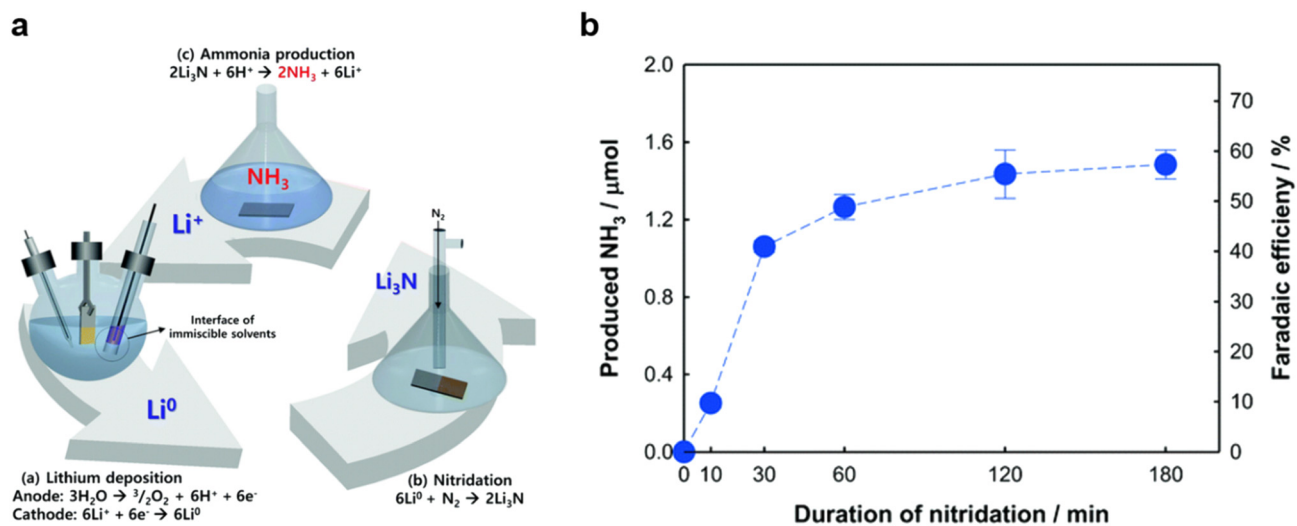


Fig. 13 (a) Schematic diagram and (b) NH_3 yield and FE of the biphasic hybrid catalytic system catalyzed by LiClO_4 (aq) and LiClO_4 -PMMA composite. Reproduced with permission.⁶⁶ Copyright 2019, Royal Society of Chemistry.

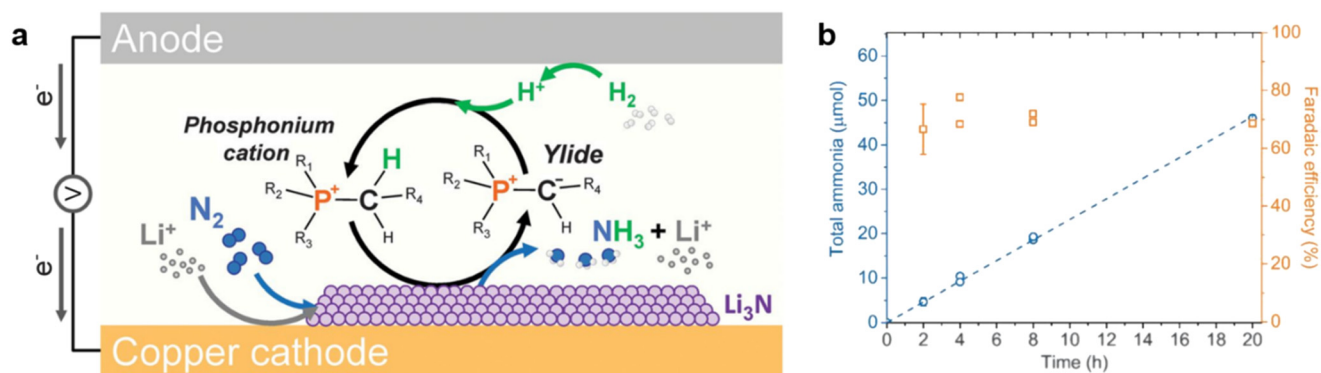


Fig. 14 (a) Schematic illustration of eN_2RR catalysis using a phosphonium salt; (b) NH_3 yield and FE as a function of time. Reproduced with permission.²⁴ Copyright 2021, American Association for the Advancement of Science.

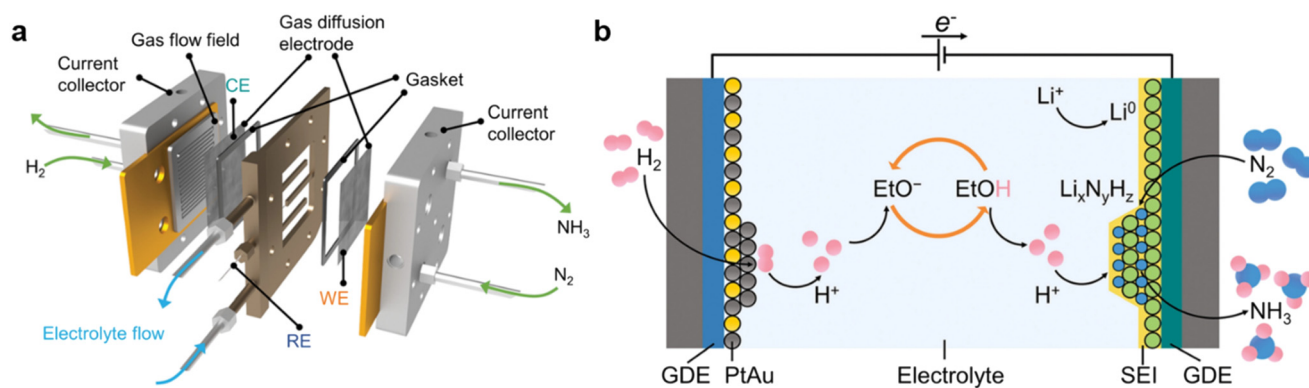


Fig. 15 (a) Expanded view of the continuous-flow electrolyzer configuration; (b) schematic process of the Li-NRR in a continuous-flow electrolyzer. Reproduced with permission.⁷² Copyright 2023, American Association for the Advancement of Science.

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