



Jupiter Ionics: Enabling Net-Zero Nitrogen

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JUPITER IONICS

The MacFarlane-Simonov research team has a long-standing interest in Green Ammonia via multiple pathways

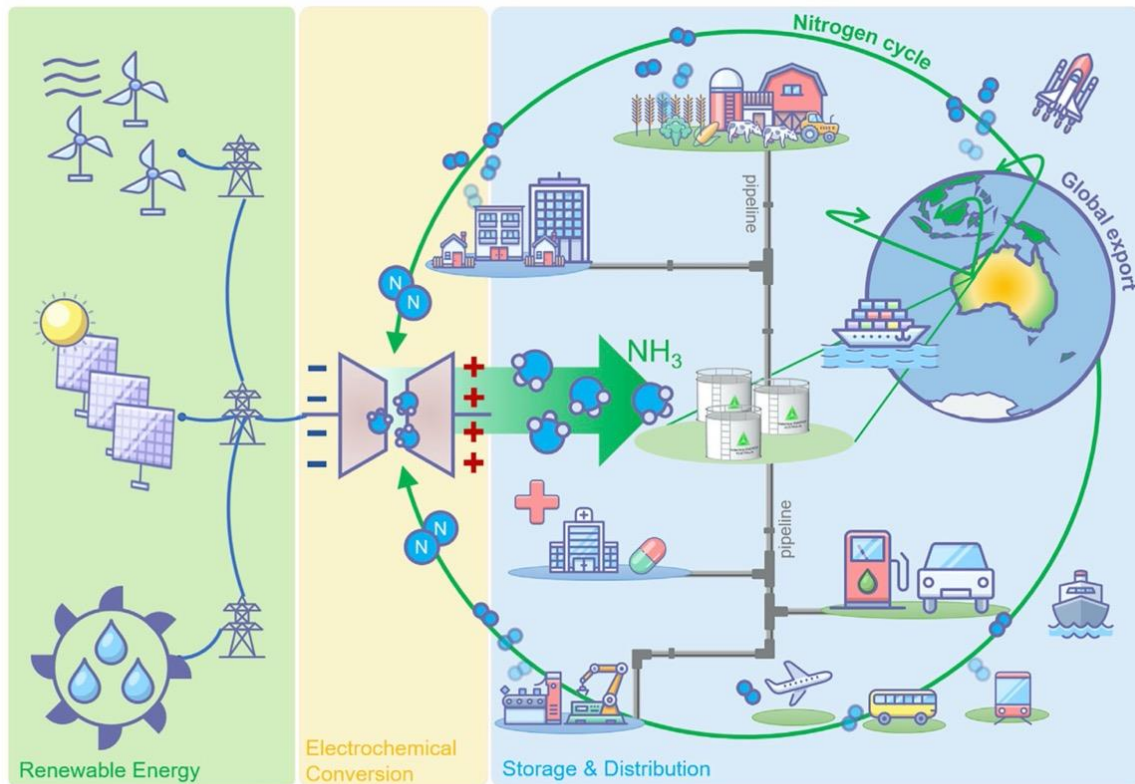


Figure 1. Vision of the "Ammonia Economy" in which the Energy Sources and Uses Are All Based on Ammonia

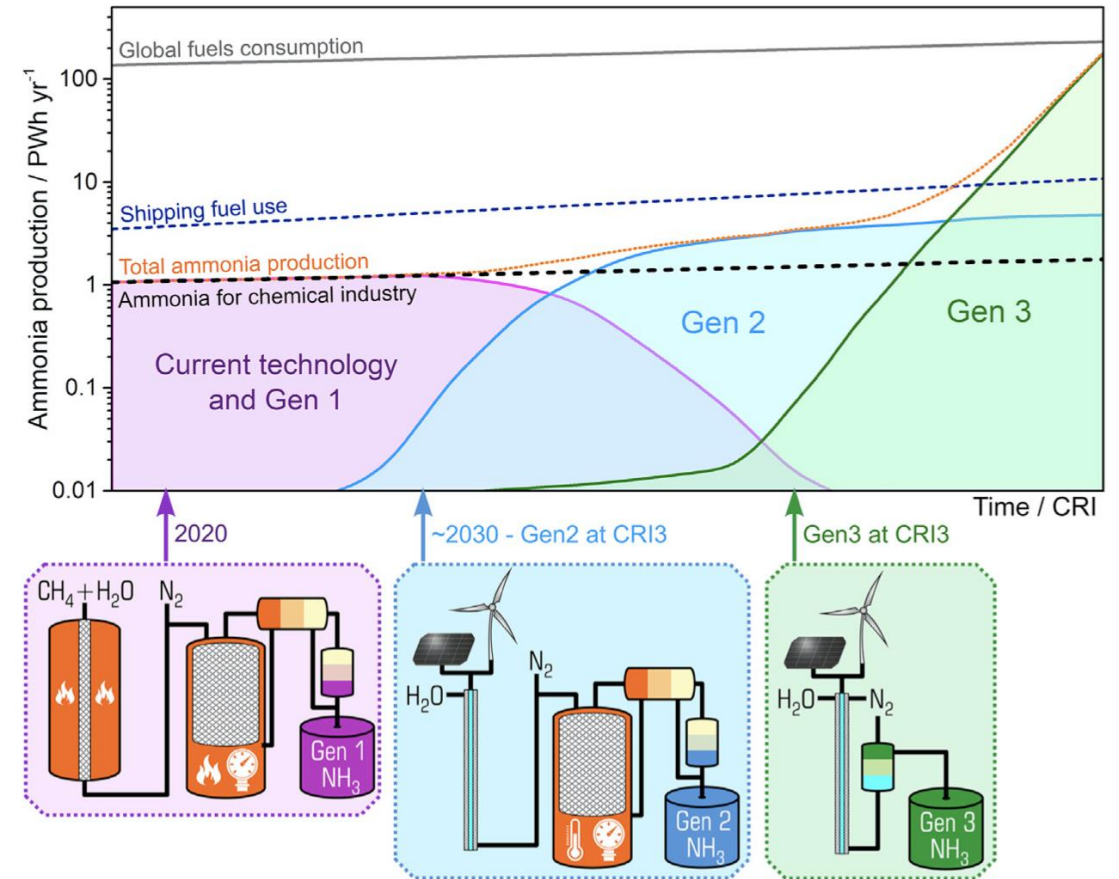


Figure 5. Ammonia Economy Roadmap Showing Current and Projected Contributions of the Current and Gen 1 (purple), Gen 2 (light blue), and Gen 3 (green) Ammonia Production Technologies

Introducing the Jupiter Ionics Team: a spin out developing breakthrough technology for electrochemical nitrogen reduction



nature awards
the spinoff prize

The Spinoff Prize Slam 2023
June 21, 2023
Free online event

Highly commended

in partnership with
MERCK



FALLING WALLS VENTURE



2023 **HORIZON PRIZE**

Monash Ammonia Team
Environment, Sustainability
and Energy Horizon Prize:
John Jeyes Prize

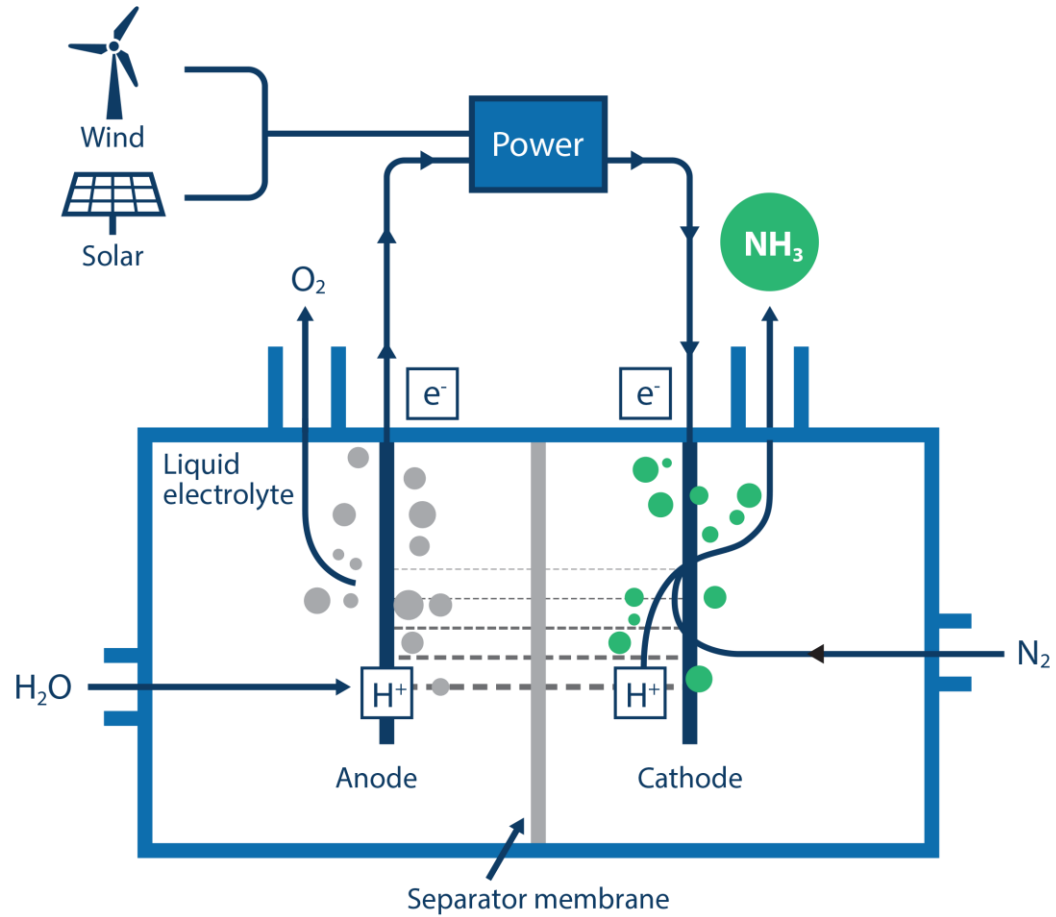
#RSCPPrizes

**ROYAL SOCIETY
OF CHEMISTRY**

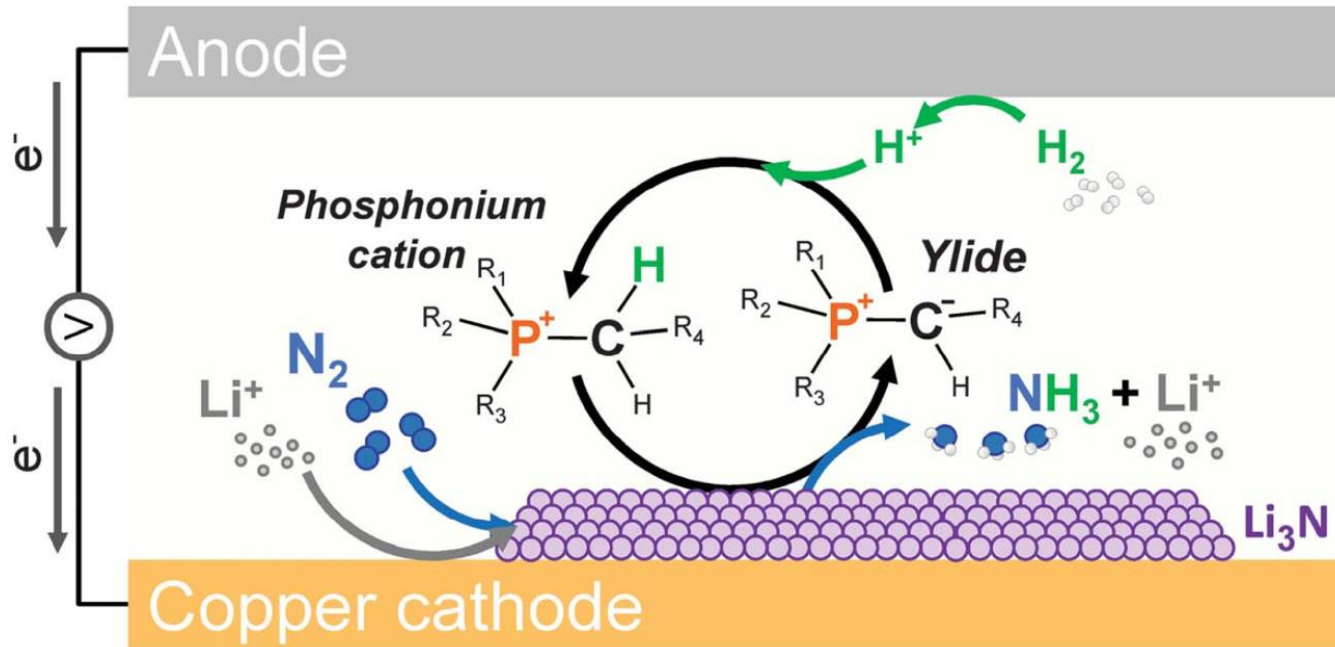
**GOVERNOR OF VICTORIA
STARTUP AWARDS**



We are developing a direct electrochemical pathway to green ammonia

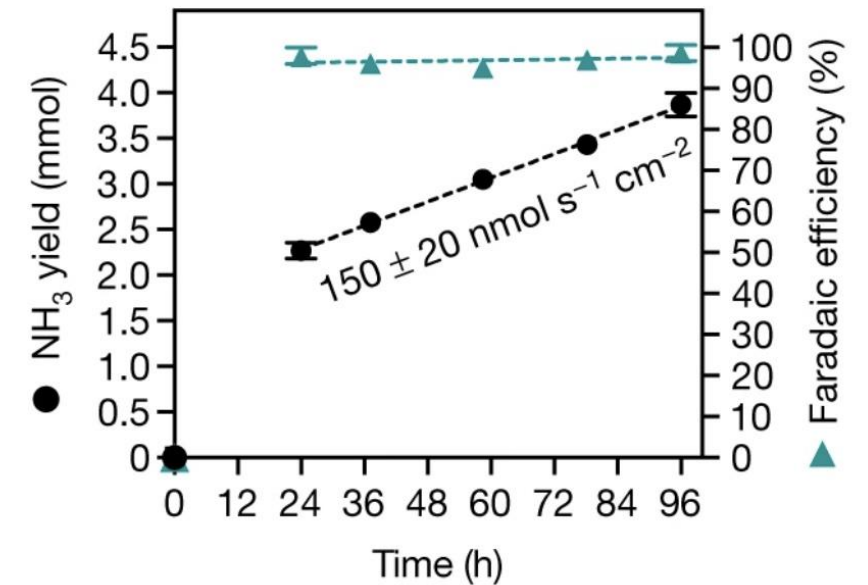


Key elements of our technology package enabling electrochemical NRR are a proton "shuttle" and the right electrolyte



Suryanto et al *Science* 2021
<https://science.sciencemag.org/content/372/6547/1187>

Complete selectivity.....



Du et al *Nature* 2022,
www.nature.com/articles/s41586-022-05108-y

Why do we think the electrochemical approach will be an important part of a Green Ammonia future?

- Powered by green electricity -> no emissions at point of production
- Single step -> less complex system requirements, lower maintenance
- Flexible operation -> handles variable renewables (e.g. wind & solar) well
- Modular process -> deployable at a range of production scales, and in a wide range of locations
- Stable input costs -> predictable output costs

We are grateful to our many partners who are helping push us forward

- **Investors: Roger Gillespie, John Clifford, Monash University, Tenacious Ventures**
- **Core R&D partner: Monash University**
- **Engineering/FEED partner: Synertec**
- **Product development and prototyping partners (as part of Aust Govt CRC-P grant):**
 - **Fortescue Future Industries**
 - **Wesfarmers Chemicals, Energy & Fertilisers**
 - **SJDC Produce**
- **Continuing to engage with potential additional partners**



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Australian Government
Department of Industry, Science,
Energy and Resources

AusIndustry
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Centres Program

Questions

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