

Advanced Battery Materials to power the energy transition

September 2022

Sicona is using its advanced battery materials in existing lithium-ion batteries to:



Increase the range of electric vehicles (increase by 20 – 50%).



Reduce the time it takes to charge an electric vehicle (<15min).



Reduce the upfront cost of electric vehicles (reduce by US\$5k).



Deliver sustainable, low impact & secure supply chains localized in each major market.

Our mission is to increase the speed of EV adoption so that ALL passenger vehicles on the road are powered by batteries & electricity before 2050.

Taking gigatonnes of CO₂ out of the atmosphere & helping save thousand of lives through cleaner air.



Highlights



Validated product market fit with battery producers & Auto OEMs globally with interest in **SiG anode materials** confirmed and evaluation testing commenced.

01



Advancing **44 patent** applications in various jurisdictions and developing additional IP. Core Australian patents recently accepted.

02



Designed and built a **2.5tpa** pilot plant and cell prototyping lab for SiG anode materials with co-funding from the Australian Federal Government.

03



Initial testwork results of **SiG450™** showcasing excellent capacity retention of >80% 1C[^] capacity after 1,300 cycles and excellent fast charging capability.

04



Commercial scale production **planned for USA and Sweden.**

Bechtel, one of the largest EPC companies in the world as engineering and construction partner.

05



Joint Development Agreement with a US based Auto OEM to develop high energy density cells using Sicona SiG anode materials.

06

*EPC = engineering, procurement and construction
^ 1C = charge and discharge the battery in 1 hour

US\$184b p.a TAM

US\$79b p.a TAM



PRECURSOR RAW MATERIALS

Spherical graphite (natural), Synthetic graphite, Silicon, Carbon

Cobalt, Manganese, Nickel, Aluminium

Lithium Chemicals

Polymers, Additives + Solvents



BATTERY MATERIALS

Anode

Cathode

Electrolyte

Separators

Binders

Cell Housing



CELL MANUFACTURERS

SAMSUNG SDI **Panasonic**

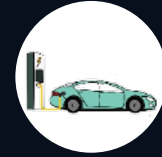
SK innovation

northvolt

CATL

MORROW

225 "Gigafactories" in pipeline out to 2030



OEM

>50 million annual EV sales in 2030

Sicona in the US\$525b p.a battery supply chain

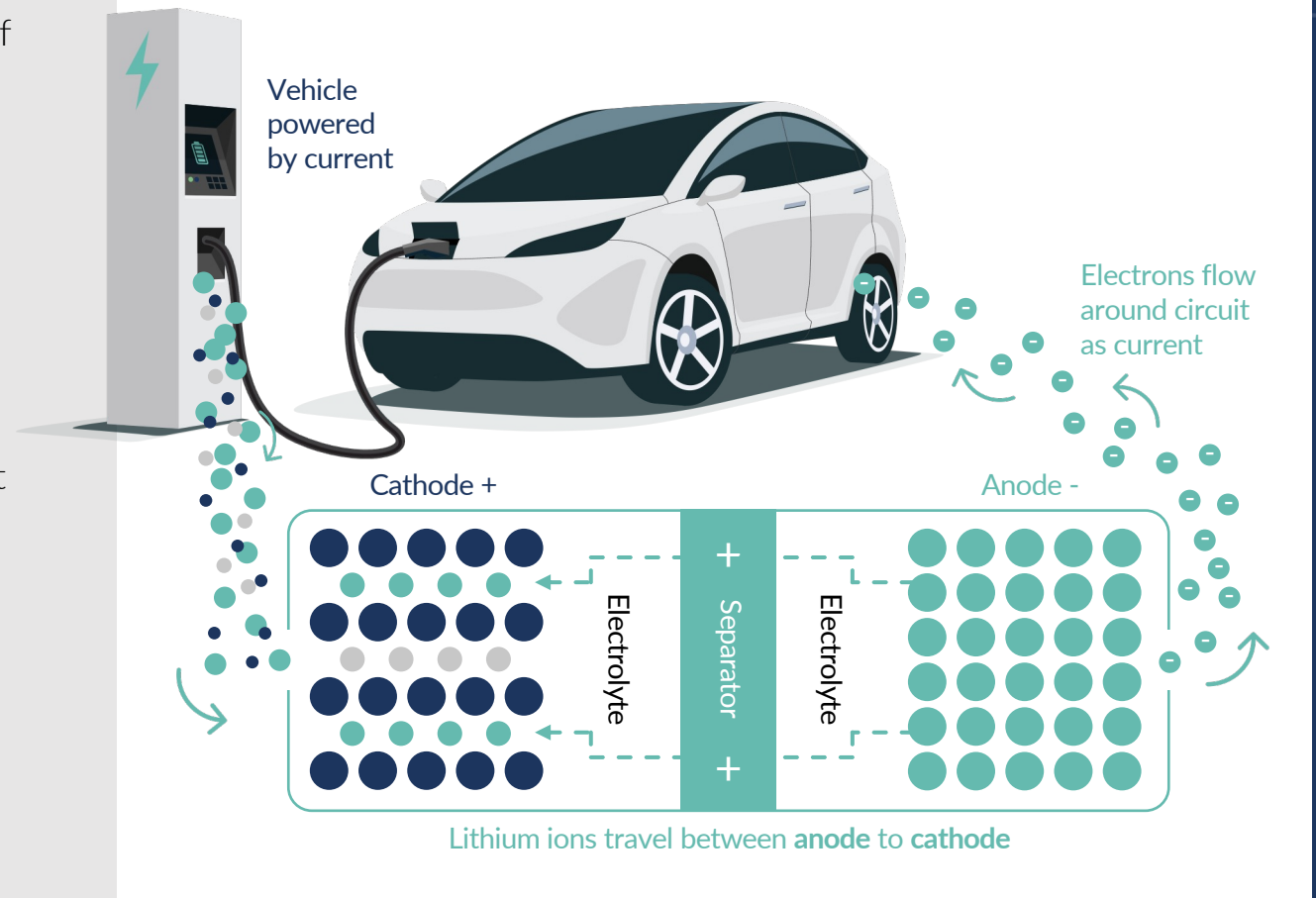
Denotes Sicona Market segment participation

Denotes Sicona's primary customers

Denotes Sicona's secondary customers

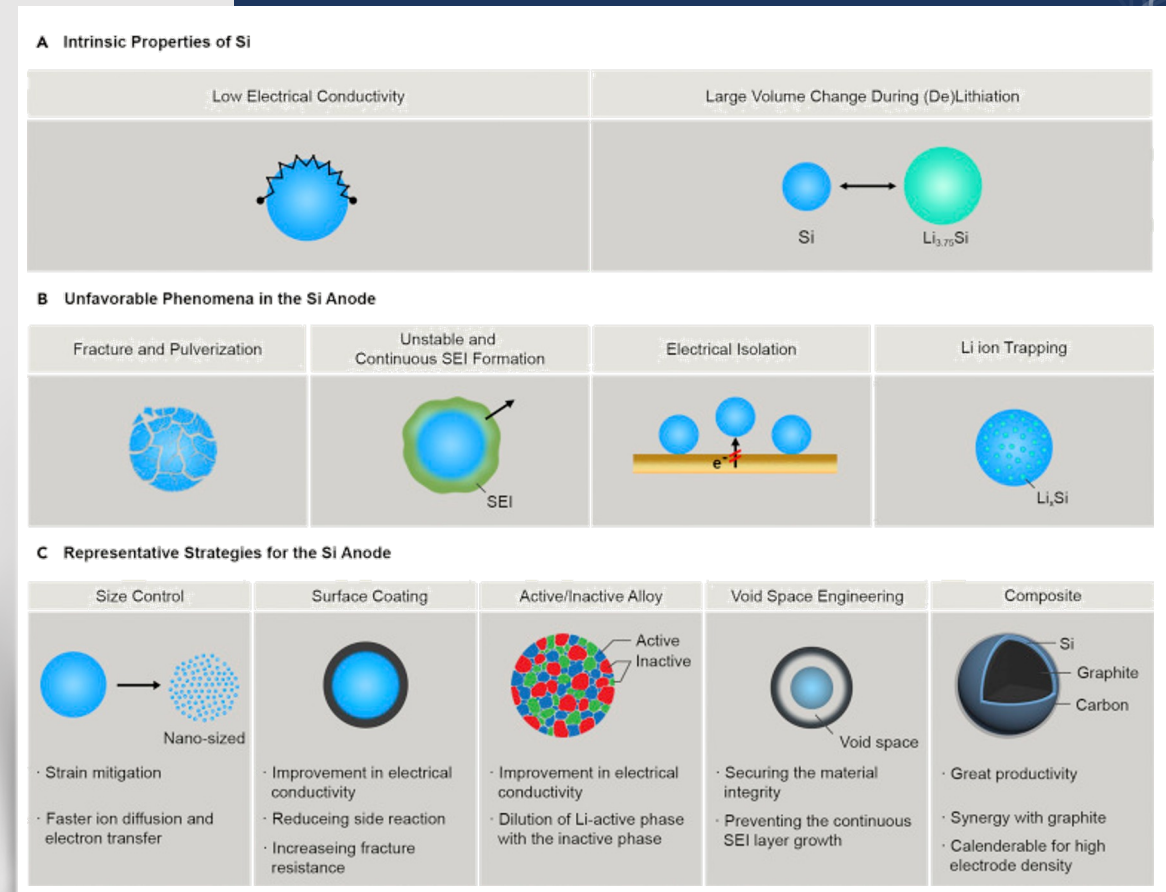
Lithium Batteries & Silicon Anodes

- ✓ Battery operation is based on the simple concept of Li-ion flow between the anode and cathode
- ✓ Creates energy that flows externally as electrical current powering a connected device
- ✓ The cathode is the source of lithium and the anode the storage bucket
- ✓ Graphite is the current anode material, very stable over repeated cycling with limited swelling. "Bucket size" of 372mAh/g (capacity units)
- ✓ Putting silicon in the anode enables high energy density without changing the architecture of the battery
- ✓ Silicon anodes can be "dropped into" existing gigafactories and their supply chains and enable a step change in EV range, cost and charge time



Silicon Anode Challenges

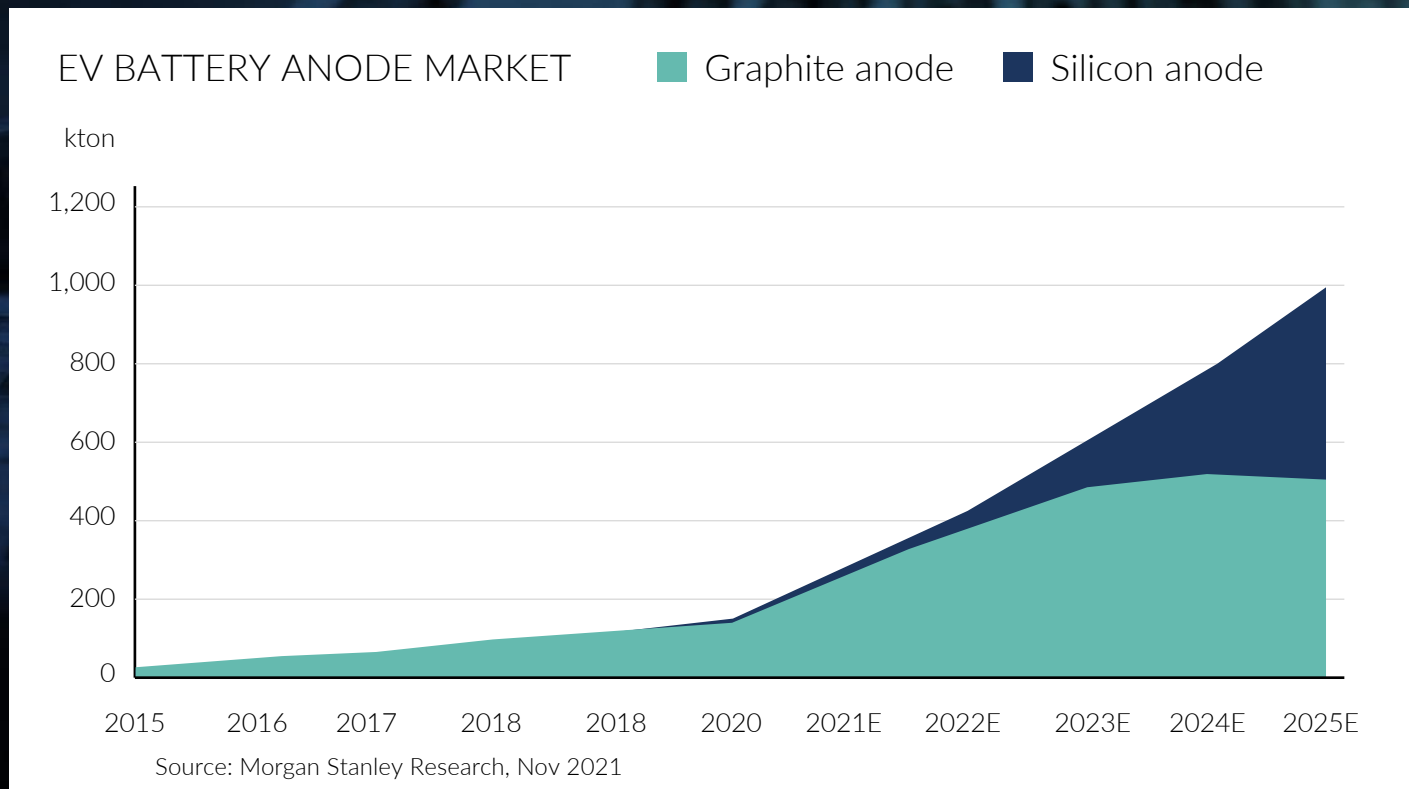
- ✓ Silicon can **store ~9x more lithium ions than graphite** enabling higher cell energy density and faster charging
- ✓ BUT silicon swells **>300%** causing premature battery failure
- ✓ Key is to find a workable, scalable and cost-effective way to use silicon in a battery



This is what Sicona's anode materials deliver

Silicon Anode Market Opportunity

Silicon containing anodes projected to catch up with graphite anodes by 2025



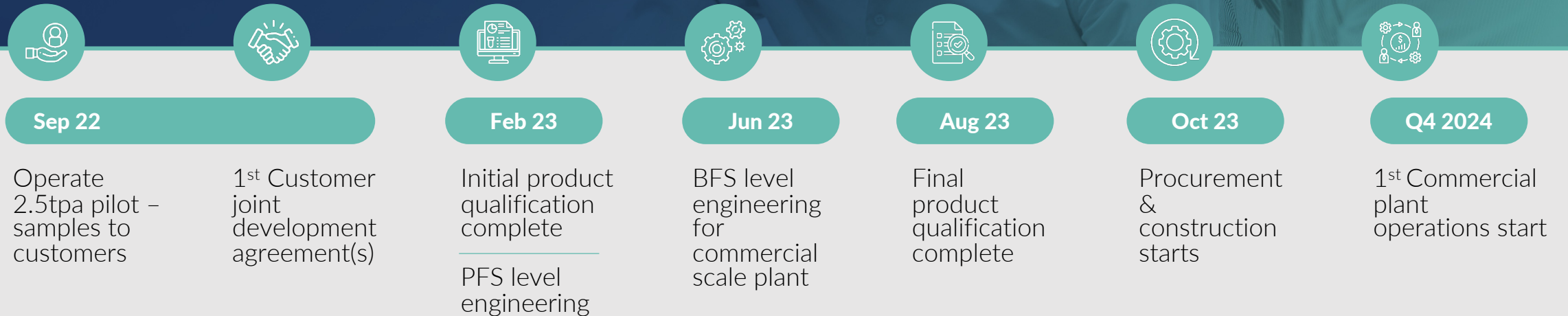
- Morgan Stanley estimates **50% market penetration** of silicon-based anodes by 2030
- **10x increase** from 2021 market penetration (5%)
- By 2025 **graphite and silicon anode** supply forecasted to be equal
- Approx. **500ktpa** each
- Silicon based anodes growing to **>1Mtpa** by 2030
- Assuming **\$15k/t** (conservative) average sales price = **\$15bn p.a** silicon based anode TAM

Sicona's global presence



Sicona Anode Materials Development Roadmap

Sicona Development Timeline



Sicona Pilot Plant & Cell Prototyping lab, NSW Australia



Design capacity of

2.5tpa

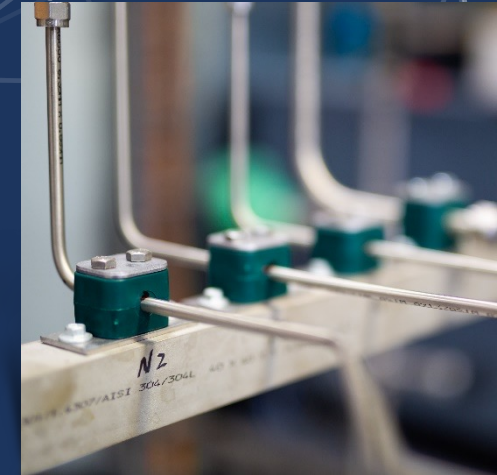
pilot manufacturing plant +
pouch cell prototyping lab



Producing in

7kg - 25kg

batches of SiG anode
materials for full cell testing
(internal & external) and
customer qualification.



Customer engagement to date

Product market fit validated & interest confirmed

Joint Development Agreement (JDA) with US Auto OEM kicking off in Q4-2022

Initial sample provided and tested by Asian Auto OEM

Next steps:

- Send larger qualification samples (2kg+)
- Share additional testing data
- Kick off 1st JDA and negotiate others
- Produce and send additional samples



Large Auto EV Company



New Auto EV Company
(under NDA)



New Auto EV Company
(under NDA)



Large Auto EV Company
(under NDA)



Tier 1 Korean cell producer



Tier 1 Japanese cell producer



New Gigafactory
(under NDA)



New Gigafactory
(under NDA)



Sicona Core Team



Christiaan Jordaan
Founder & CEO

Former CEO of ASX listed graphite company

Developed energy and mining projects in Africa

10 years experience as entrepreneur and CEO

Deep battery supply chain knowledge



Andrew Minett
Co-Founder & CTO

PhD in electro-chemistry

Max Planck institute under Nobel Prize winner

MIT Medialab

Finished academic career as Prof of Chemical Engineering

Materials expert

Scaled up inventions for multiple startups



Tan Xing
Head of Research & Develop.

PhD Nanomaterials in Energy Storage from Deakin

Battery scientist for novel 3D electrode startup

Systems engineering and R&D lead for 2 satellite companies



Nikan Nurb
Senior Process Engineer

PhD in Chemical Engineering

Lead research engineer for ASX listed Hazer Group

Experienced process engineer

Expert in process scale up & design

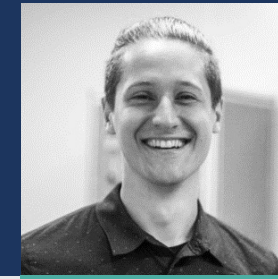


Derwin Lau
Battery Material Scientist

PhD in Silicon anodes for next gen batteries

UNSW research assistant

Silicon expert



Thomas Rowe
Research Scientist

Research scientist for TSX listed Nano One Materials

Cathode materials expertise

Experienced research professional

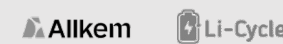


Anthony Tse
Advisor

Former CEO of Galaxy Resources (now Allkem) a \$3bn global lithium chemical company

Board member & early investor Li-Cycle (NASDAQ LICY)

Active investor in LiB supply chain



Select Partners, Collaborators & Investors



Engineering



Major equipment



Raw materials



*confidential



Financial Modelling & Grants



Major investors



Australian Government

*Grant funding

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SICONA

Battery Technologies

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Sicona uniquely positioned to leverage silicon metal to produce next gen anodes cost effectively at scale

