

MAY 2025

# Solid-state electrolytes enabling breakthrough battery performance



## Corporate Presentation

[ampcera.com](https://ampcera.com)

AVAILABLE FOR PUBLIC DISCLOSURE



Ampcera is empowering lives with  
material solutions for next-generation  
energy storage

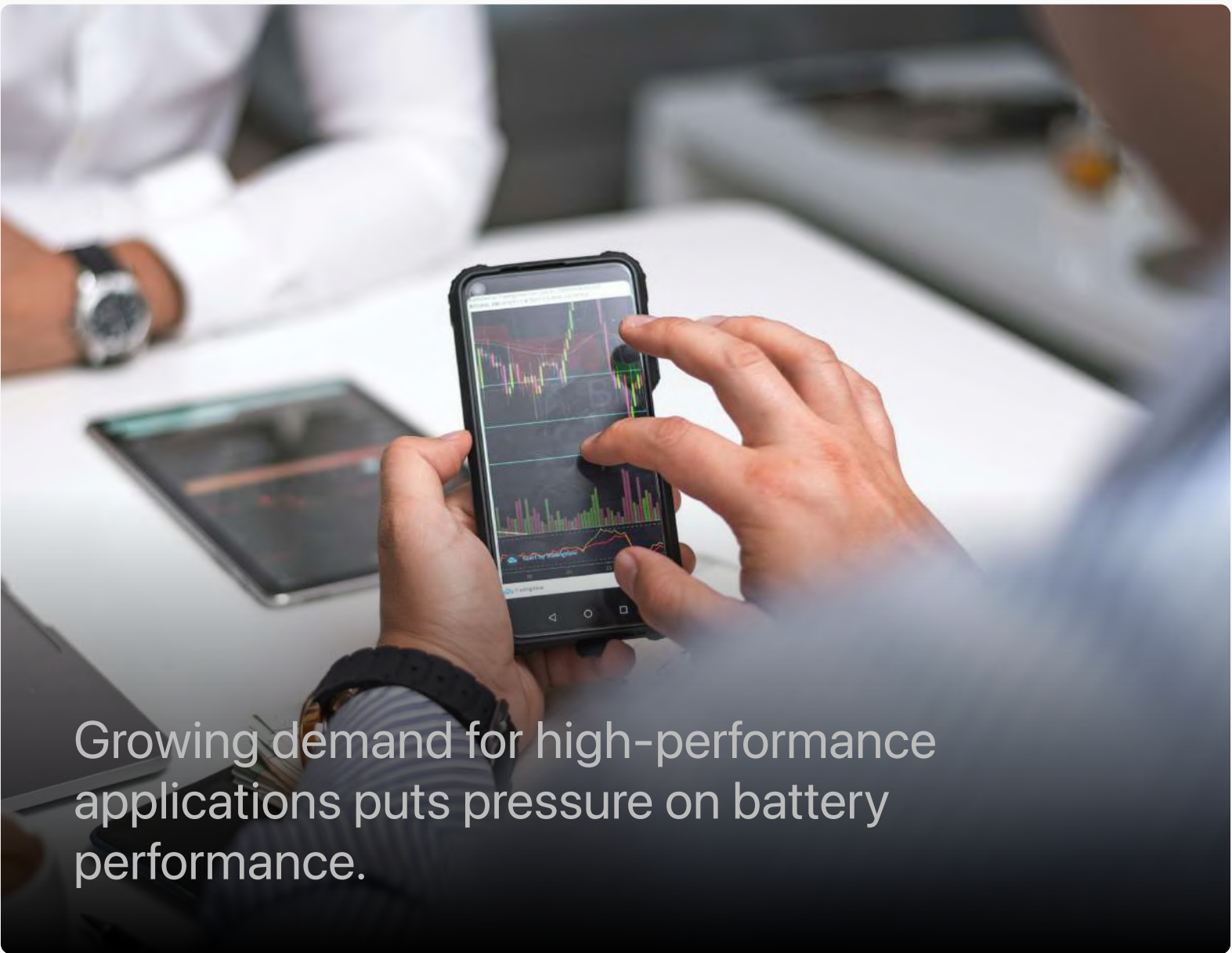


# Battery technology needs a fundamental change

EVs face range limits and slow charging



AI draining consumer electronics



Current batteries limit electric aviation

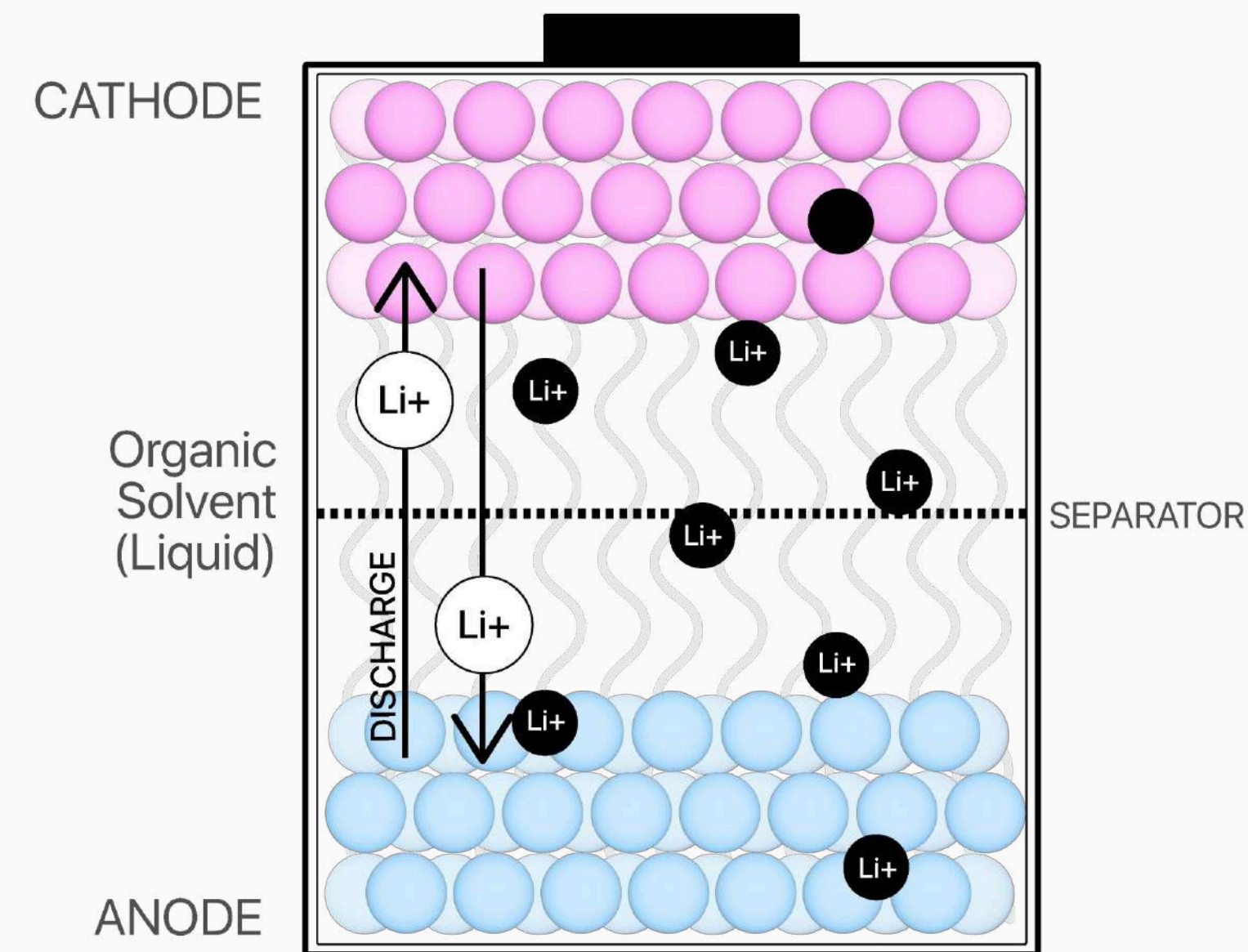


\*VTOL stands for vertical takeoff and landing  
\*CTOL stands for conventional takeoff and landing

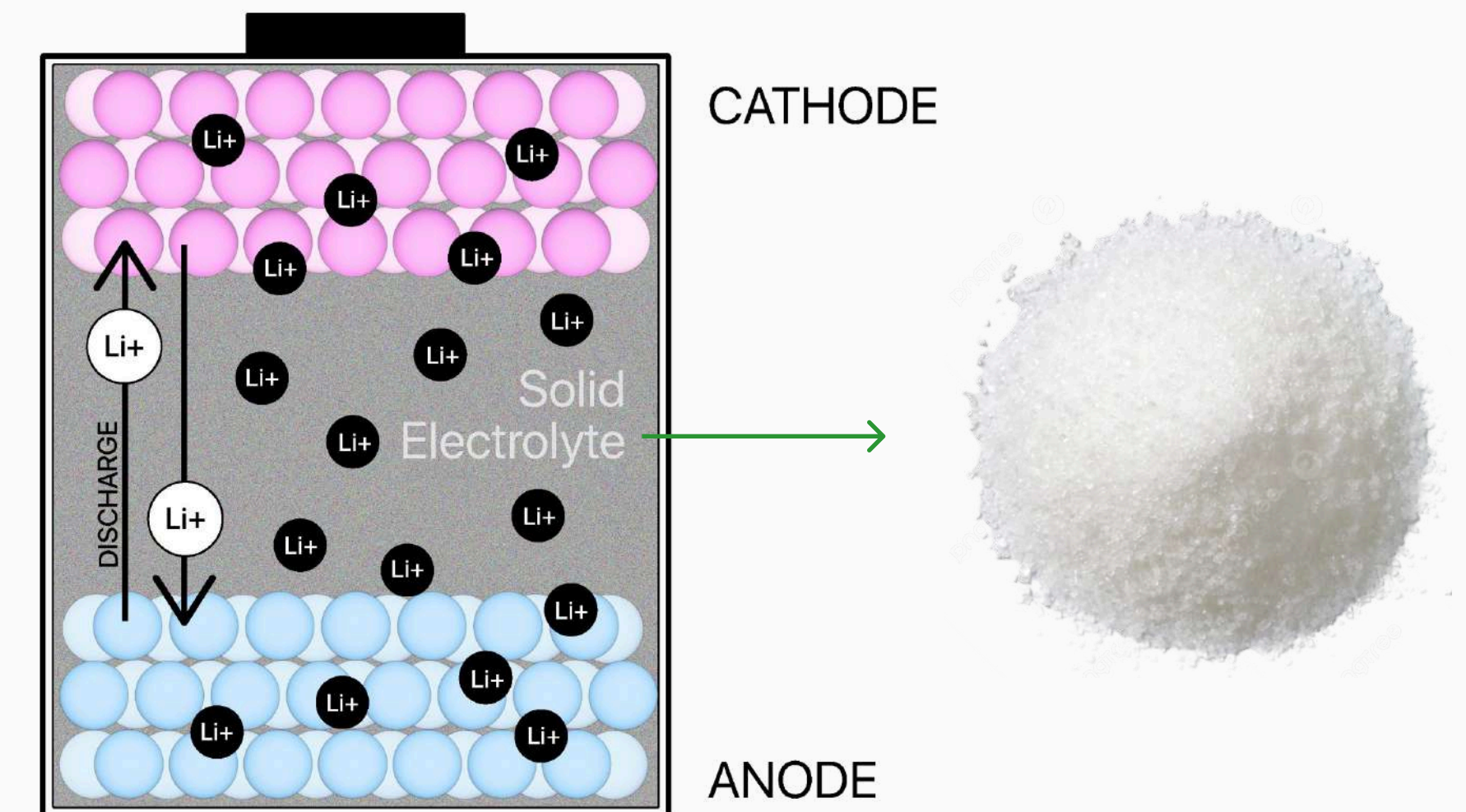


# Solid electrolyte enables more energy packed into a smaller volume

LIQUID LITHIUM BATTERY

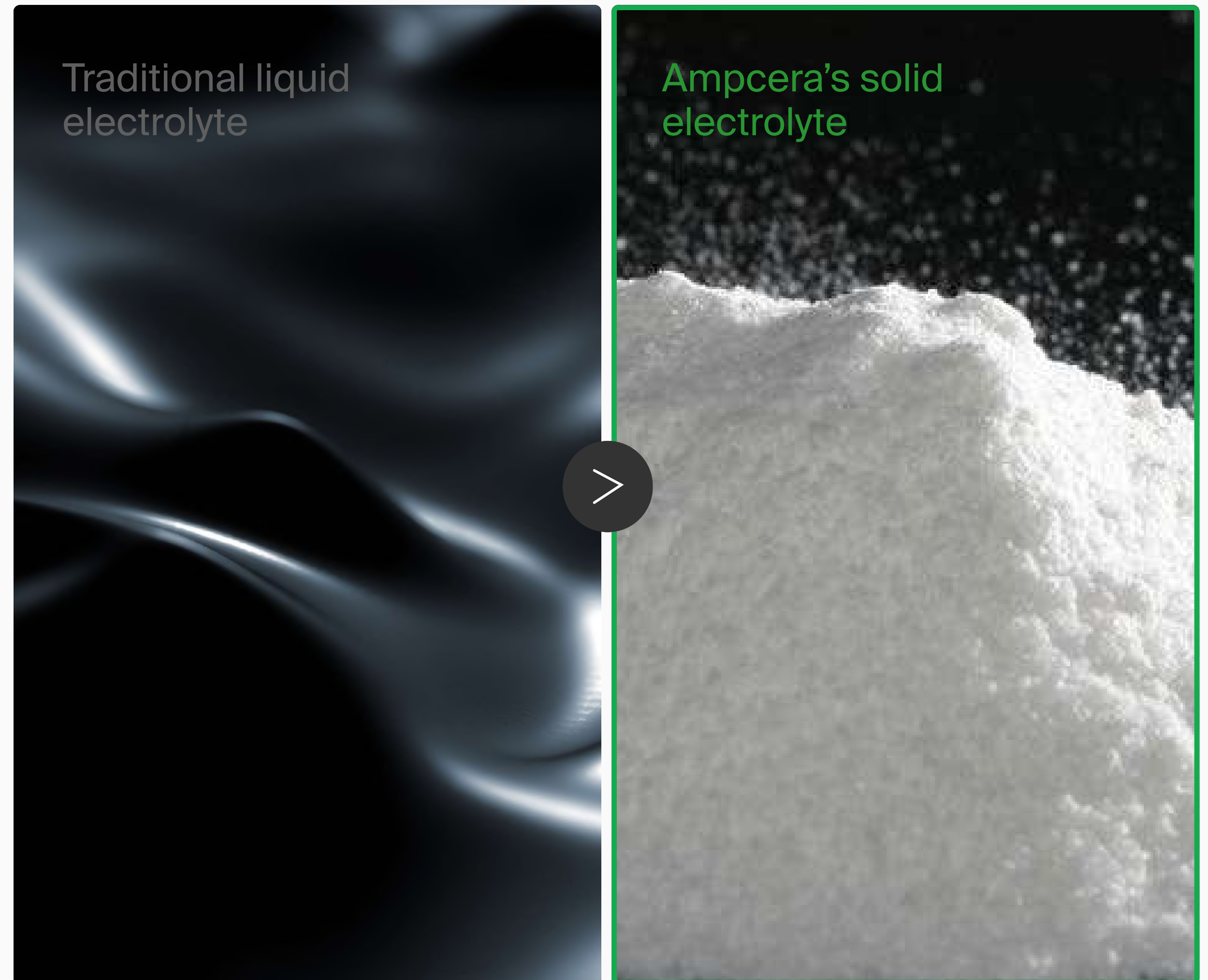


SOLID-STATE BATTERY



# Materials enabling breakthrough battery performance

Ampcera does this by substituting liquid electrolyte with a **solid one** in today's lithium battery





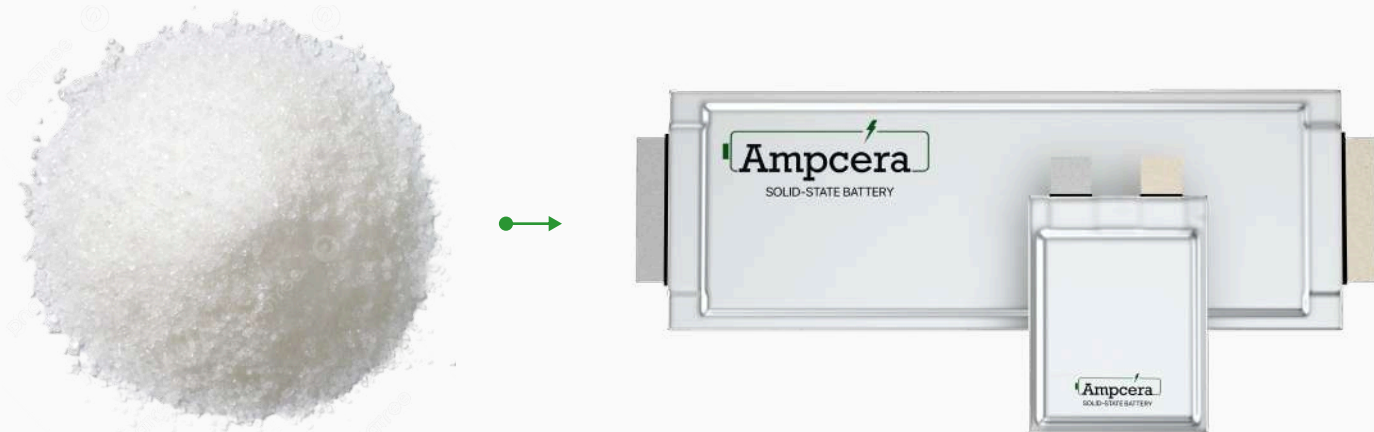
# Ampcera is driving change

Ampcera has 7+ years of expertise in battery electrolyte materials synthesis, battery design, battery fabrication, and equipment development

## TECHNOLOGY

### Solid electrolyte

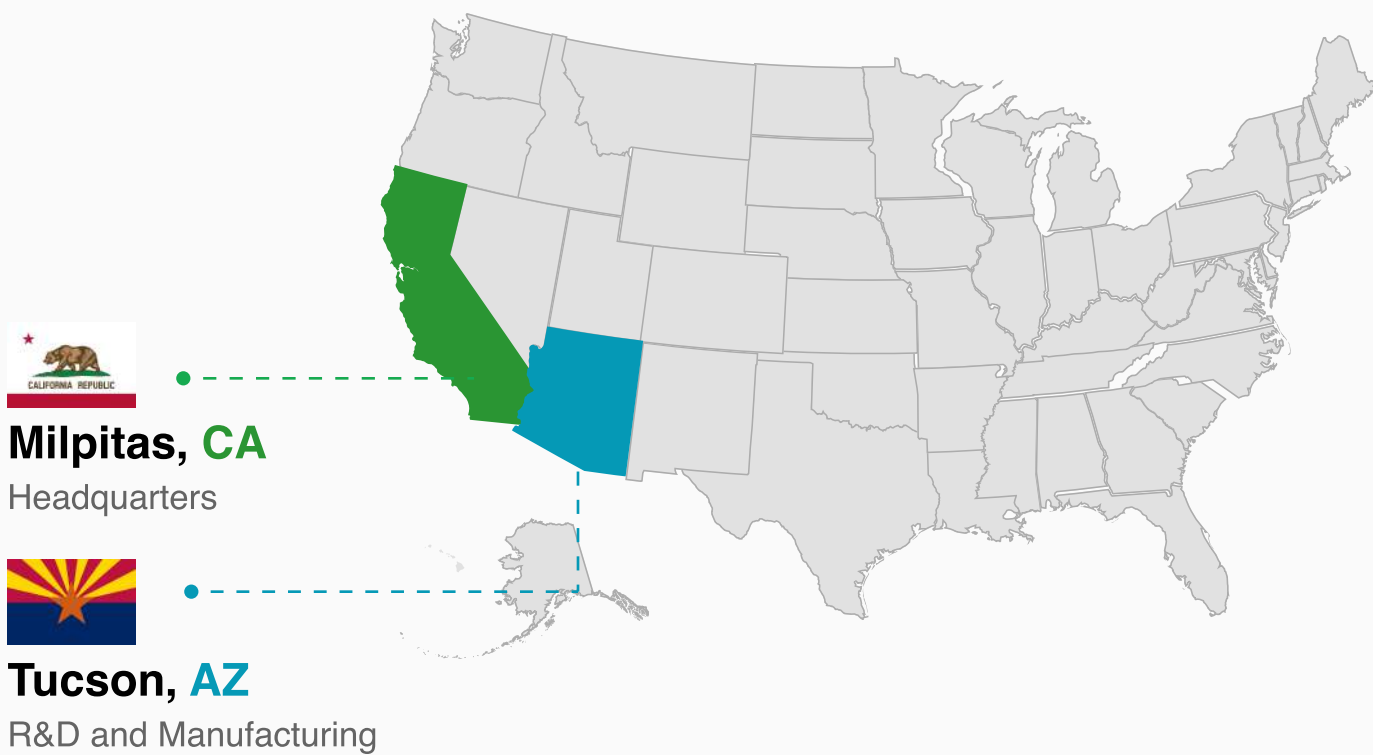
Proprietary solid electrolyte materials and cell design with focus on R&D and production.



## LOCATION

### Made in America

Ampcera's Tucson facility leverages Arizona's expertise for domestic supply chain enhancement.



## PARTNERS

### Financial backing

Cooperation in technology, product, process, production and scale-up.

SERIES A  
\$10 million



Strategic collaboration with large EV automakers and U.S. national labs


GRANT  
\$8 million



Process equipment development and manufacturing scale-up


# Ampcera’s robust electrolyte technology platform driving commercialization

**Solid electrolytes**  
("component")




ENGINEERED ARCHITECTURE

**Cell integration**  
("tailor-made")



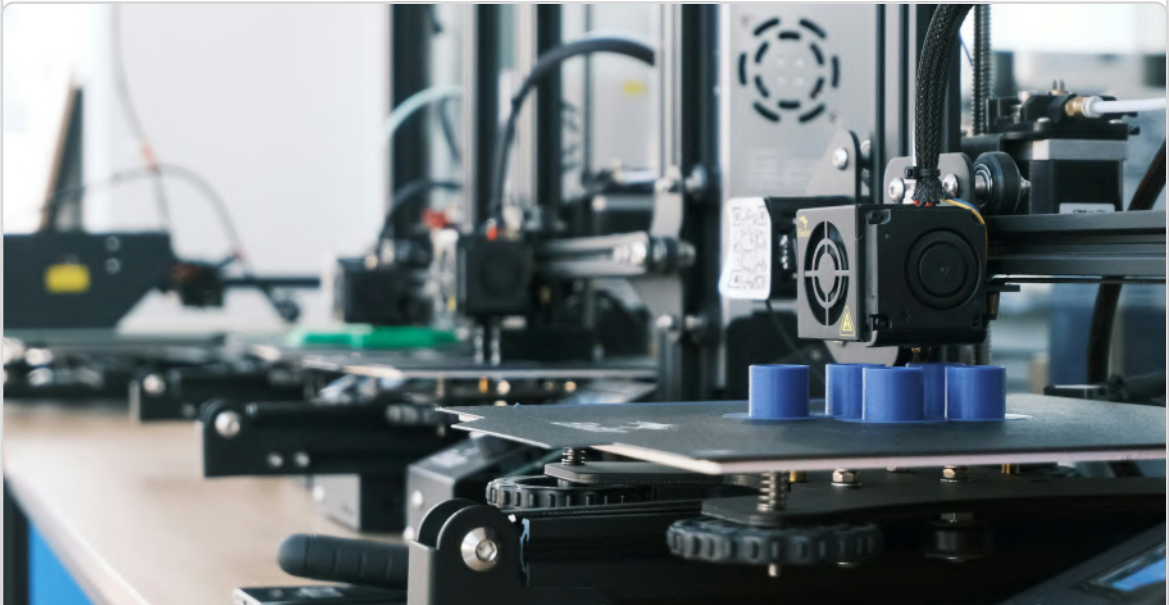
CELL ECOSYSTEM DESIGN

**Battery cell**  
("system")



HIGH ENERGY DENSITY & FAST CHARGING

**Process technologies**  
("manufacturing")

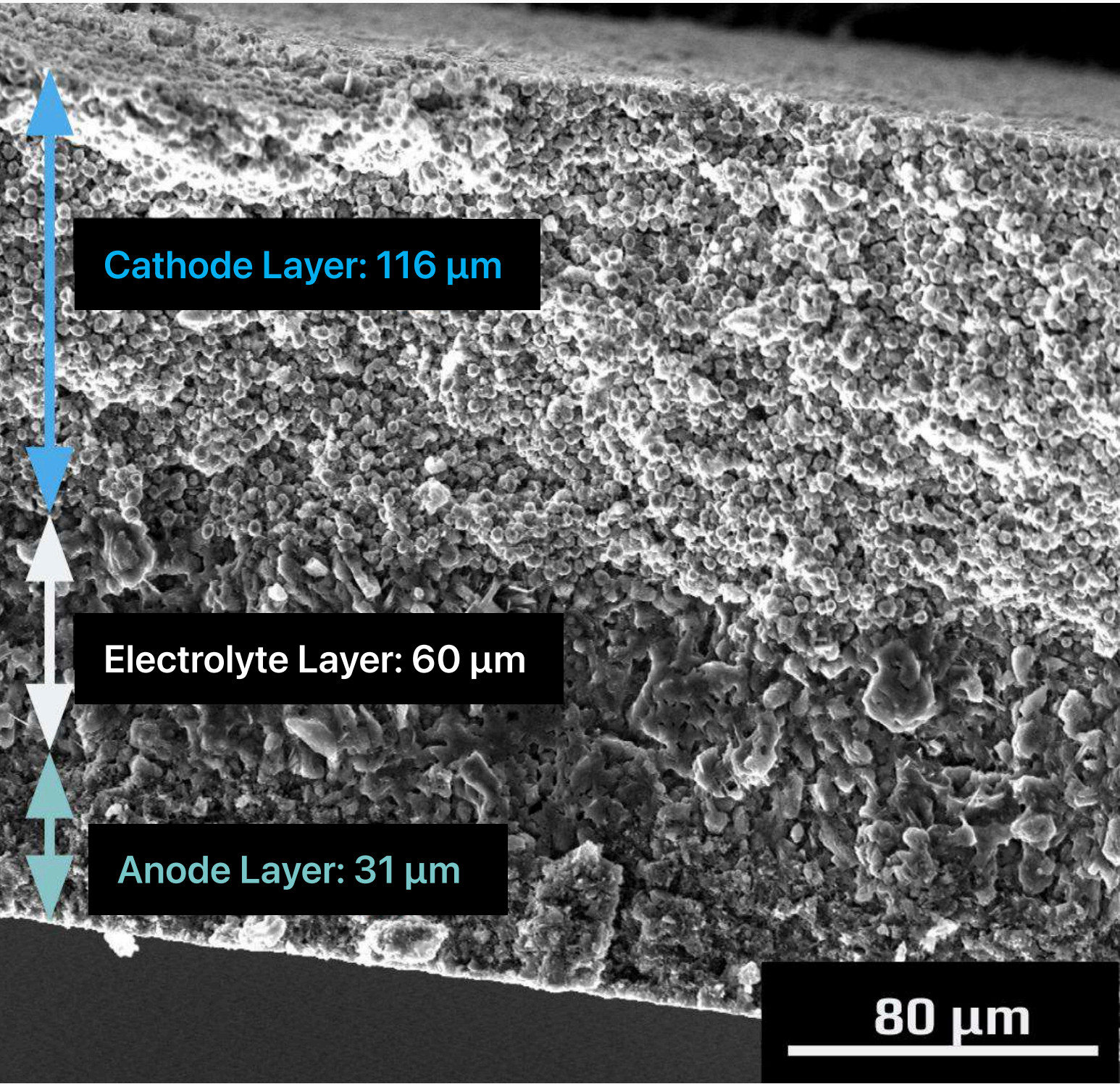
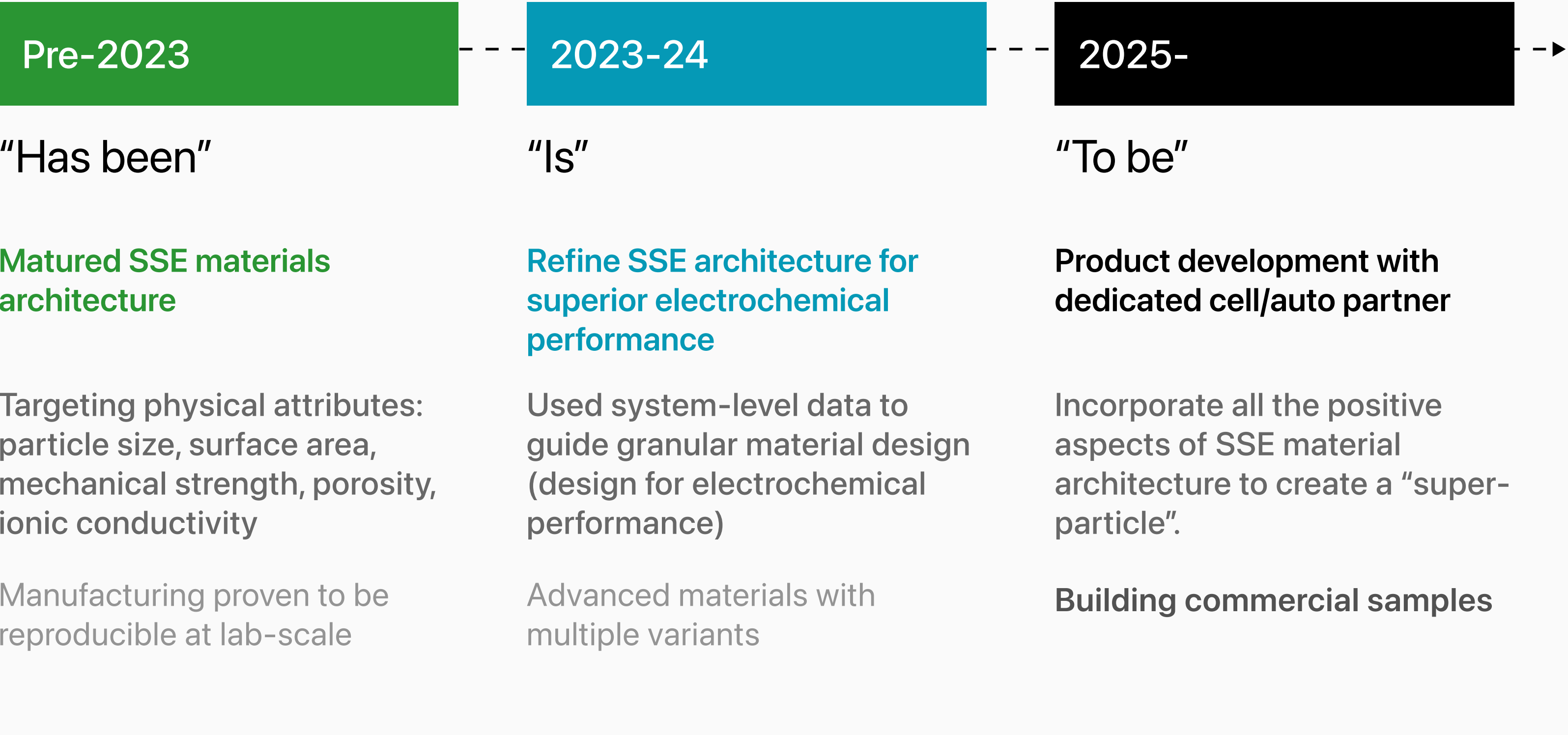



SCALABILITY AND REPRODUCIBILITY

50+ patents and 90+ trade secrets covering materials, manufacturing, and cell designs



# Journey: Synergized material design with system-level understanding



 Hanwha Solutions investment  
ARPA-E grant



# All-solid sulfide electrolyte materials

High ionic conductivity, high purity and engineered particle sizes.



1 ton annual capacity

Manufacturing

~\$1M revenue/year

R&D sales

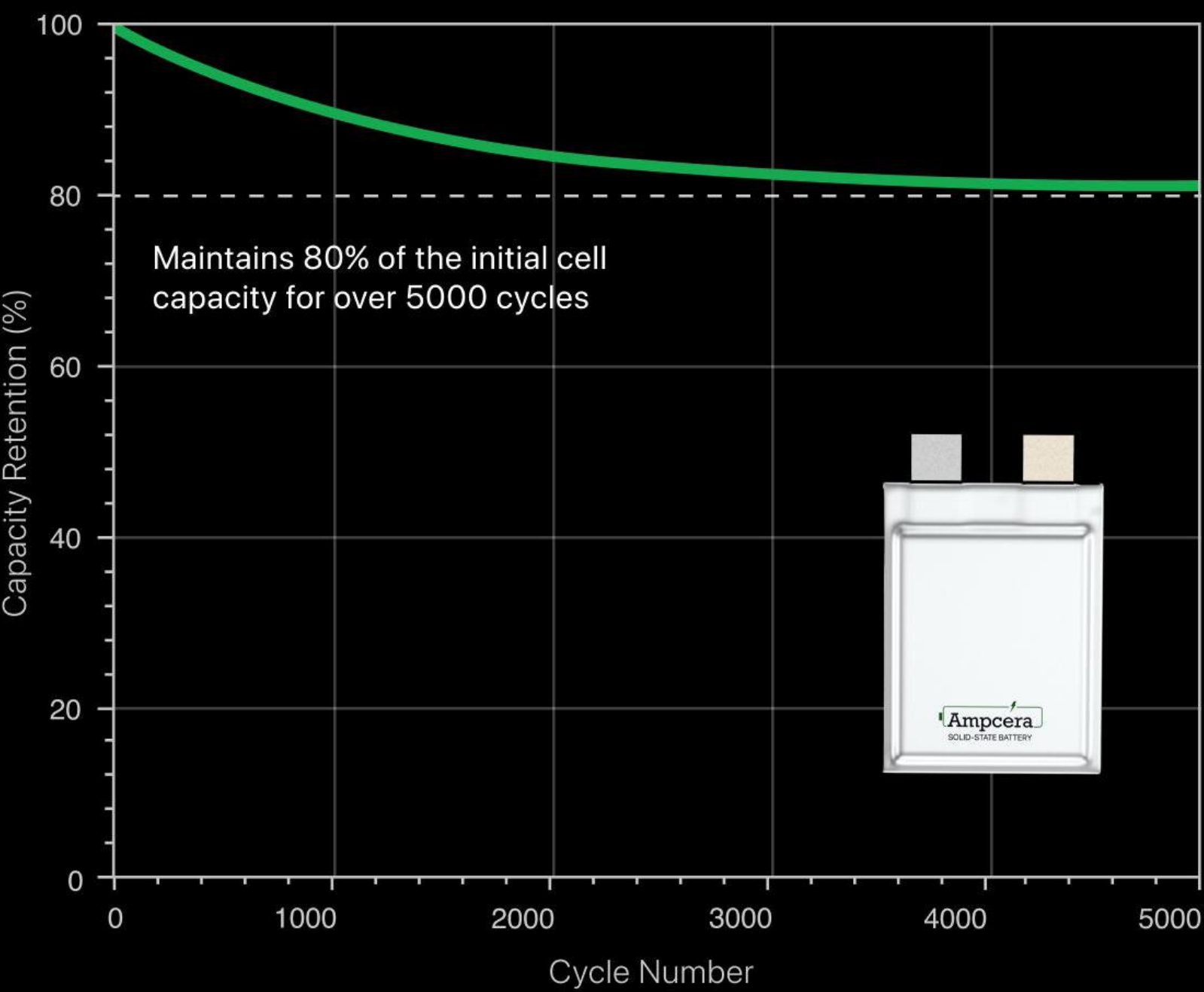
200+ paying customers

Major automotive OEMs, cell manufacturers, and consumer electronics hardware companies.

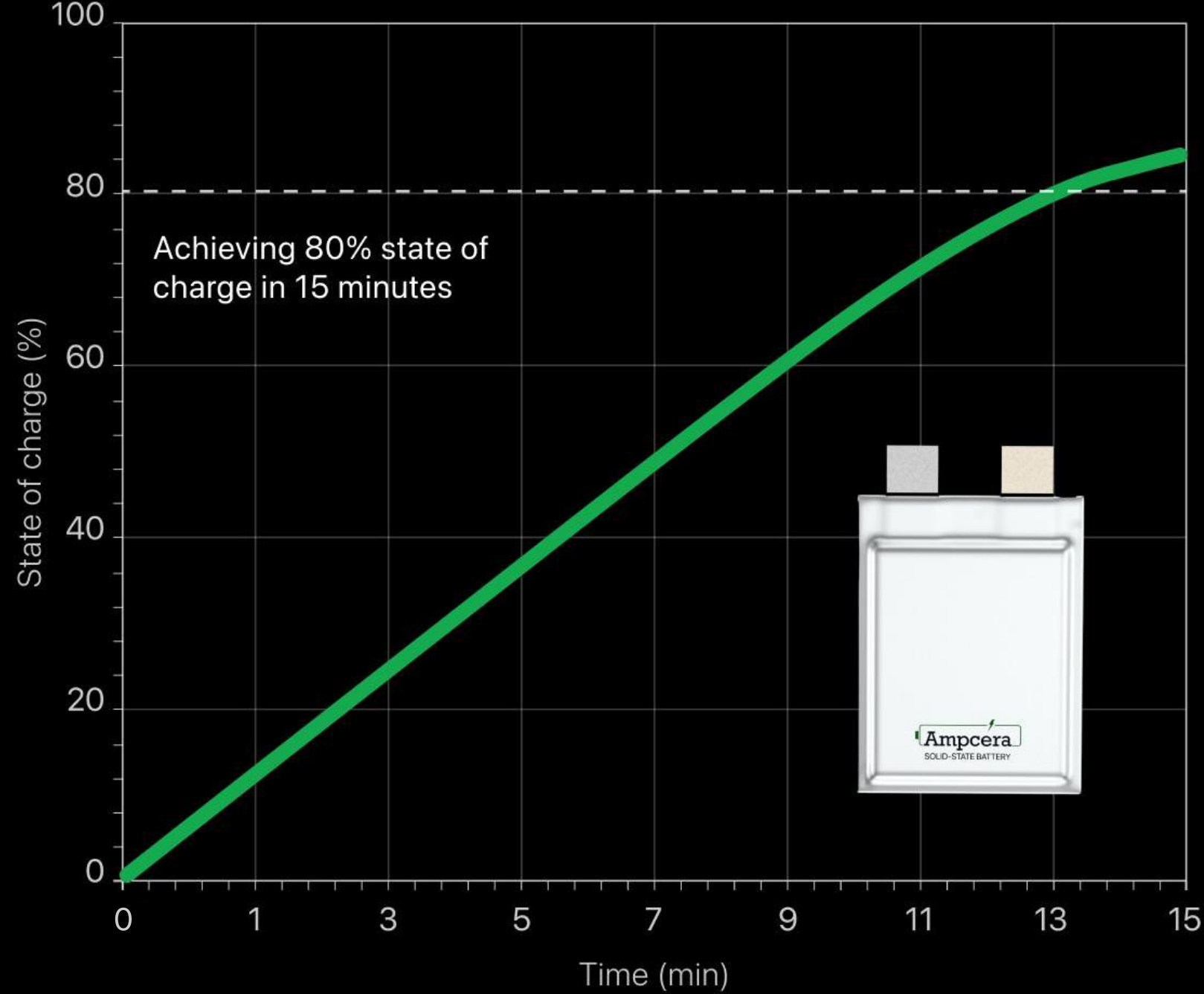


# Your battery with 50% more energy

Cycle life performance



Fast charging



Capacity	1-50 Ah
Performance	High energy density >400 Wh/kg GED      >800 Wh/L VED
Prototyping	In-house Cell partners (>5 Ah)



# IP-protected processing for high-phase purity and modular scaling

PRE-PILOT  
JAN 2023

1 ton  
per annum

INDUSTRIAL PILOT  
JUN 2025

20 tons  
per annum

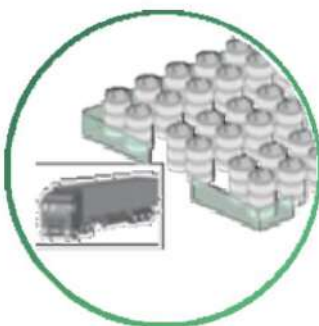
LARGE SCALE  
COMMERCIAL PLANT  
2026

1000 tons  
per annum

STAGE 1

Precursor procurement & quality validation

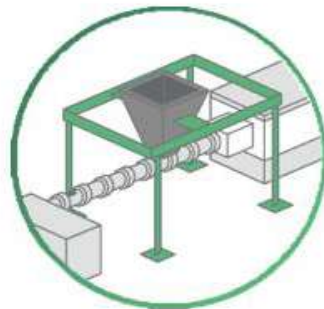
Ensuring supply chain security and the highest level of material quality



STAGE 2

Material preparation and homogenization

Scalable processing approach for achieving high phase purity



STAGE 3

Material processing

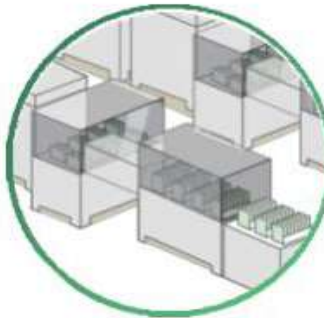
IP-protected processing method that enables modular scaling to thousands of tons



STAGE 4

Post-processing and particle size classification

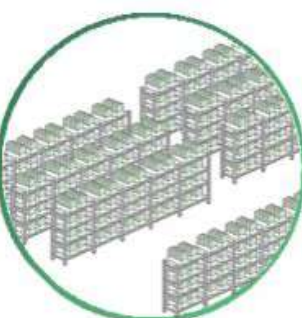
Confidential processing approach for achieving small particle size distribution



STAGE 5

Material packaging and distribution

Patented packaging technology to protect against moisture contamination

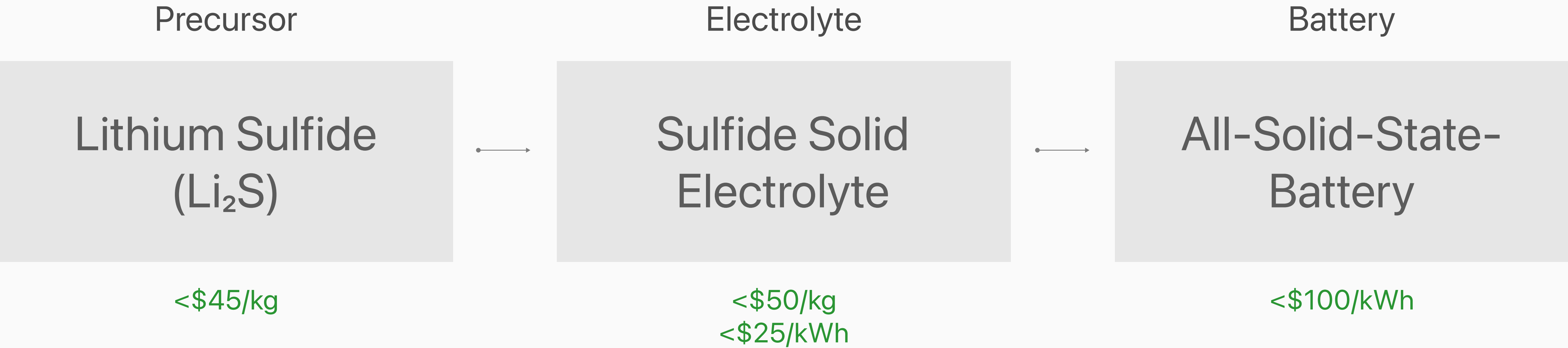


Collaboration with Tier 1 partners has enabled Ampcera to achieve larger batch size, high-quality powder, and consistent production.



# Realizing <\$100/kWh for ASSB cells

In partnership with   



Cost target will be achieved by 2028, through vertical integration, low-cost manufacturing technologies, and scale.




# Strategic investors and partners

PARTNER

### Strategic Cooperation

[TECHNOLOGY DEVELOPMENT & QUALIFICATION  
WITH 6 EV/CELL PARTNERS]



Automotive companies conducting tests on Ampcera's solid-state electrolytes and battery cells

Note: Ampcera is collaborating with six Tier 1 EV and cell partners, who are also prospective customers, to conduct material and cell validations and qualifications.

INVESTOR



### Series A Lead Investor

[SUPPORT IN 3 CRITICAL AREAS]



Scaling up manufacturing, developing process equipment, and managing the chemicals supply chain

PARTNER



### U.S. Government Grant

[7 STRATEGIC PROJECTS]



Materials, manufacturing, and scalable solutions



# Partnerships with the U.S. Department of Energy to tackle scale-up challenges

TECHNOLOGY

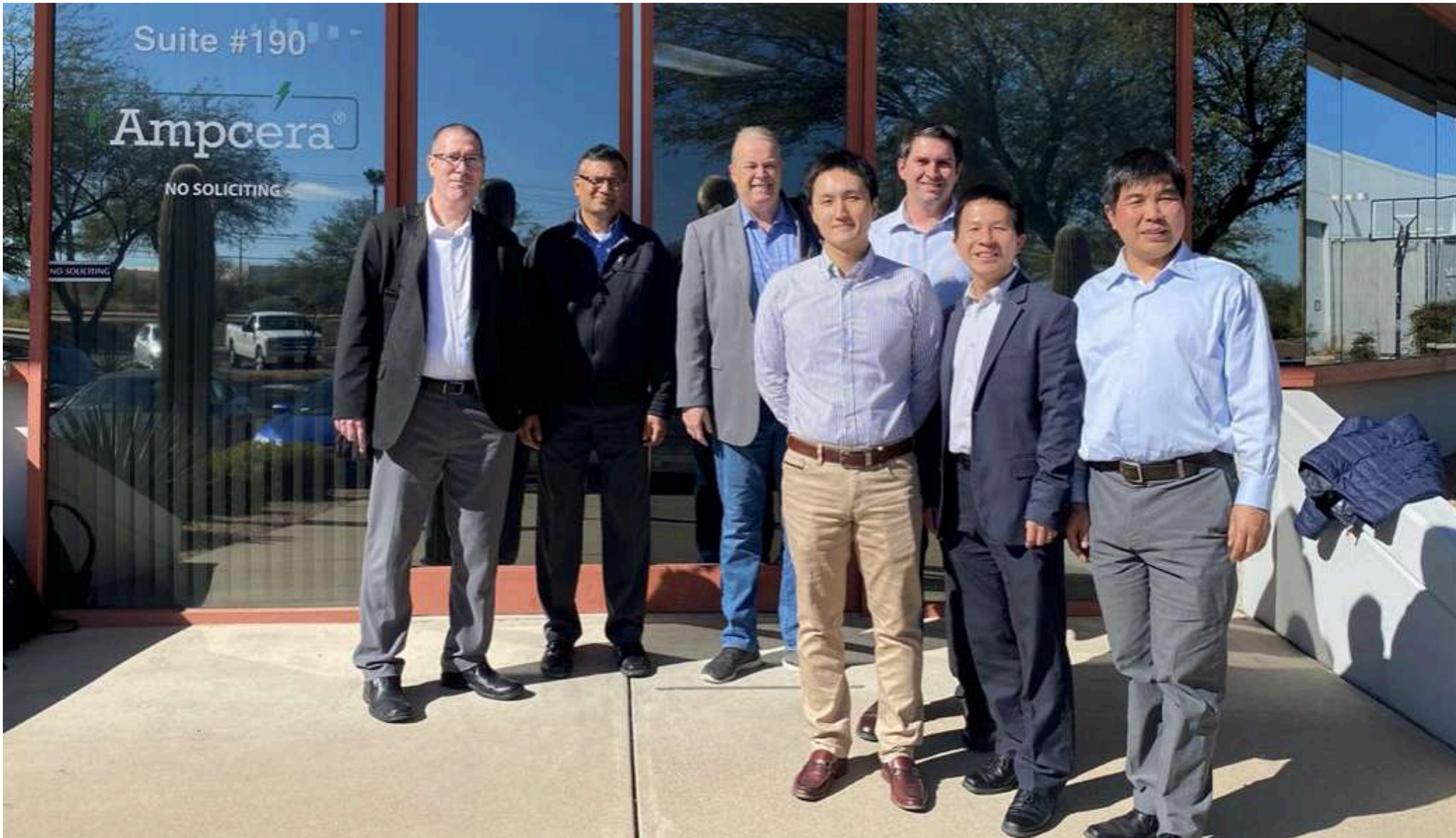
Funded by DOE ARPA-E

Fast-charging solid-state battery for EV



Funded by DOE VTO

High-energy next-generation Li-S batteries for EV



ARPA-E team members, from left to right: Sean Vail, Apoorv Agarwal, Halle Cheeseman, alongside Ampcera Leadership: Eongyu Yi, Emery Brown, Sumin Zhu, and Hui Du.

MANUFACTURING

Funded by DOE AMO

Additive manufacturing for high-power LIB and SSB



Funded by DOE VTO/AMO

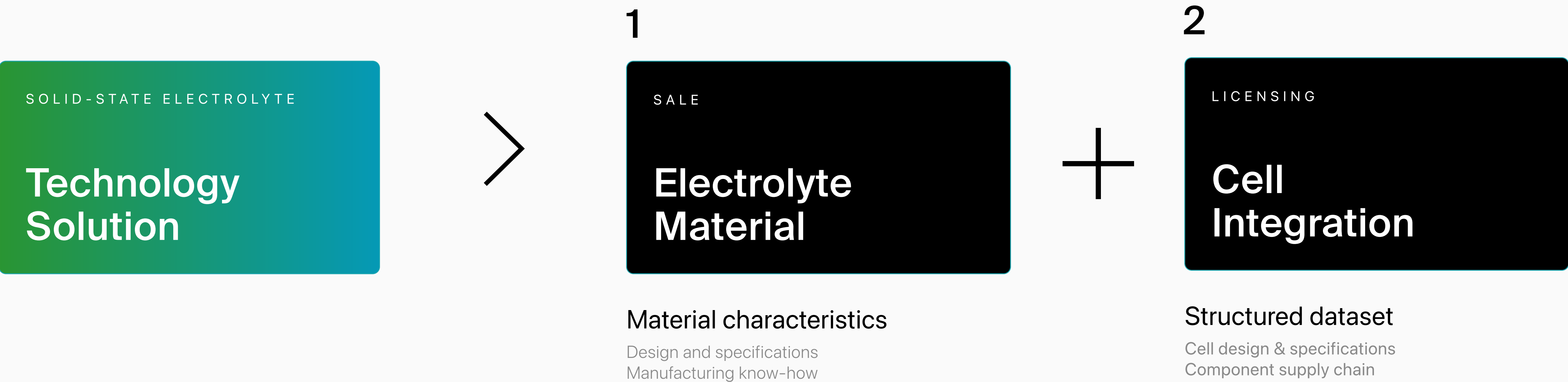
Scale-up of Sulfide SSE manufacturing





# Business model for the commercialization of safe, all-climate, fast-charging ASSB

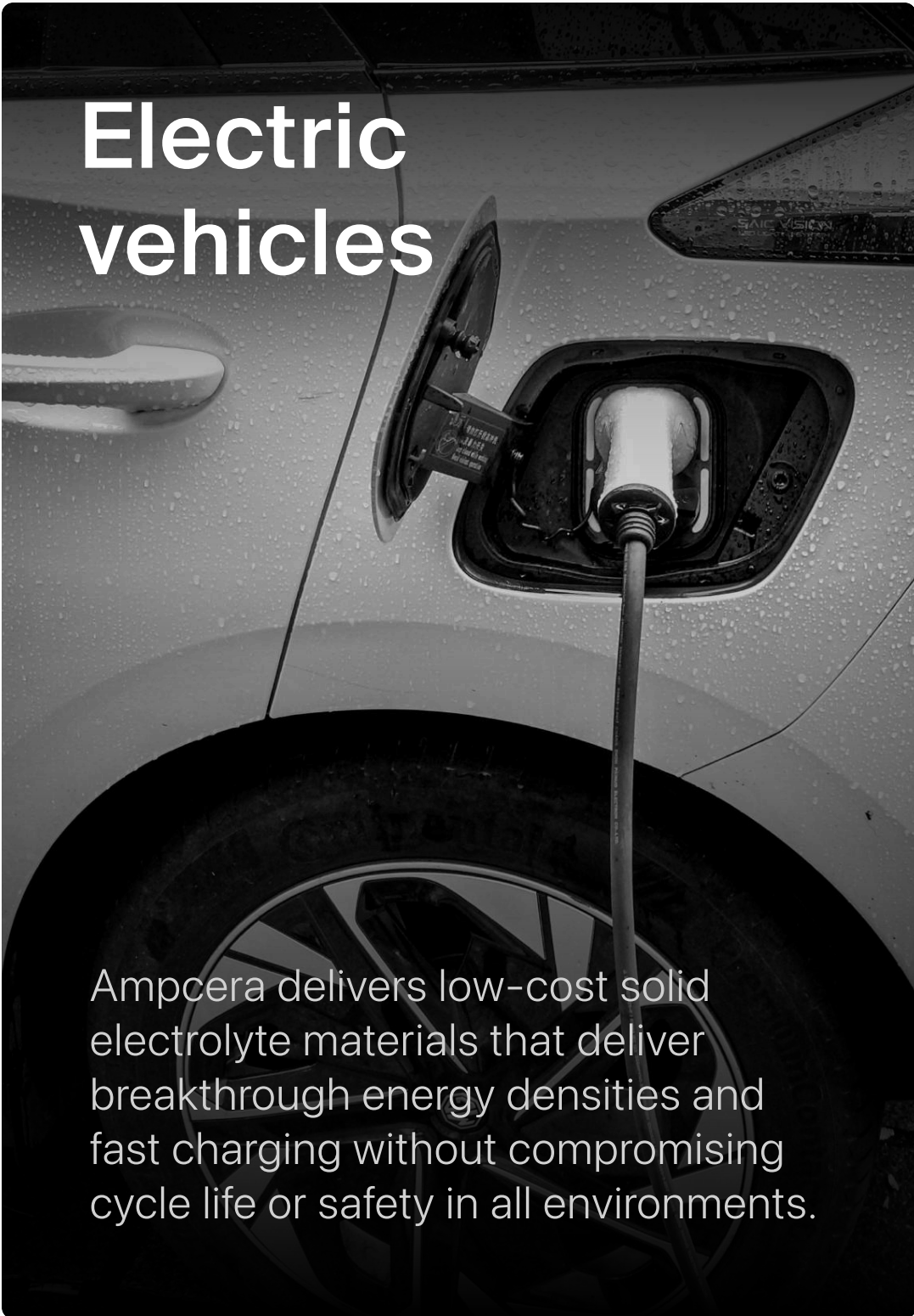
Sale of engineered materials to battery and OEM manufacturers and licensing of battery design and process technology





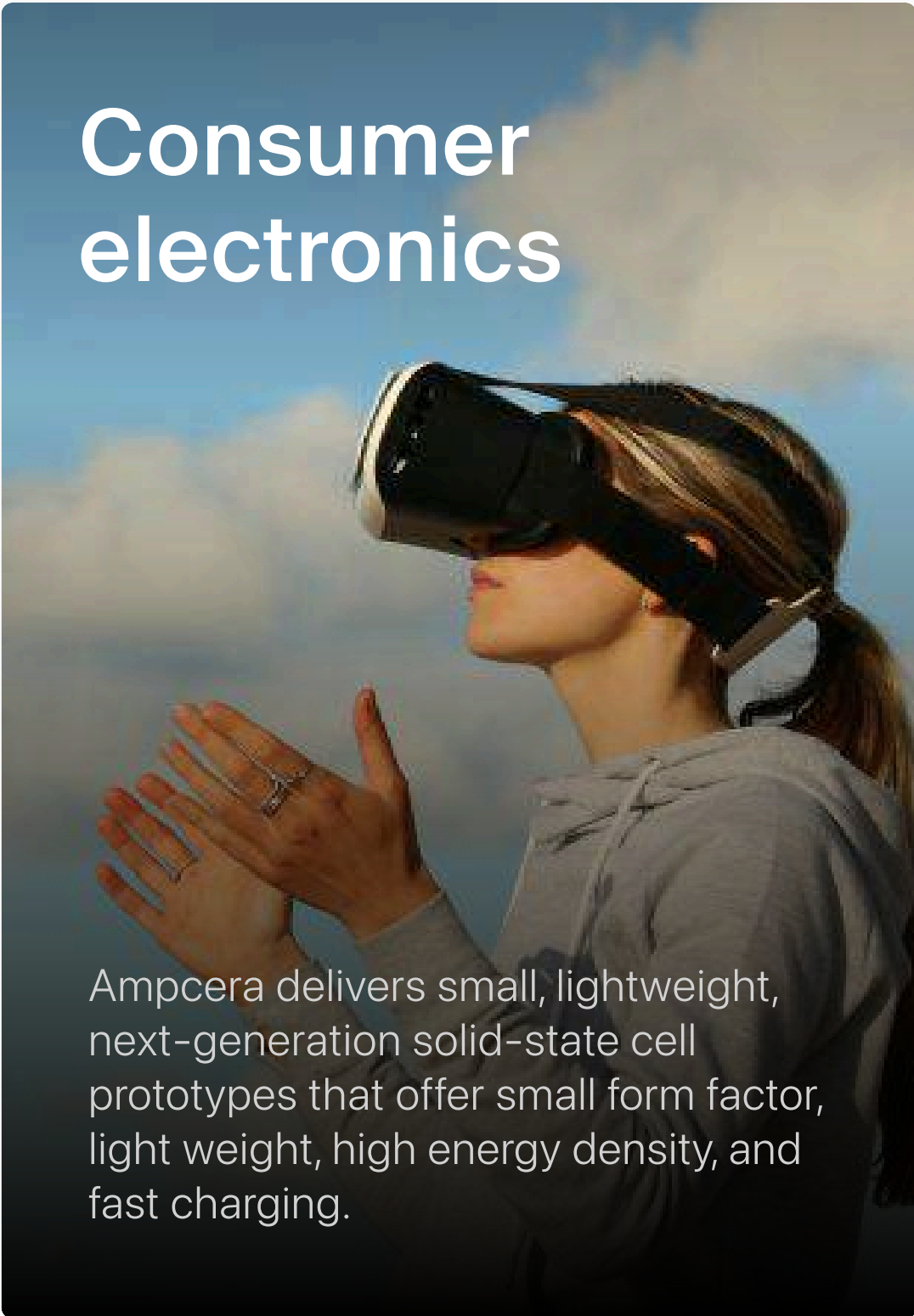
# Platform drives wider markets

### Electric vehicles



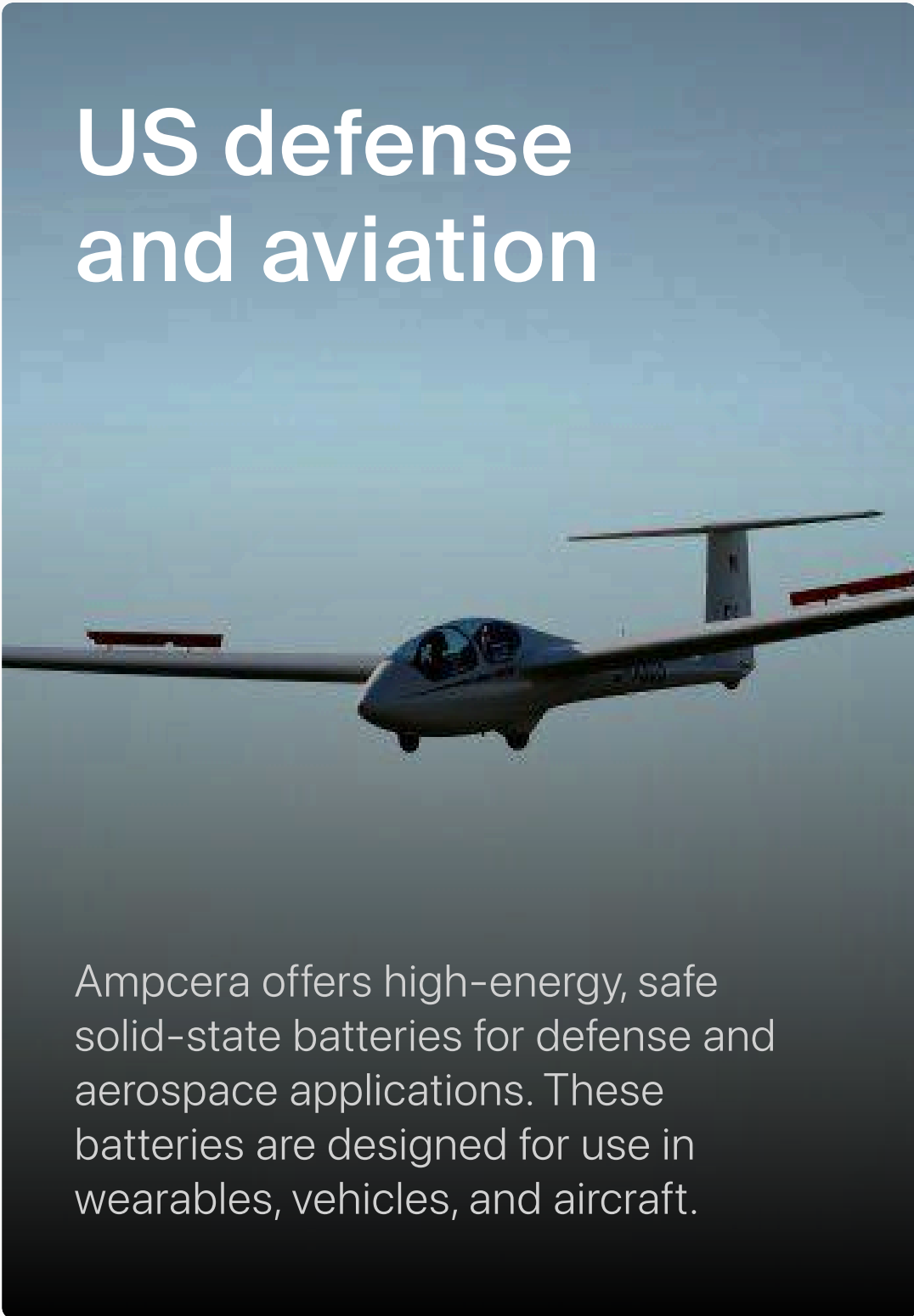
Ampcera delivers low-cost solid electrolyte materials that deliver breakthrough energy densities and fast charging without compromising cycle life or safety in all environments.

### Consumer electronics



Ampcera delivers small, lightweight, next-generation solid-state cell prototypes that offer small form factor, light weight, high energy density, and fast charging.

### US defense and aviation



Ampcera offers high-energy, safe solid-state batteries for defense and aerospace applications. These batteries are designed for use in wearables, vehicles, and aircraft.

3-fold business development strategy blends production at scale with premium margins by targeting EV, high-end consumer electronics, and U.S. defense sectors.

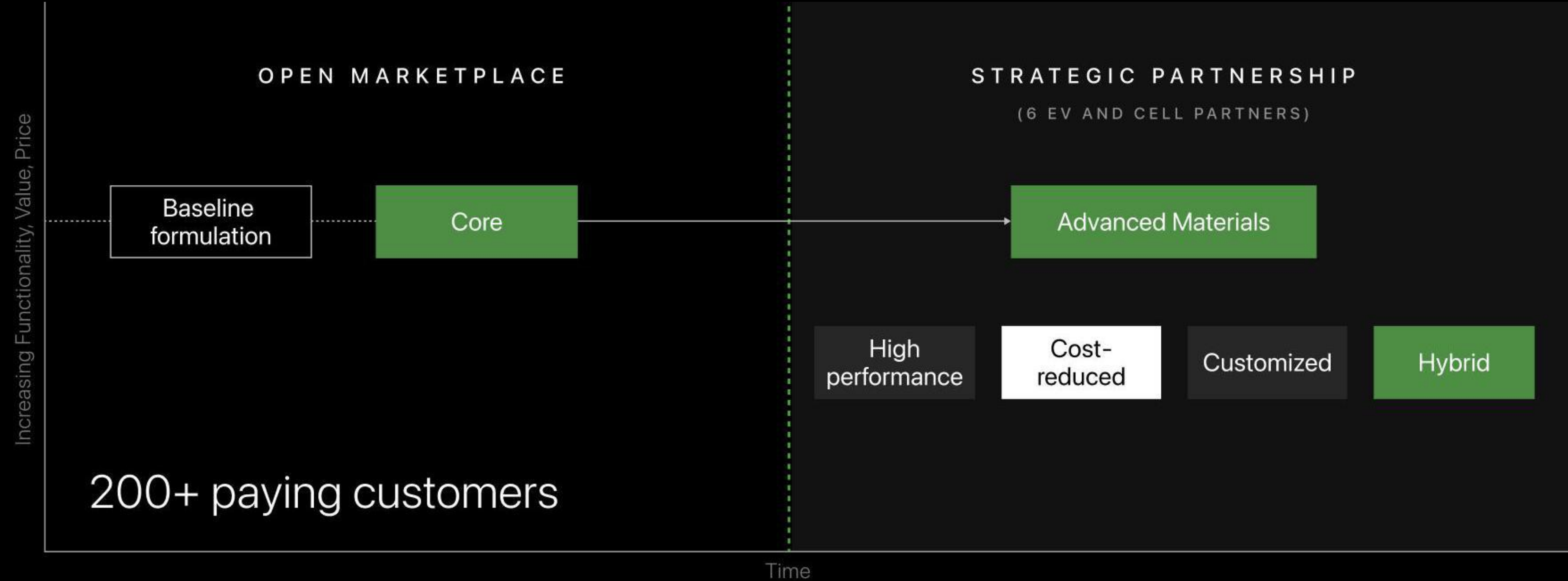
High performance products through cross-market development

Faster technology development and time-to-market

Diversity sector risk



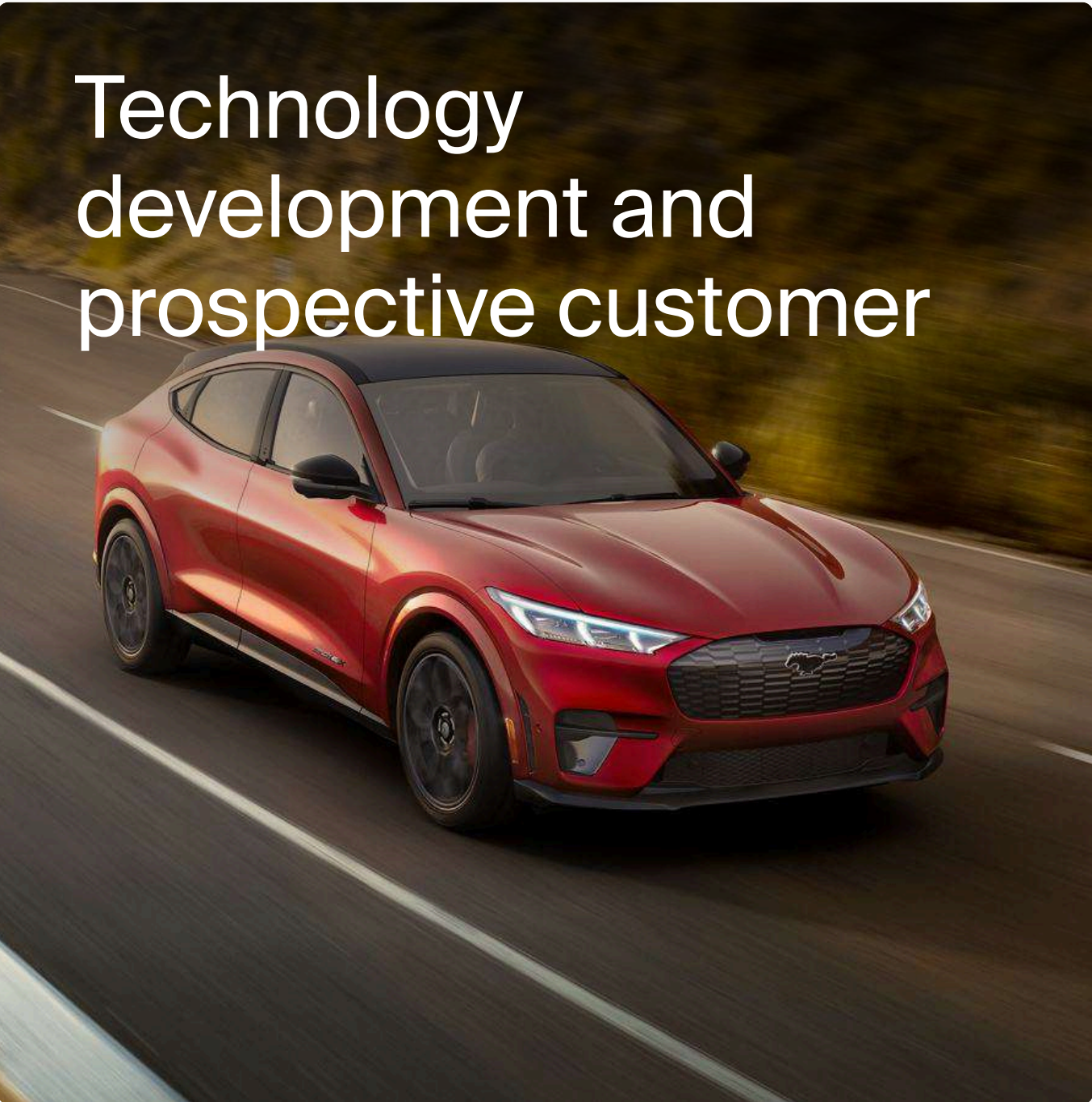
# Advanced materials for strategic partnerships





# Steps for cooperation with EV partners

PARTNER



Note: Ampcera is collaborating with six Tier 1 EV and cell partners, who are also prospective customers, to conduct material and cell validations and qualifications.

Cell qualification stages	Partner-specified demand for Ampcera material	2024	2025	2026	2027	2028	2029	2030
R&D	Kg-scale							
Pre-A sample	100s Kg-scale (R&D line)						CURRENTLY DELIVERING	
A sample	1-10 Tons (Pilot Line) CELL FINE TUNING AND SAFETY TESTING							
B sample	10-100 Tons MODULE AND PACK DESIGN AND EVALUATION							
C/D sample	100-1000 Tons PPAP QUALIFICATION VEHICLE TEST INDUSTRIAL SCALE							
Start-of-Production (SOP)	>1,000 Tons FULL COMMERCIALIZATION							



# Steps for cooperation with consumer electronic OEMs



## Performance alignment

**Data sharing:** Cell pre-qualification dataset provided to customer to demonstrate Ampcera’s technology validation.

**Proof of concept:** Application of Ampcera’s known specific cell ecosystem deploying solid-state electrolyte in a stacked pouch cell configuration



## Alpha prototype cell

**First prototype:** Confirm the performance of cells by utilizing Ampcera's electrolyte, assessing their capability to achieve specified targets



## Beta prototype cell

**Alpha to Beta:** Refine alpha cell to meet advanced performance and meet target cell dimensions

**Cell optimization:** Application of cell ecosystem dedicated for partner-specified performance

**Device integration optimization:** Refinement of cell structural design characteristics for device integration compatibility



## Battery pack

**Build and integration:** Optimize beta prototype cell design for pack integration of pouch cells, proceed to the final cell builds, and hand over to the customer's hardware integrator for sealed pack integration

**Testing:** Batteries subjected to full test matrix defined by integrator



# Experts leading the charge

Team of 30+ domain experts

COMPANIES



UNIVERSITIES



**Sumin Zhu**  
Co-founder and CEO

Bruker, Thermo Fisher  
Missouri University of Science and Technology **(PhD)**



**Hui Du**  
Co-founder and CTO

Veeco Instruments, Sion Power, NREL  
Carnegie Mellon University **(PhD)**



**Eongyu Yi**  
Director, Battery Technology

Lawrence Berkeley National Laboratory  
University of Michigan **(PhD)**



**Dawei Liu**  
Director, Legal

Wilson Sonsini  
Harvard Law School **(J.D.)**  
University of Washington **(PhD)**



**Alan Lin**  
Co-founder and Director of Investor Relations

SV Cafe, Silicon Valley entrepreneur and angel investor



**Ross Dueber**  
Senior Business Advisor

Powerside, ZPower, US Air Force, Emerson, Eaglepitcher  
Oxford **(PhD)**, Stanford **(MS)**



**Mei Cai**  
Senior Technology Advisor

General Motors Global R&D  
150+ patents  
Wayne State **(MS, PhD)**



**Amjad Huda**  
Financial Consultant

Co-founder of Sun Hydrogen and WaferGen Biosystems



Powering towards a sustainable future.



# Let's connect

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