



FORGE NANO

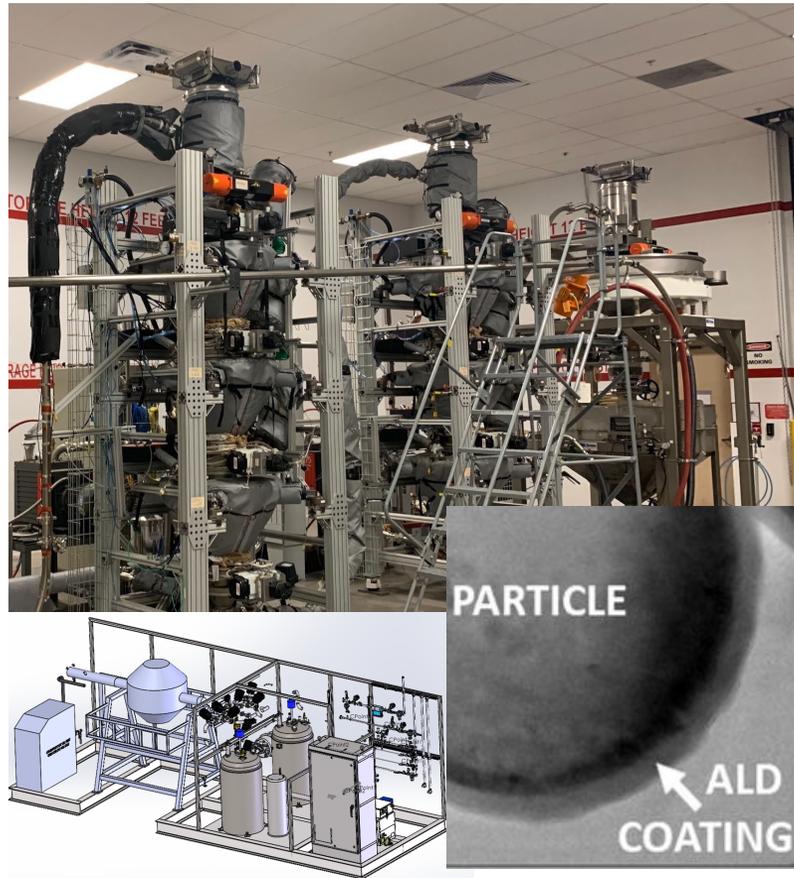
NAATBatt Member Update

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CTO

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Leading ALD Innovation and Scaling for over 10 years



Company Snapshot

- 70 employees, >\$10M revenue with 100% YoY growth the past 3 years
- 18 development reactors used for customer trials
- >300 years of combined experience in powder ALD
- Demonstrated at commercial scale ~6,000 Tons/yr
- Working with most fortune 500 materials companies

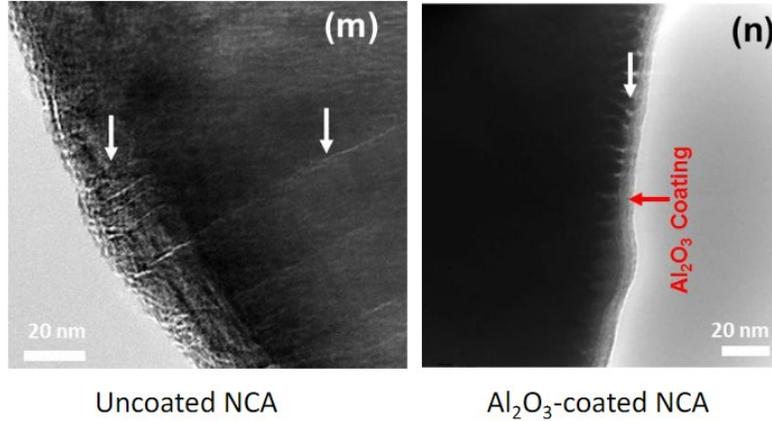


ALD Coatings Improve every part of the Lithium-Ion Battery



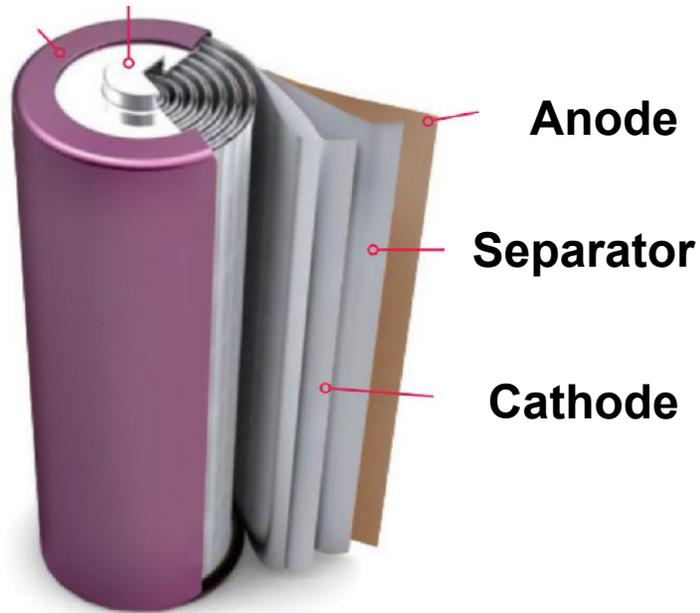
Benefits of an engineered SEI

- Prevents unwanted reactions
 - Keeps low resistance
 - Reduces the occurrence of key exothermic reactions
- Improves conductivity



Uncoated NCA

Al₂O₃-coated NCA



Anode performance with ALD coating

- ✓ Lower cost
- ✓ Enables fast charge
- ✓ Reduced need for formation
- ✓ Enable increased silicon loading

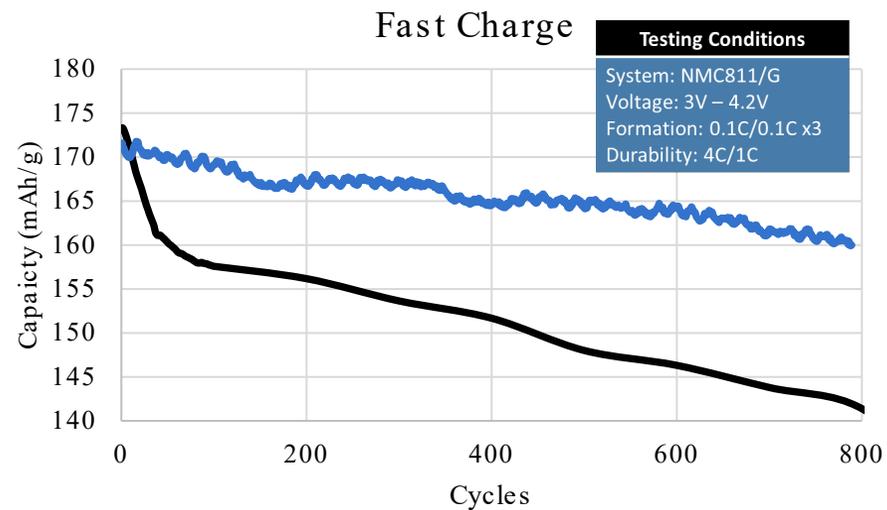
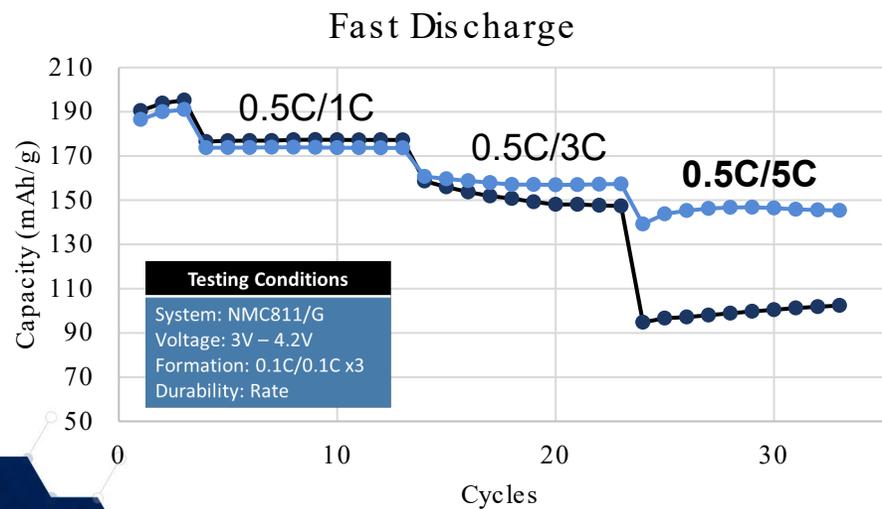
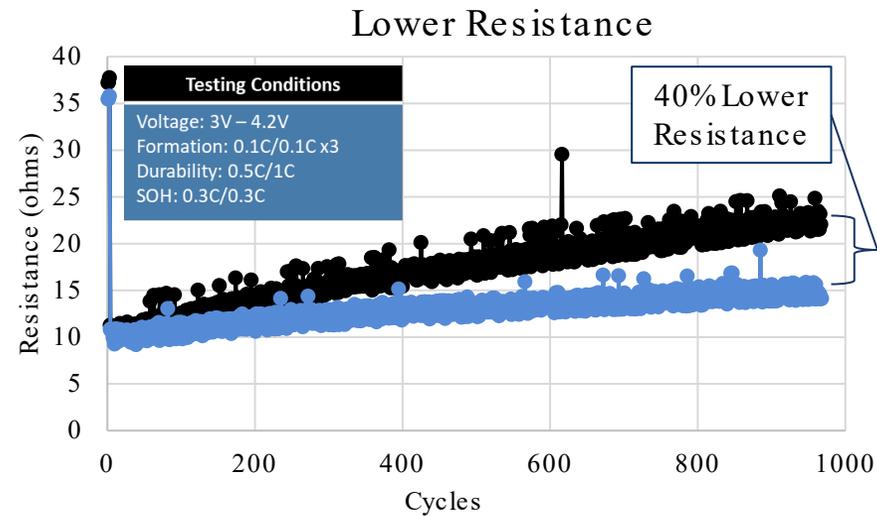
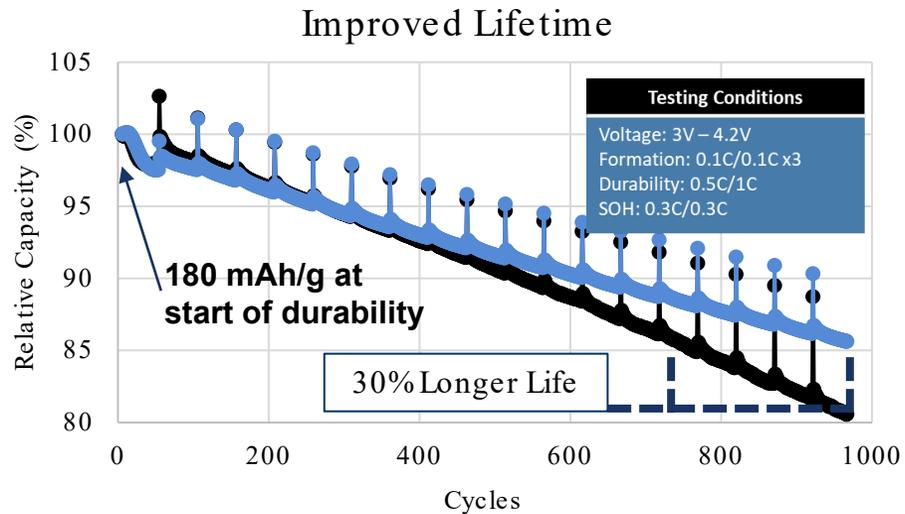
Separator performance with ALD coating

- ✓ Improved safety
- ✓ Thinner separator
- ✓ Faster formation
- ✓ Higher temperature stability

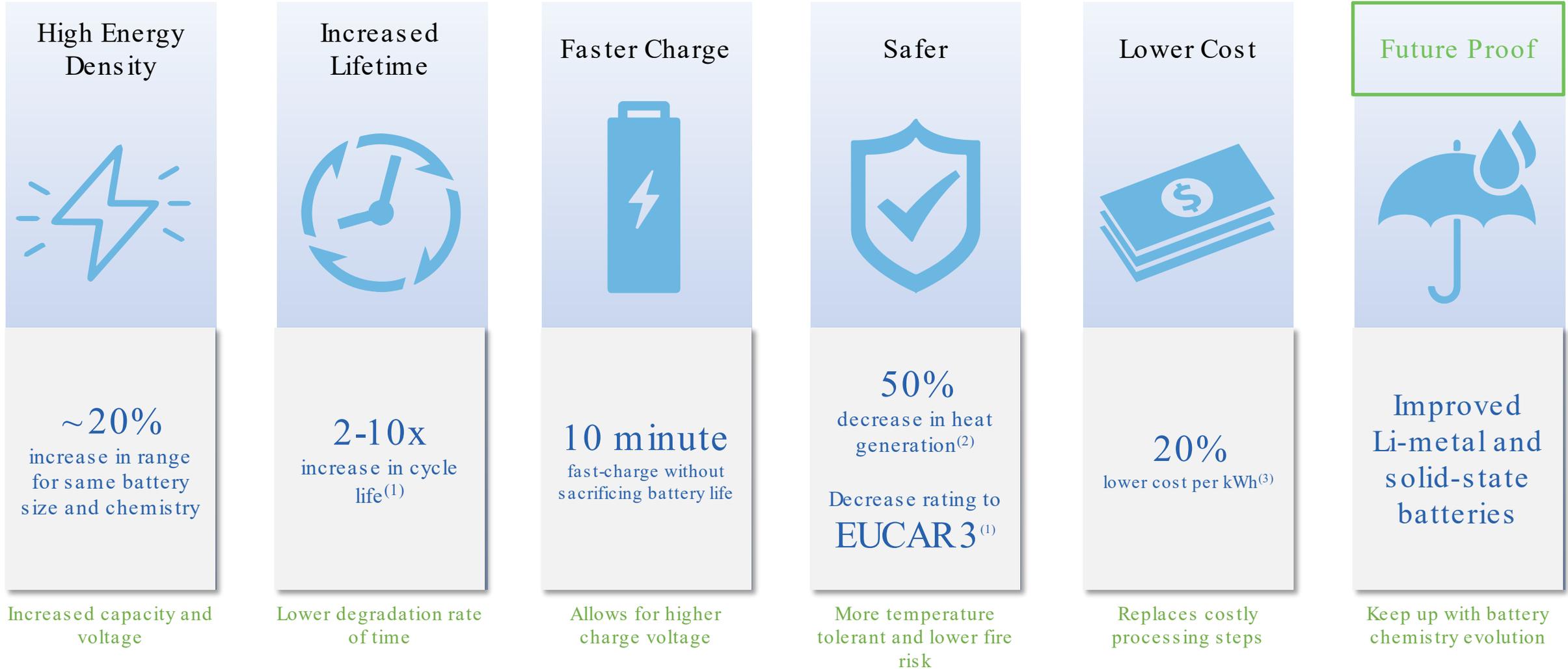
Cathode performance with ALD coating

- ✓ Improved energy density
- ✓ Improved cycle life
- ✓ Lower raw material cost
- ✓ Enables low-cost recycling

ALD Battery data examples (up to 100Ah)



ALD is a Customer Validated Technology Platform that Enhances Battery Performance

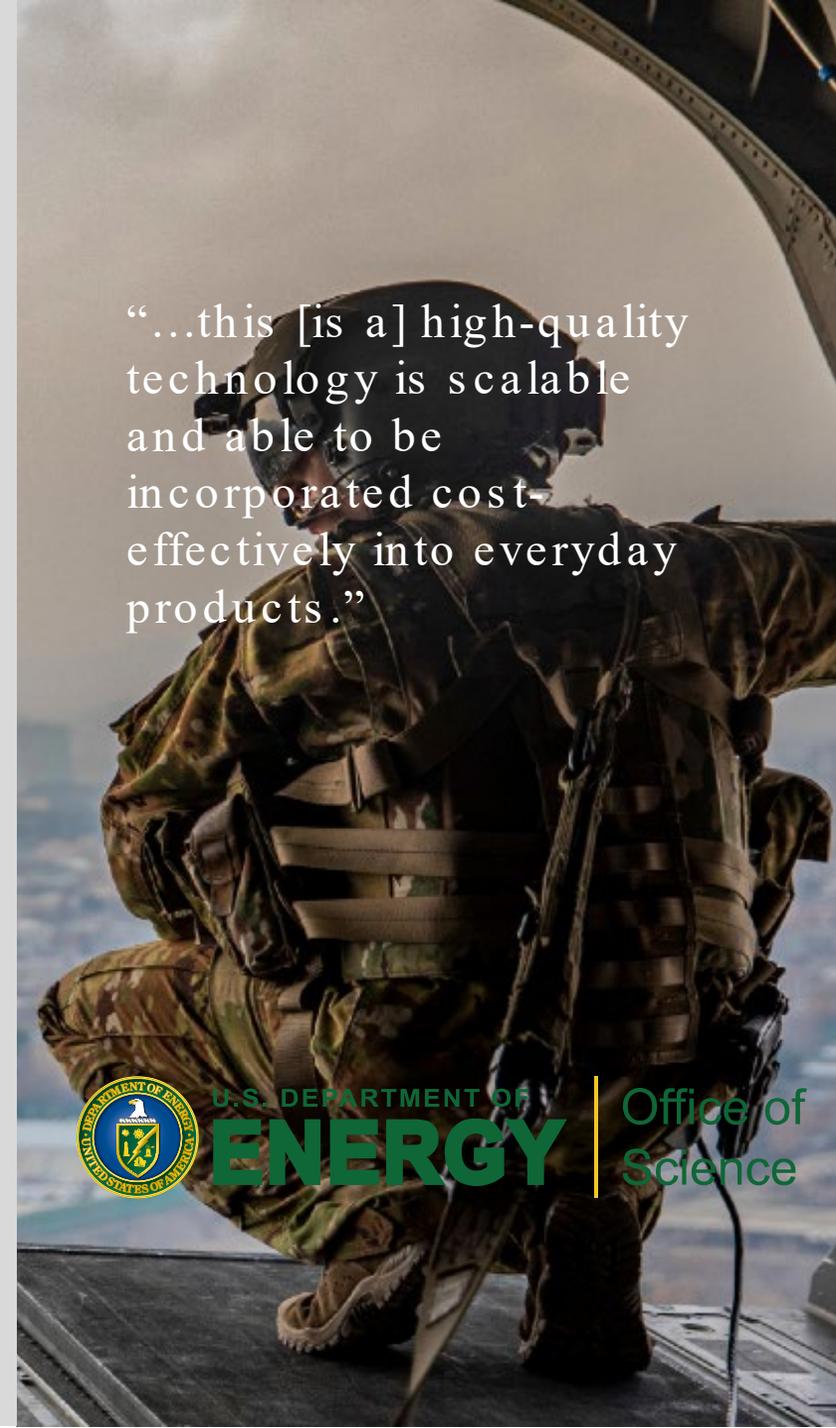


(1) Independently validated by major auto manufacturer.
(2) Quantified by % reduction in exothermic energy from arc test.
(3) Projected for full-scale production based on detailed cost modeling.

“...We are acting as a partner to Forge Nano and intend to provide the team with opportunities to carry out industrial trials with its innovative technology.”



“...Forge Nano has developed the technologies that enable scale-up production and commercialization of this innovation for both automotive and non-automotive applications.”



“...this [is a] high-quality technology is scalable and able to be incorporated cost-effectively into everyday products.”



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Thrust #1: Disrupting production of Graphite Anodes for LiB's



Forge Nano coatings

Process overview



Single step, continuous
Low temp 150C operation

Traditional Petroleum (Pitch) coatings



Multi-step batch process
>1200C post processing

Material loading



0.001 weight %



5-30 weight %

**>100x lower
CO₂ emissions**

Processing time

Hours

Days

**~4x faster
throughput**

Operating cost

~\$0.5 – 1 / kg

~\$1 – 2 / kg

**Much lower
OPEX cost**

Capital cost

\$10M

>\$20M

**50% lower
CAPEX**

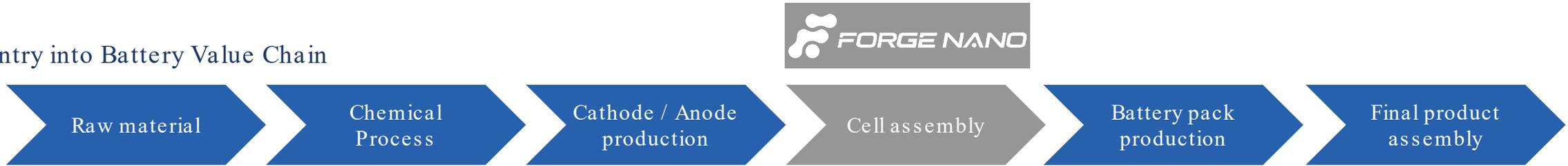
Quality

Consistent quality from high-purity chemicals

Risk of contamination from Tar

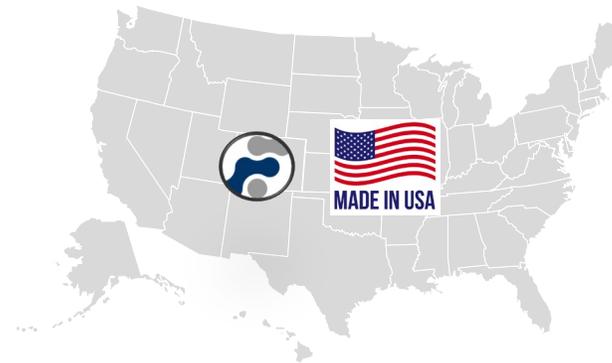
Thrust #2: Forge Nano is Building a Battery Demonstration Facility

Entry into Battery Value Chain



Cell Manufacturing

- Leading Li-ion battery formulation enabled by ALD
- Safest and highest quality cells
- Lower cost with higher performance
- Unlimited future roadmap
- America-only supply chain possible
- Active Supply and Development Agreements



**Phased approach
for up to 500MWh**

Intent to Directly Serve a Broad Range of Niche Applications and Partner/License for Large Applications

Auto



EV OEMs

Defense



Airforce, DOD,
Federal fleet
electrification

Consumer



Power tools
Consumer durables

Industrial



ESS,
Marine,
IoT



FORGE NANO

Questions

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