

H1 2023 Results Presentation

Interim Results ending 31st December 2022

March 2023



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Contents

1. Presentation team
2. Operational & financial highlights
3. Our business
4. Our technologies
5. Financial results
6. Summary and outlook

Presentation Team



John Wood
CEO & Executive Director



Amit Gupta
CFO & Executive Director

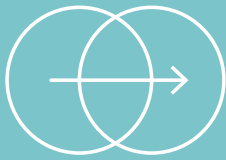


Thomas Maschmeyer
Non-Executive Director,
Founder & Principal Technology Advisor

Operational and Financial Highlights



1,200 ZnBr₂ cells manufactured for internal battery system testing and Acciona Project



Updated ZnBr₂ match to market completed, faster discharge applications development focus



Gelion's half-cell sulfur cathode technology has reached over 300 usage cycles at less than 20% capacity degradation.



Synergistic acceleration, extension and protection of Gelion's LiSiS technology via strategic acquisition of Johnson Matthey Lithium Silicon Sulfur IP Portfolio (patents, manufacturing design, test data)



Gelion selected by New Energy Nexus and EnergyLab's Supercharge Innovation Acceleration Program



£14.4m
Cash and cash equivalents and term deposits

(June 2022: £17.0m)

Our Business



Gelion's target battery markets

Lead-Acid (PbA) batteries



Market Growth at a steady increase ~2% CAGR
490GWh (2030)



1.6v cells

Lithium-ion batteries



Market Growth will ACCELERATE at ~46% CAGR
1.3TWh (2030)



LiSiS battery schematic

Source: AVICENNE Energy, BOI Information (Confidential)

Our Technologies



Gelion ZnBr₂ batteries



Cell manufacturing and Acciona Energia Project

- Manufactured 1200 ZnBr₂ cells for internal test program and Acciona Project deployment
- Single string 2kWh system tested to specification
- Upgraded Battery Management System (BMS) hardware complete, undergoing testing on battery systems
- Commissioning upscaled 12.6 kWh test system
- Extending to full scale system for deployment in 2023.



Testing power electronics



Battery Management System



Battery cells and systems being installed into racks

Zinc bromide battery testing

Testing insights from Gelion's pilot battery manufacturing program

- Novel ZnBr_2 fast discharge mode, minimal capacity fade advantage over lead acid technologies to be rigorously tested and verified.
- Dendrite management and prevention to be optimised for ad hoc cycling profiles including using top of float charging regime.
- Lower cost electrode material options identified (to replace titanium) to be tested and validated.
- Based on confirmation in above testing program, Gelion to adjust initial market focus towards faster discharge lead acid applications needing higher energy capacity.



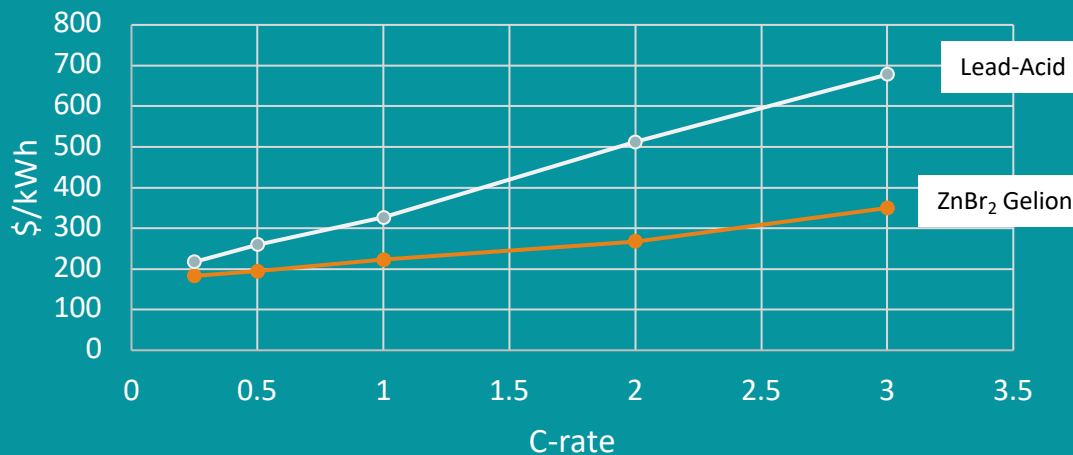
The lead acid market is currently double the capacity size of the lithium-ion market

Match to Market Update

Target applications

UPS Data Centre (US\$2.9B Market)	Telecom (US\$3.3B Market)
Motive (>US\$5.5B Market)	ESS and other stationary (~US\$2.0B market)

PACK LEVEL COST (USD\$/kWh) BY C-RATE



Gelion zinc bromide

- Zinc bromide batteries to provide a competitive alternative to lead-acid batteries, solving key limitations of their performance in specific applications.
- We anticipate it is well-suited to and highly competitive for high-power discharge applications currently serviced by the lead-acid market.
- Gelion's technology is designed with safety and recyclability in mind, it has been engineered to minimise the risk of thermal runaway, which can cause fires and explosions.
- Gelion's batteries can be transported at zero state of charge, reducing implementation costs and improving safety.

2023 Outlook – Zinc bromide



R&D to address performance enhancement needs identified from testing, early manufacturing and match to market



In-house and in-field battery system test programs



Preparation for battery testing and certification process

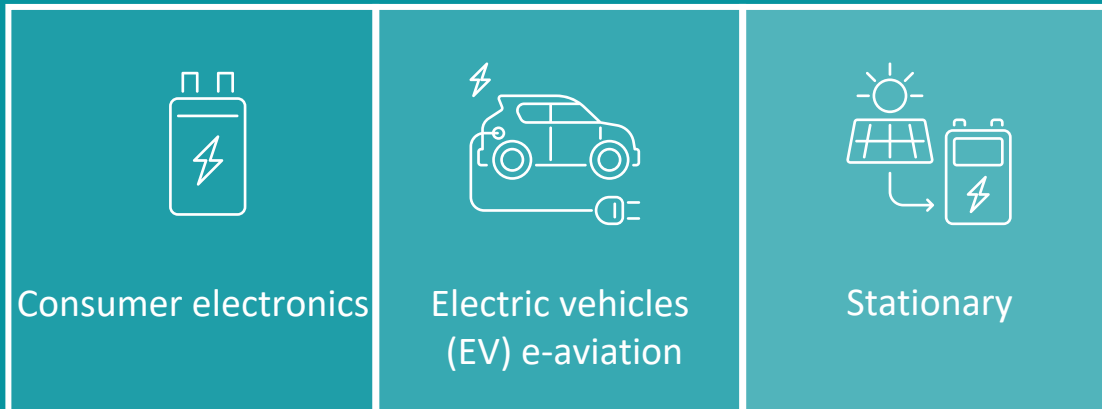


Lithium Silicon Sulfur (LiSiS)

Strategic Acquisition:
**World's leading Lithium
Sulfur
IP Portfolio**



Lithium-ion battery markets



Source: AVICENNE Energy, BOI Information (Confidential)

Gelion LiSiS

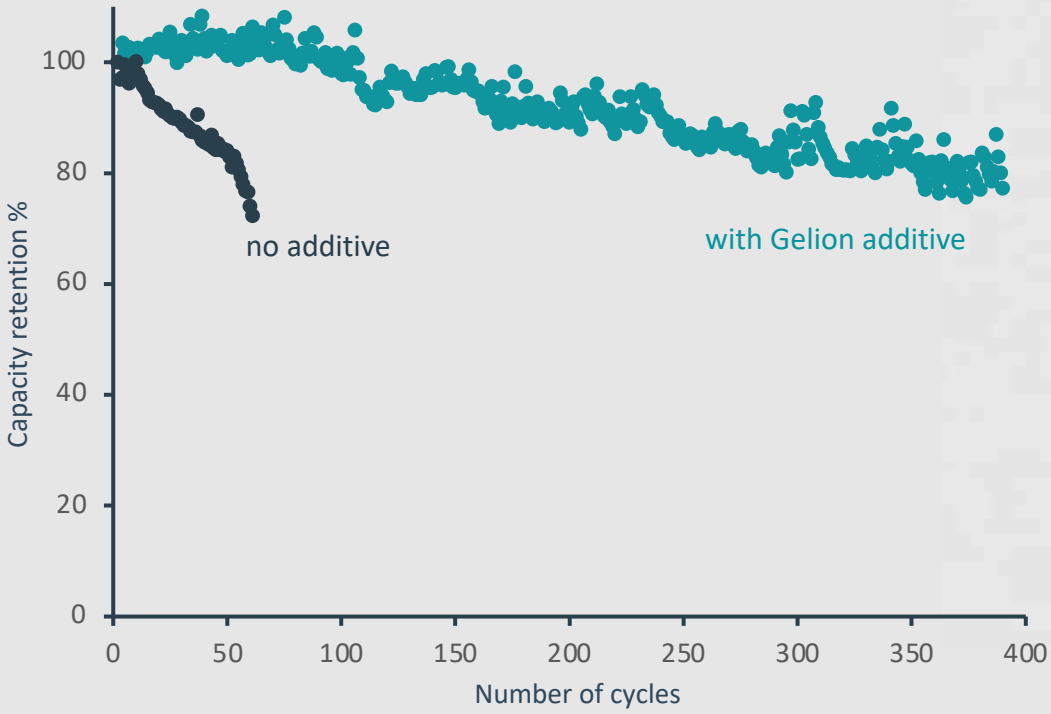
- Gelion is at the global forefront of advanced LiS cathode and LiSiS battery development
- Gelion's LiSiS IP portfolio is world leading
- Improve EV range performance, enable significant e-aviation, increase capacity for stationary storage and unlock new application opportunities



Gelion LiSiS: Solving the technology challenges

Gelion's sulfur cathode technology has now reached more than 300 cycles with less than 20% capacity fade in half-cells. This result proves the viability of Gelion's additives.

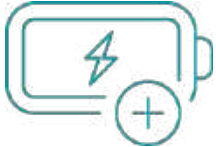
Gelion is progressing rapidly with electrolyte development and strategic partnering for silicon anode optimisation.



LiSiS Pouch Cell Schematic

Gelion LiSiS advantages

Significant improvement in battery energy density, cost and safety



Double the energy density

Gelion’s LiSiS is targeting double the gravimetric energy density of current li-ion batteries.



Cost savings 43%²

Gelion estimate LiSiS can achieve **43%²** cost reduction relative to a lithium-ion NMC¹ cell pack, reducing to **US\$87/kWh²**.



Improved safety

Sulfur cathode is stable at high temperatures, minimising risk of thermal runaway related fires and explosions.



Abundant sulfur supply

Sulfur is a low cost, abundant global resource. All li-ion cathodes (2.7 TWh³ by 2030) could be replaced with sulfur cathodes using just 1.1%² of current annual sulfur supply.

¹Bloomberg NEF: Bottom-up Battery Cost Model (BattMan 2.0.1)

²Gelion Management techno-economic modelling

³BNEF, Long-term Electric Vehicle Outlook 2021

Solving the LiSiS battery puzzle

World leading LiSiS IP Patent portfolio

Gelion's newly acquired IP portfolio (82 patent families) from Johnson Matthey & University of Sydney will accelerate this journey.

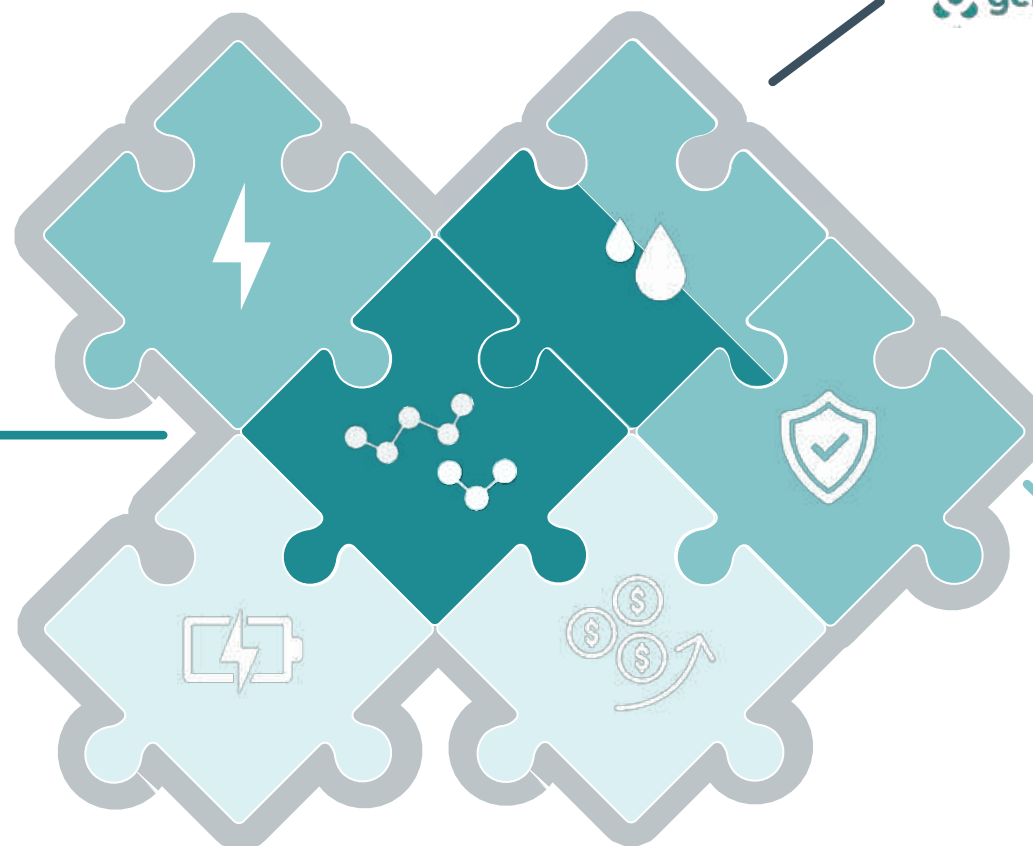
Gelion's competitive IP moat is extended and secured



Polysulfide shuttling

The central problem for sulfur cathode commercialisation is managing sulfur intermediates within the battery during charge operation.

Gelion's technology breakthrough kickstarted development to bring low cost, safe, and energy dense batteries to the market to help secure global energy freedom.



Electrolyte engineering

Novel electrolytes must be developed that enable stable cycling of both sulfur and silicon simultaneously.



Solid state capability

New solid state electrolyte technology will enhance compatibility of Gelion's sulfur cathodes with lithium metal batteries in the future.

Supercharge Australia Innovation Challenge

Gelion selected by New Energy Nexus (US) and EnergyLab's (Australia) Supercharge program as a high impact next generation technology to accelerate the build out of the lithium battery ecosystem.

“

Danny Kennedy, Chief Energy Officer New Energy Nexus commented:

“New Energy Nexus and our partners established the US Lithium Bridge, a 600+ company ecosystem, to target US\$33 billion in lithium battery revenues and 100,000 new jobs by 2030.

New Energy Nexus and EnergyLab are bringing these learnings to Australia, including developing a suite of startup support programs locally to accelerate the build out of Australia's ecosystem with candidate high impact, next generation technologies like Gelion's lithium-silicon-sulfur battery development.”

Financial Results



H1 FY23 results

Financial Performance

£m	H1 FY23	H1 FY22
Total income	-	-
Administrative expenses	(2.1)	(1.1)
Research and development expenditure	(2.3)	(1.1)
Adjusted EBITDA loss*	(4.4)	(2.3)
Listing & other associated costs	-	(4.5)
Share Based Payments	(0.2)	-
Depreciation & amortisation	(0.2)	(0.1)
Operating loss	(4.8)	(6.9)

Key highlights

- H1 FY23 Adjusted EBITDA loss in line with expectations
- Increase in administrative expenses reflecting the additional costs of being a public company including additional headcount and governance expenses
- Increase in R&D expenditure reflecting investment in:
 - strengthening our capability to support research and development programs (chemistry and manufacturing);
 - ongoing and continuous R&D activities; and
 - manufacturing and BMS activities related to the Acciona trial. In early February, manufacturing of cells were completed with the team working on BMS now. As such, these level of expenses are not expected to be repeated in H2 FY23

* Adjusted EBITDA loss (£4.4m) = Operating loss (£4.8m) less Share-based payments (£0.2m) and depreciation (£0.2m).

Strong balance sheet: Significant cash position & nil debt

Balance sheet

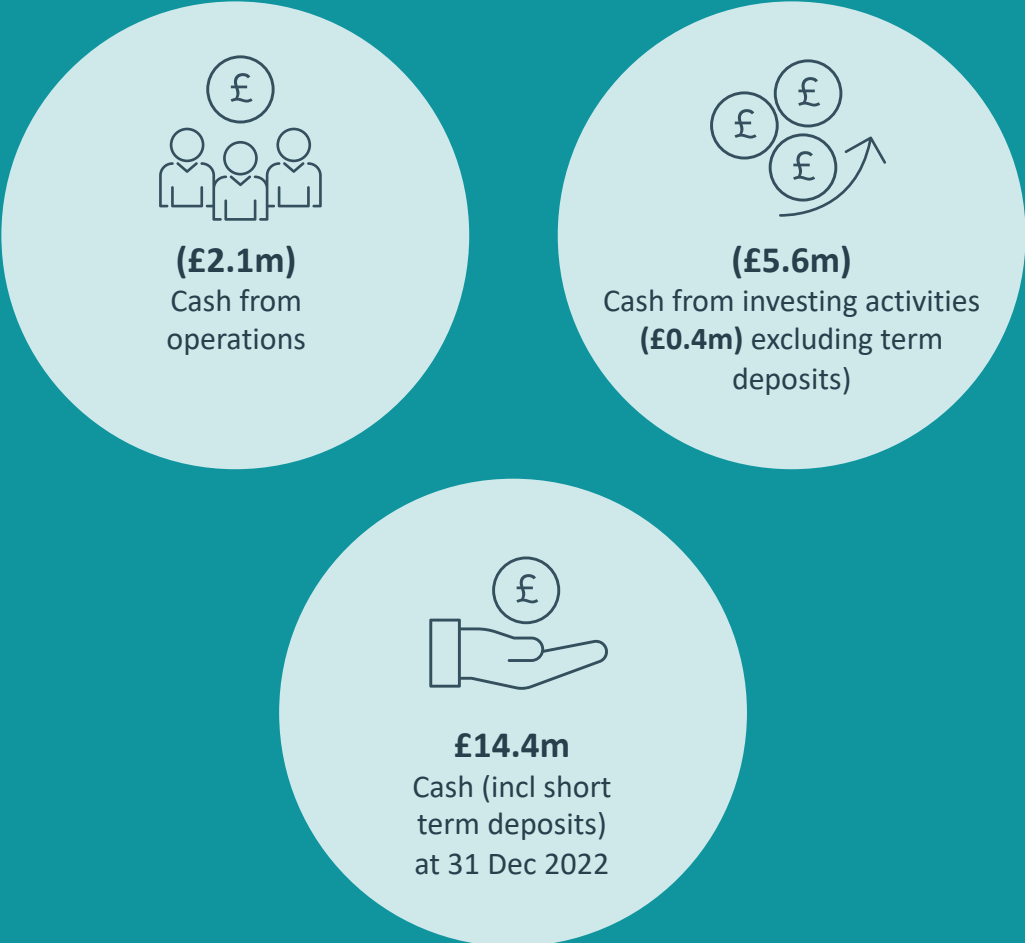
£m	31-Dec-22	30-Jun-22
Cash and cash equivalents (incl. term deposits)	14.4	17.0
Other receivable	0.4	2.2
Intangible assets	0.4	0.4
Property, plant and equipment	1.3	1.0
Trade and other payables	(1.4)	(0.9)
Net assets	15.1	19.7

Key highlights

- Cash and cash equivalents (incl. term deposits) of £14.4m. Net decrease in cash from June 2022 reflecting funds used in operations and investment in PP&E
- Successfully received £1.8m of R&D tax incentives (RDTI) in November 22
- Nil debt at 31 December 2022
- Net assets of £15.1m at 31 December 2022
- Continue to remain well capitalized even after IP acquisition from Johnson Matthey with net cash outflow of c.£3.0m

Substantial cash available to fund development activities

Cashflow (£m)



Key highlights

- £2.1m used to fund the operations of the business
- £5.6m of cash outflows from investing activities include £5.2m of short-term investments (term deposits)
- Cash and cash equivalents (incl. term deposits) of £14.4m at 31 December 2022.

Conclusion



Summary and outlook

2023

- Progress technology readiness development, pathway for both technologies
- Leverage novel ZnBr_2 advantages focusing development and test of fast discharge high capacity and lower cost electrode
- LiSiS leverage expanded IP portfolio to accelerate development including optimisation of polysulfide shuttling mechanism and electrolyte compatibility

2024

- Preparation for advanced in-field ZnBr_2 battery testing and certification process
- Progress LiSiS match to market, with industry partners
- Test and validate LiSiS multi-layer full cell prototype
- Seek government funding for scaled up multi-MWh capacity of LiSiS cells in 2025 for partner test programs leading to anticipated offtake/ licensing



Q&A



Thank you



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Appendix



Lithium Silicon Sulfur Battery

Building the world's best battery

March 2023

Purpose

Advance energy storage to achieve Global Energy Freedom

Mission

To deliver 2 X gravimetric energy density, higher safety and lower cost lithium batteries, 4-5 years earlier than alternate pathways.

Impact & value

- We believe this is of significant geopolitical economic competitiveness and strategic importance
- Cut 4-5 years out of the timeframe for the industry to achieve climate targets
- Manufacture GWh of batteries in Australia, and selected additional countries.
- Export complete batteries overseas not just “dig and ship” resources

The right team



**Non-Executive Director,
Founder & Principal Technology Advisor**



John Wood, CEO and Gelion team

Market applications of next-generation batteries

Higher energy density batteries will power electric vehicles further.

Gelion's market opportunity

- Targeting the high gravimetric energy density mobility markets.
- Initially targeting Defence and Industrial drones and e-aviation.
- Moving to heavier e-trucks, buses, and passenger EVs.

**EV battery market forecast
US\$276 billion¹ by 2030.**

¹Precedence Research 2023



Drones



Trucks



Electric Aviation



Cars

Two key technology challenges to solve

The next generation of high energy density lithium based batteries, Lithium Silicon Sulfur (LiSiS) need to solve two key technology challenges :-

\$13

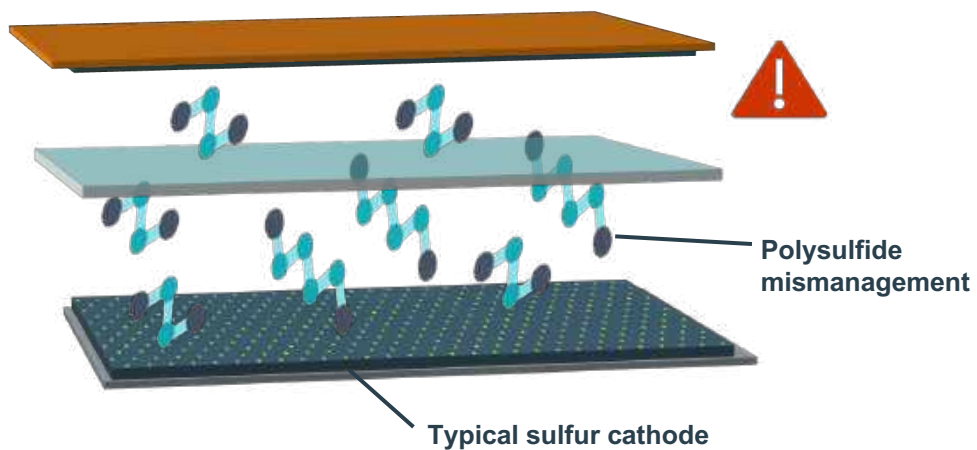
1. **Polysulfide shuttle** which corrodes the anode, preventing lithium sulfur batteries from lasting more than 50-100 cycles, rendering them uncommercial.
2. **Electrolyte compatibility** to enable silicon/graphite anode to operate successfully with sulfur cathode.

1. Gelion polysulfide management

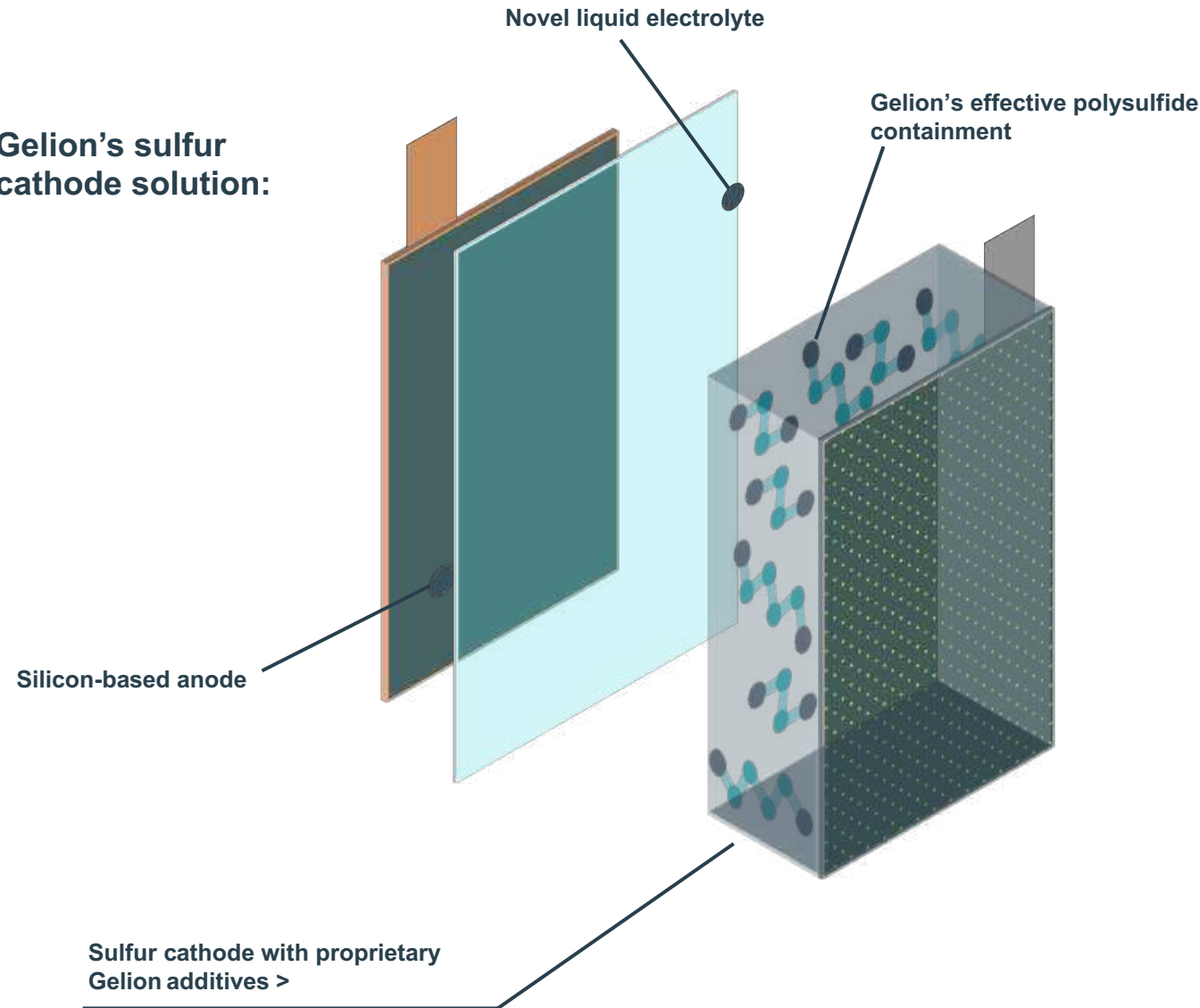
A proprietary cathode formulation paired with a novel electrolyte allows for effective polysulfide management leading to longer cycle life

Typical sulfur cathode challenges:

- Typical sulfur batteries (no additives) suffer from polysulfide shuttling.
- Sulfur dissolves in the electrolyte and diffuses through the battery.
- This causes damage to the battery leading to poor charging efficiencies causing short lifetimes of below 100 cycles.



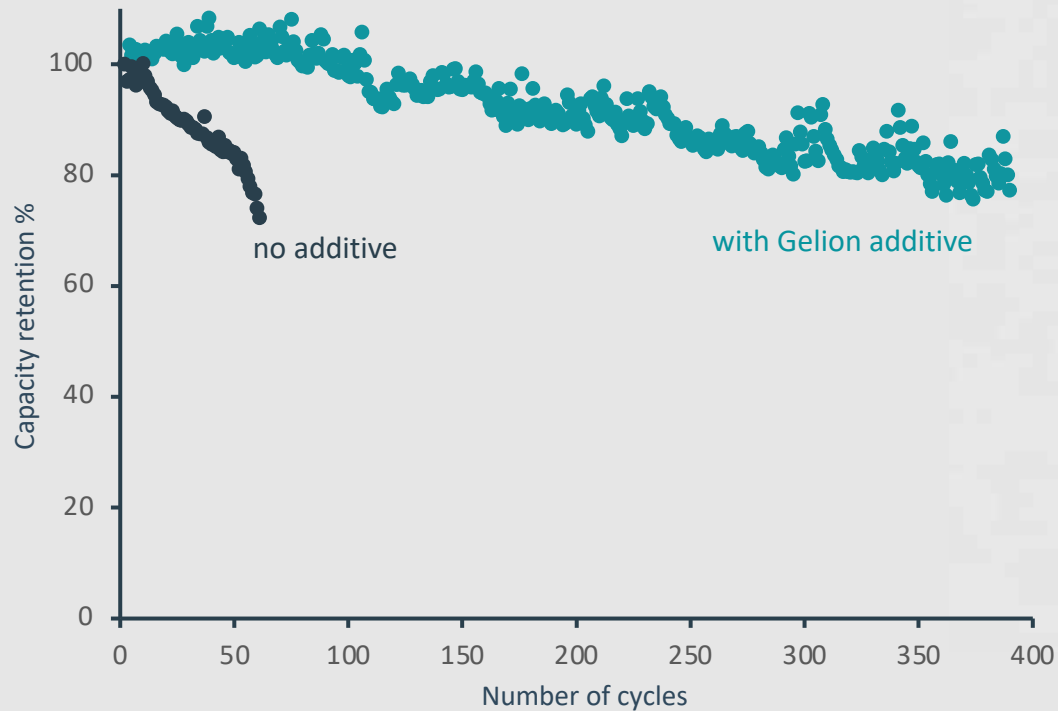
Gelion's sulfur cathode solution:



Gelion LiSiS: Solving the technology challenges

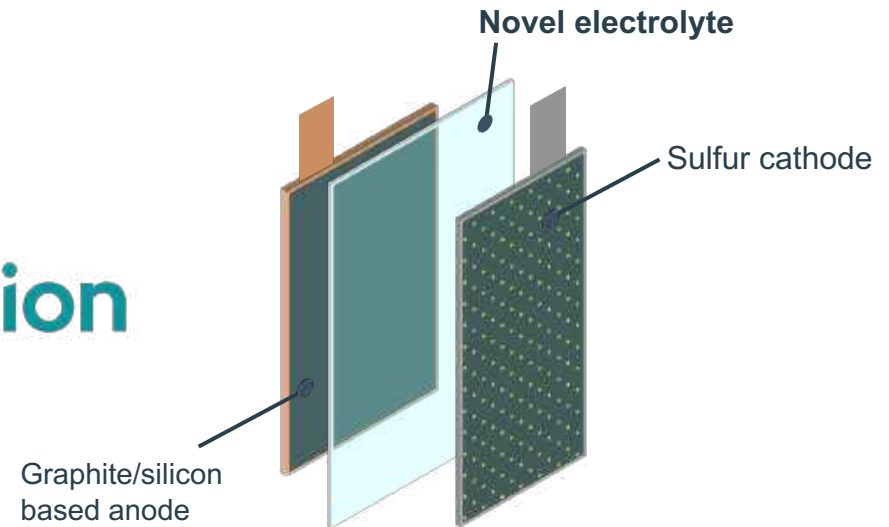
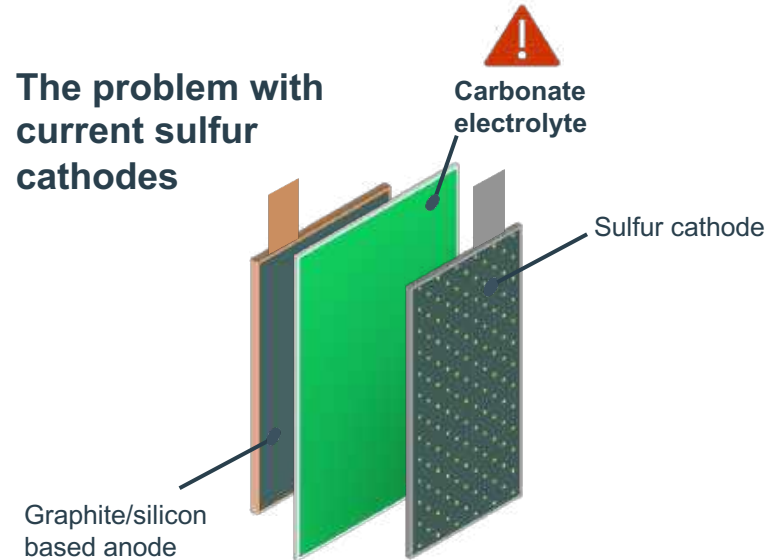
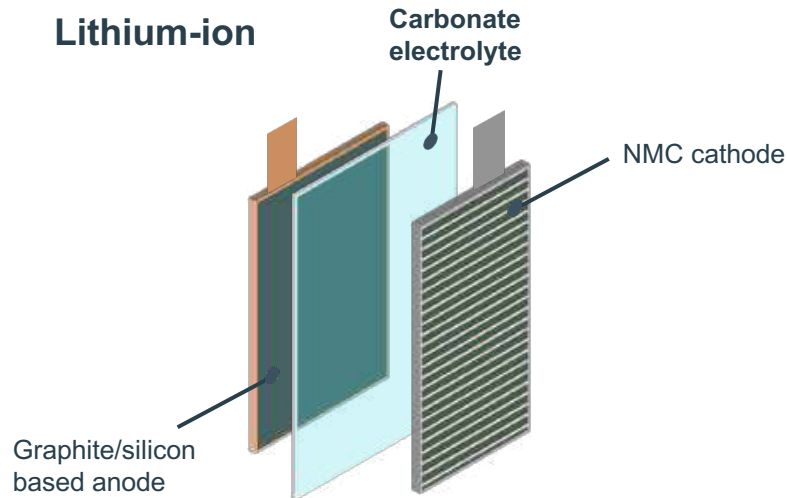
Gelion's sulfur cathode technology has now reached more than 300 cycles with less than 20% capacity fade in half-cells. This result proves the viability of Gelion's additives.

Gelion is progressing rapidly with electrolyte development and strategic partnering for silicon anode optimisation.



LiSiS Pouch Cell Schematic

2. Electrolyte compatibility



Development of a **novel electrolyte**

- Sulfur is not compatible with existing lithium-ion electrolytes (carbonate based) as they react causing degradation, causing immediate cell failure (within a few cycles).
- While other electrolytes (ether-based) currently exist for sulfur cathodes, they are not however compatible with graphite/silicon anodes.
- Gelion is developing novel electrolyte formulations that will be compatible with existing anodes and sulfur cathodes.

Gelion LiSiS advantages

Significant improvement in battery energy density, cost and safety



Double the energy density

Gelion's LiSiS is targeting double the gravimetric energy density of current lithium-ion batteries.



Cost savings 43%^{1,2}

Gelion estimate LiSiS can achieve **43%**^{1,2} cost reduction relative to a lithium-ion NMC¹ cell pack, reducing to **US\$87/kWh**².



Improved safety

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Abundant sulfur supply

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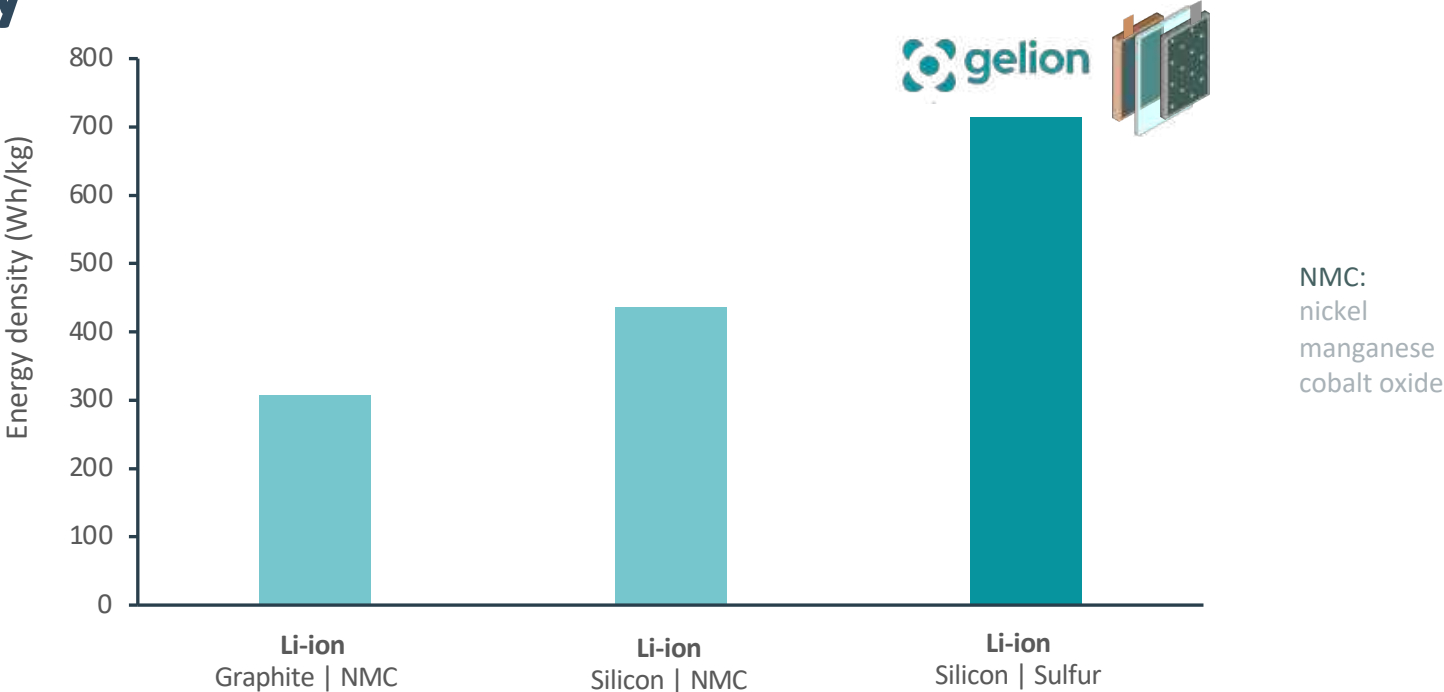
¹Bloomberg NEF: Bottom-up Battery Cost Model (BattMan 2.0.1)

²Gelion Management techno-economic modelling

³BNEF, Long-term Electric Vehicle Outlook 2021

Double the energy density

By enabling advanced sulfur cathodes with silicon based anodes, Gelion is developing safe, high to ultra-high energy density batteries.



Lithium-Silicon-Sulfur

High power silicon anode with sulfur cathode, dendrite-free ultra-high density cells to unlock unique applications.

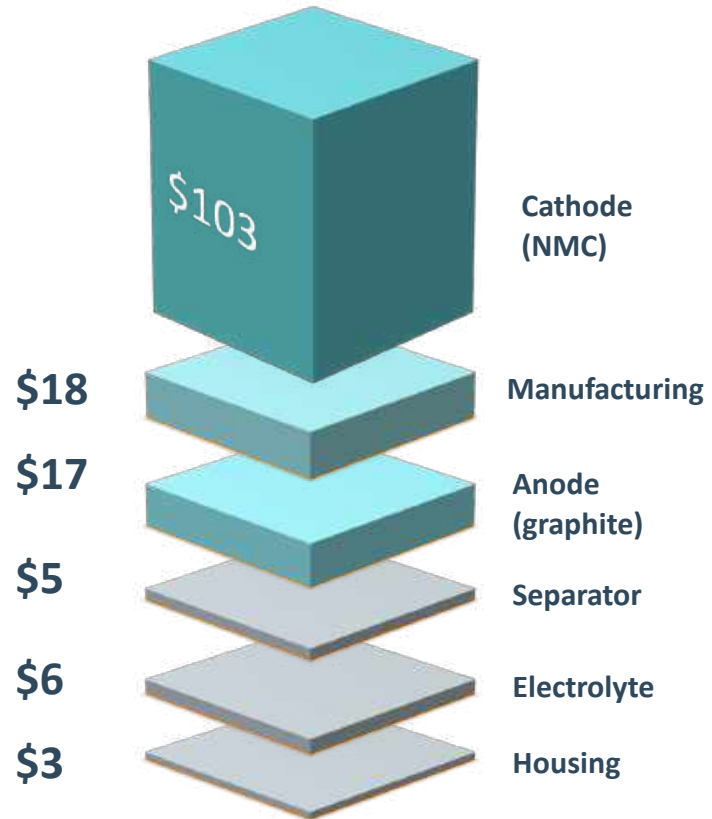
- High specific capacity sulfur cathode and silicon anode, increases gravimetric energy density.
- Gelion additive enables low-cost lithium sulfur chemistry.
- Sulfur cathode stable in event of short circuit, minimising thermal runaway.

- ✓ Increased energy density
- ✓ Low cost additives
- ✓ Safe failure mechanism

LiSiS cost savings

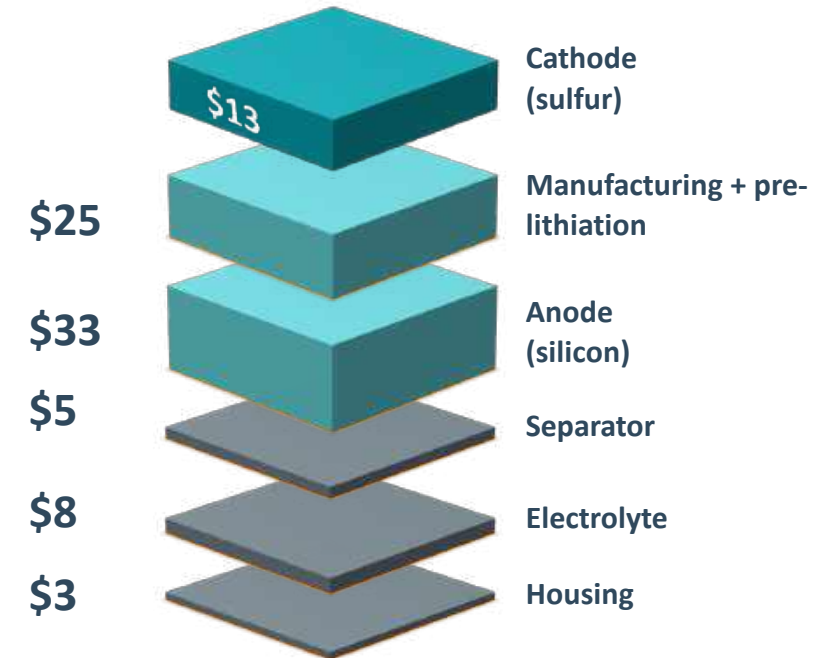
Replacing expensive NMC, replacing cathode, significantly reducing costs

Li-NMC battery



US\$151 / kWh¹

gelion | LiSiS battery



43% cost reduction²

US\$87 / kWh²

Abundant sulfur supply

Replacing rare expensive metals reduces cathode cost.



Global sulfur supply chain

Total global sulfur production

80 MT p.a.

Just 1% is enough to replace all battery cathodes



Replacement with sulfur, the 5th most abundant element on earth by mass.¹



Removal of cobalt from the NMC cathode reduces reliance on inputs with ethical concerns.



Sulfur sources are “almost limitless”; supply chain stability is expected.¹



All Li-ion cathodes (2.7 TWh by 2030)² could be replaced with sulfur using just 1.1% sulfur supply.

Solving the LiSiS battery puzzle

World leading LiSiS IP Patent portfolio

Gelion's newly acquired IP portfolio (82 patent families) from Johnson Matthey will help to accelerate this journey.

Gelion's competitive IP moat is extended and secured



Electrolyte engineering

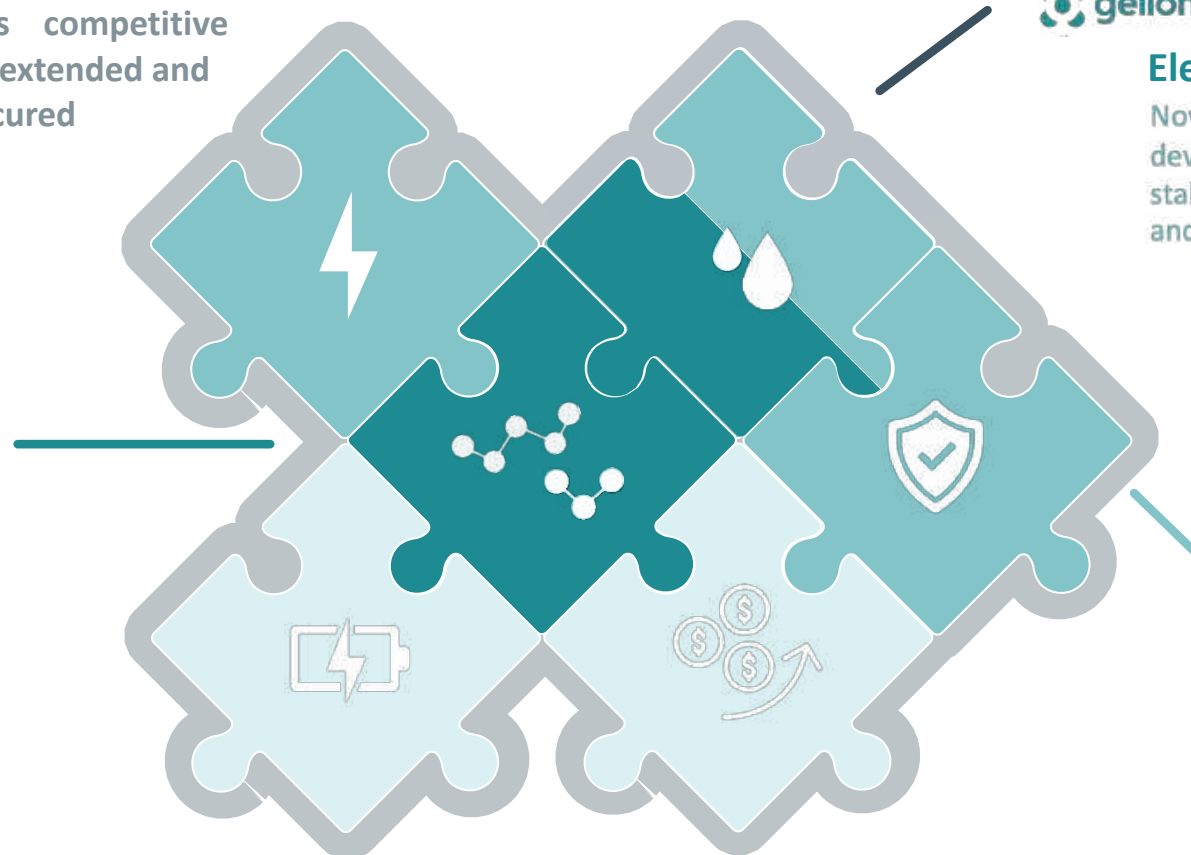
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Polysulfide shuttling

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Solid state capability

New solid state electrolyte technology will enhance compatibility of Gelion's sulfur cathodes with lithium metal batteries in the future.

Summary & next steps

Summary

- **Right team:** Gelion has the right team, to be further expanded to accelerate LiSiS commercialisation
- **World's leading IP portfolio** (82 patent families) in Lithium-Silicon-Sulfur secured from Johnson Matthey
- **Multi-anode scope** including lithium metal, graphitic and silicon-based anode technologies

Next Steps

- **We're serious** we're embarking on total quality TRL approach, welcome engagement from credentialled partners
- **We're ambitious** seeking >70% adoption of Lithium Sulfur cathodes globally, we'll engage with partners across the supply chain to achieve this target.
- **Surf the wave** leadership, Australia to catch the high-performance energy storage wave and surf the front
- **Partnering seeking industry partners and Government support together with strategic funding to accelerate the journey to building the world's best battery.**

Thank you.



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