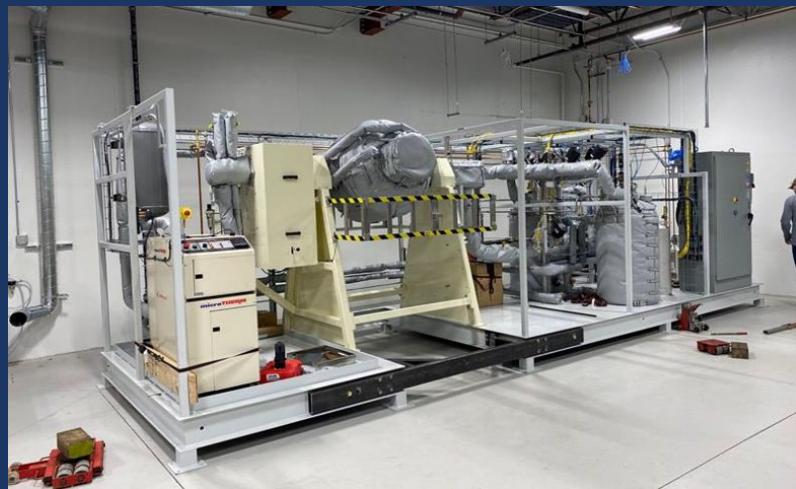




NAATBatt Panel: Breaking down the Barriers to Commercialization of U.S. Battery Innovation

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Chief Technology Officer

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Founded in 2011, Headquarters in Denver, CO

~90 employees, 90% YoY growth past 4 years

Typically engaged as a **materials innovation partner**

Scaled a nano-coating technology called ALD

Technology demonstrated at giga-factory scale

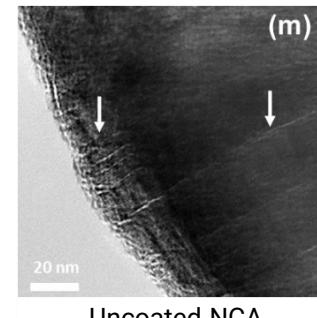
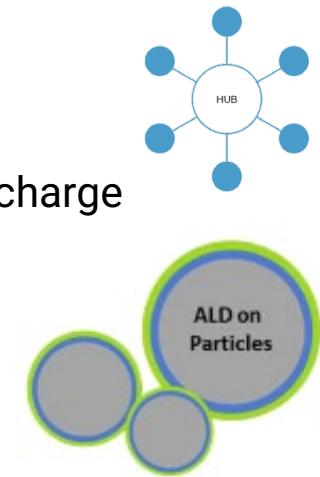
Core business is selling commercial equipment

Developed multiple market-leading Li-ion cells

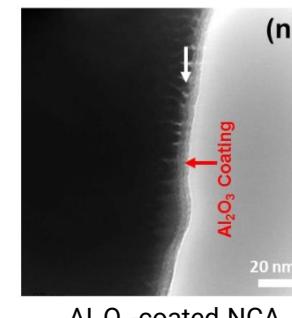
End-to-End Development Provider (grams-to-tons)

ALD R&D, Piloting, Tolling, and Commercial Integration

- In Li-ion/Beyond Li-ion Batteries
 - Increase energy density up to 20%
 - Increase power density for fast (dis)charge
 - Increase cycle life by 2-10x¹
 - Increase safety by 50%²
 - Decrease cost³
 - Future proof (any battery/chemistry)



Uncoated NCA

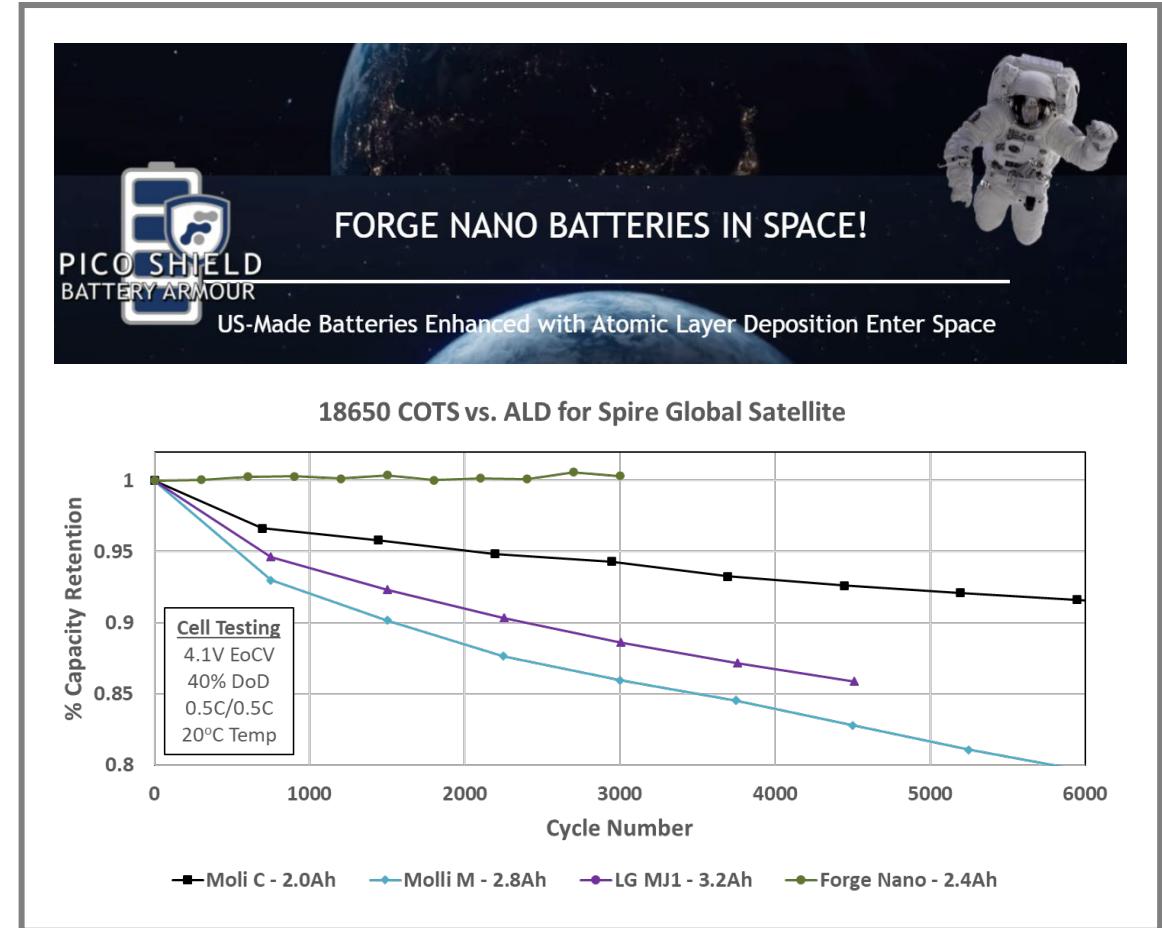
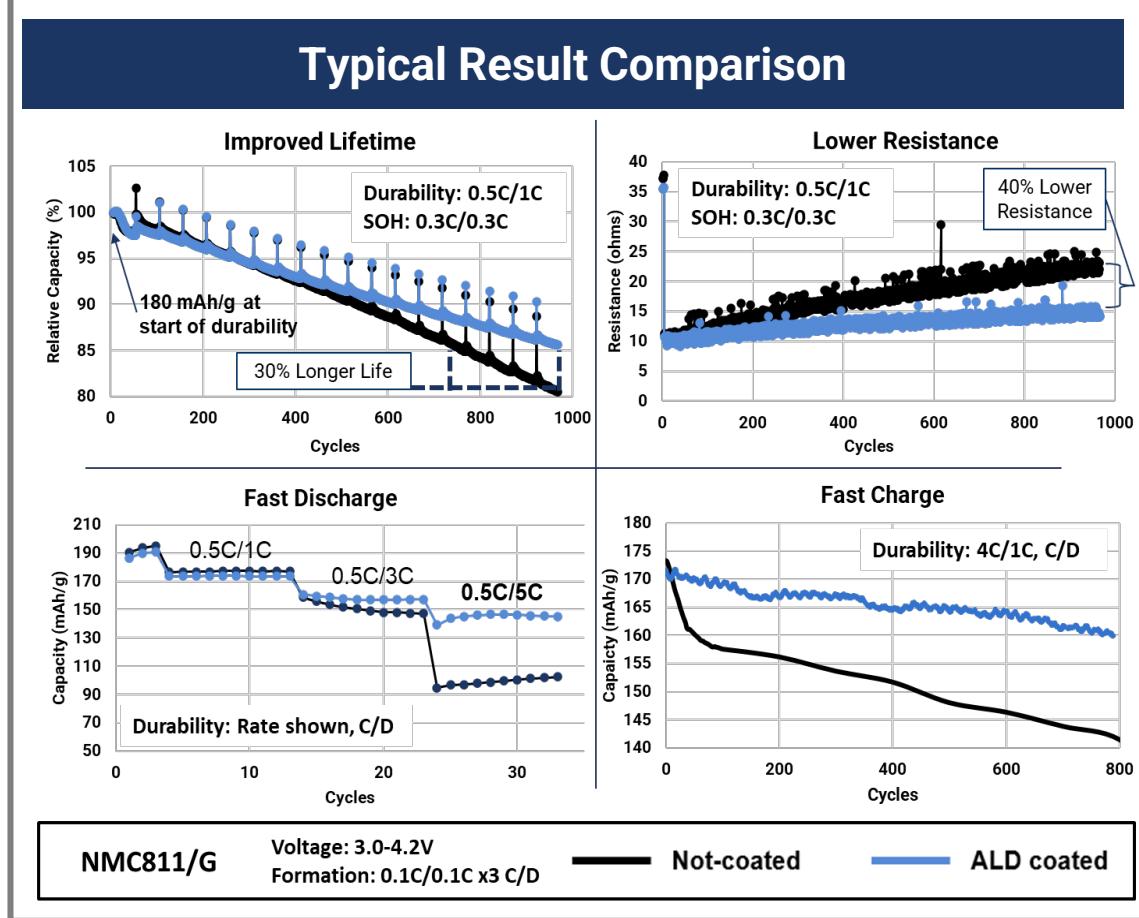


Al₂O₃-coated NCA

Any battery
Any chemistry
Any cathode
Any anode
Any separator
Any... other?

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.

ALD for Li-ion Batteries



ALD precision
coatings

Reduction of unwanted chemical
and electrochemical reactions

Keep resistance low

Reduce the occurrence of key
exothermic reactions

Forge Nano Super Cell Performance



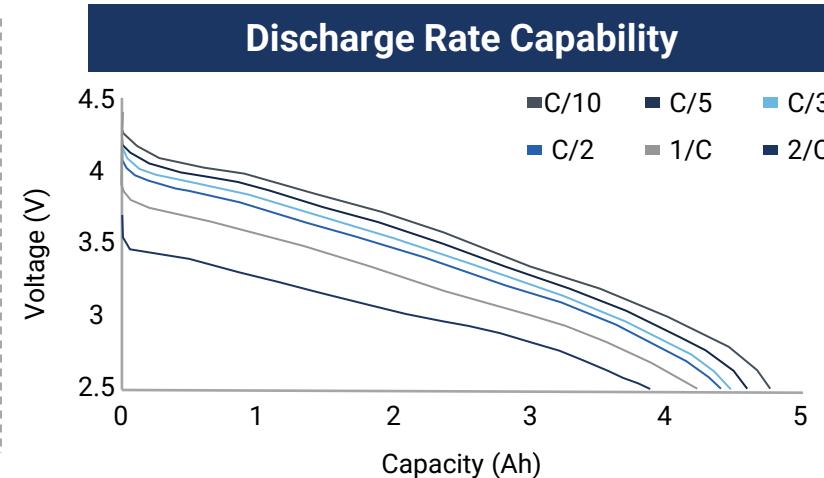
Gen 1 Cells

- 275 Wh/kg 21700s available now
- 260 Wh/kg 18650s available now



Gen 1.1 Cells:

- 300 Wh/kg 21700s in development
- 280 Wh/kg 18650s in development



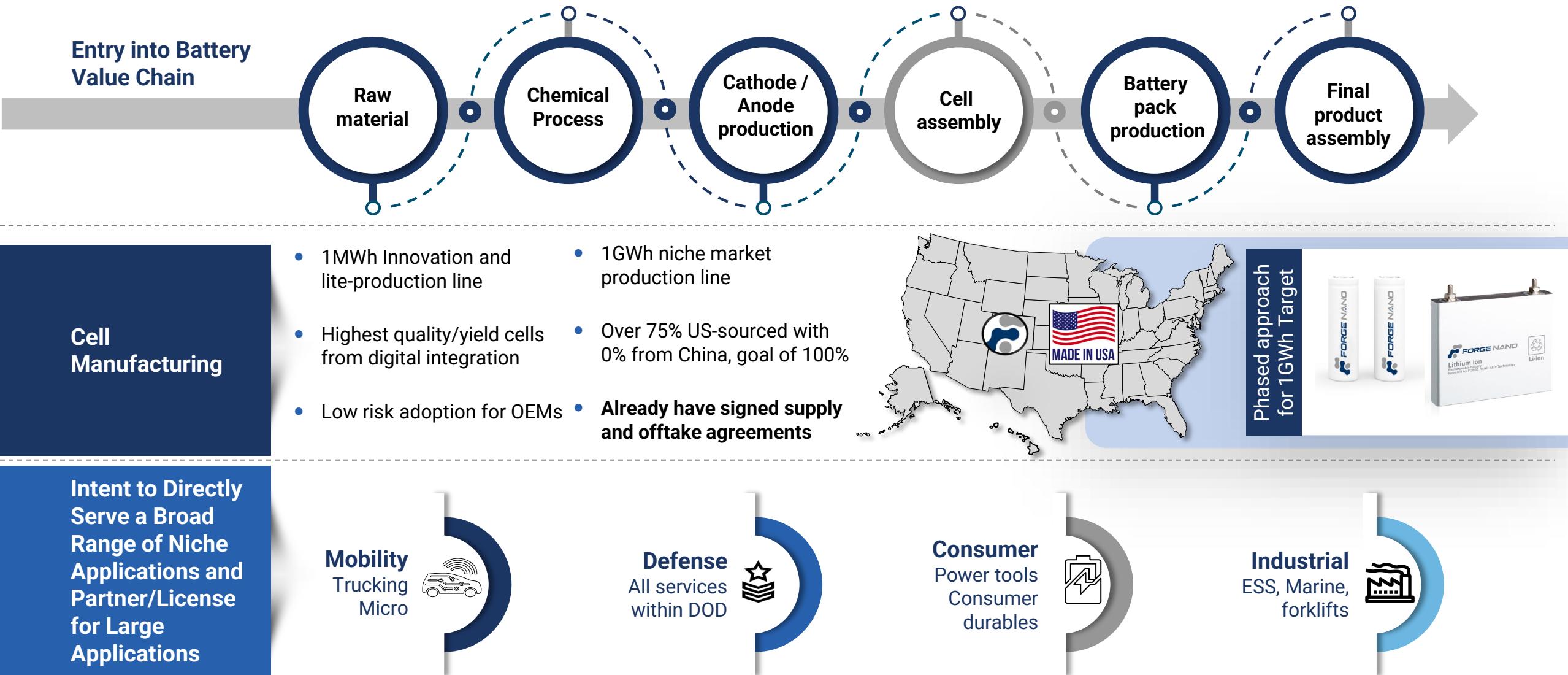
Charge Capacity (Discharging at 0.2C)

Charge Rate	% of C/10
0.1C	100%
0.2C	95%
0.33C	95%
0.5C	95%
1.0C	94%
2.0C	93%

Cell Comparison (Energy Cells)

Specification	LG M50T	Panasonic Model 3 21700	Samsung SDI 50E	Forge Nano 2149-10 (developed)	Forge Nano 2156-10 (developing)
Energy Density (Wh/kg)	260	250	260	275	300
Capacity (Ah)	4.8	4.8	4.9	4.9	5.6
Nominal Voltage (V)	3.6	3.6	3.6	3.6	3.6
Weight (g)	68.2	68.5	68	64.5	66.5

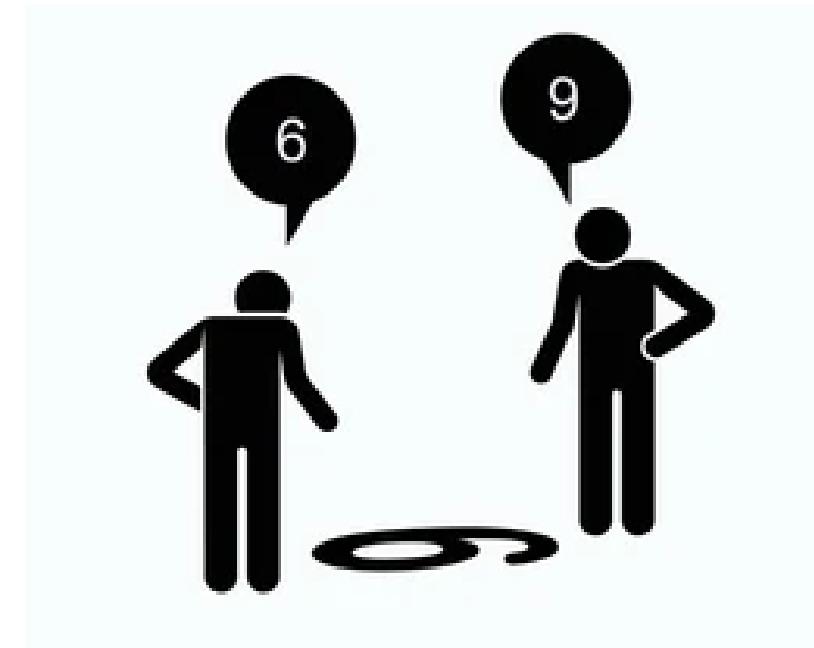
Forge Nano Super Cell Performance



Forge Nano Perceived Barriers to Commercialization: Effective Communication and

- Effective TRL Demonstration
- Effective MRL Demonstration
- Poor communication
 - Technology
 - Business development
- Large company adoption
 - Untouchable production lines
 - Competition benchmarking
- Industry 'Noise'
 - Company comparisons
 - Advertisement vs. Reality vs. Academia
 - Investor scars from other industries
- Cost of R&D vs. Cost of MFG
- Market perception
- Marketing vs. Problem Solving
- IP (All forms)

“There are liars, damned liars, and battery suppliers”





Li-Bridge



Thank you



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