

Nanoramic  Laboratories

The Future of Li-ion Energy Storage

Available Today



www.nanoramic.com

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Market Innovator Since Inception – Well-Positioned to Transform the Energy Storage Market

Grants for Research to Advance
Energy Storage Nano-technology



Li-ion Batteries

Neocarbonix
AT THE CORE

Lower Cost/kWh: **-20%**

Higher Energy Density: **+30%**

Faster Charging: **15 minutes**

Thermexit™
A Nanoramic Labs Technology

Thermal Interface Materials

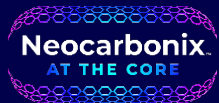


Nanoramic Laboratories – Business Segments



**FastCap®
Ultracapacitors**
A Nanoramic® Labs Technology

FastCap® Ultracapacitors is an industry leader in harsh environment energy storage, producing the only ultracapacitors capable of operating in temperatures up to 150°C and under conditions of high shock and vibration. FastCap's ultracapacitor technology is derived from years of government funded R&D in advanced materials.



Neocarbonix™ at the Core is an electrode technology for rechargeable Li-ion batteries, Li-ion capacitors, and supercapacitors. Neocarbonix electrodes are created using a low-cost process with an advanced 3D nanocarbon binding structure. The resulting product provides greater power, energy density, and performance in extreme environments compared to traditional battery designs.



Thermexit™
A Nanoramic® Labs Technology

Thermexit™ is a line of high-end thermal interface gap filler pads. Nanoramic's® gap fillers are a non-reactive, non-silicon, no cure system featuring high thermal conductivity and high thermal stability. Nanoramic® produces 2 novel product lines, a High-Performance TIM Gap Filler and an Electrically Insulating TIM Gap Filler.



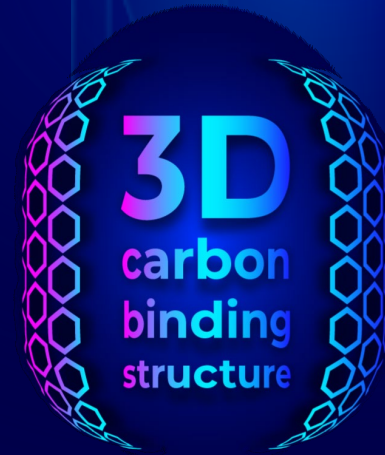
Nanoramic Labs manufactures Li-ion cells with **NEOCARBONIX™** at the *Core technology*

- The Neocarbonix™ at the Core technology is **applicable** to Li-ion cathode, Si-anode, and Supercapacitor electrodes



Industry Standard Polymer Binders for Cathodes (PVDF)

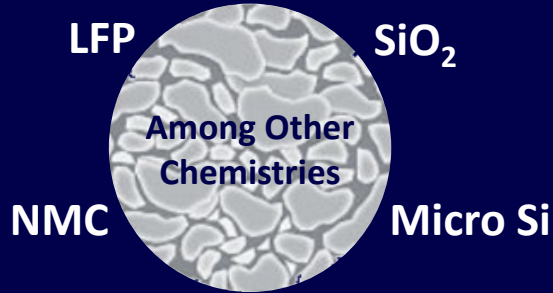
Replaced
With...



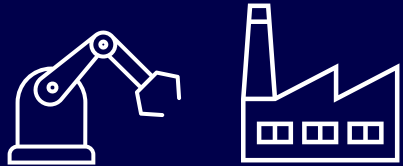
NMP-free, PVDF-free coating process for:

- All cathodes
- Silicon anodes
- High mass loading (> 6.0 mAh/cm²)

NEOCARBONIX™ at the Core Value Proposition & Ease of Use – Immediate Applications & Cost Savings for All Li-ion & Solid-State Batteries



Compatible with Any Active Material in Li-ion & Solid-State Batteries



Drop-in Replacement to Existing Manufacturing & Infrastructure

Lower Cost/KWh



Use Same Equipment



Higher Energy Density



Long Cycle Life



Faster Charging



Environmentally Friendly

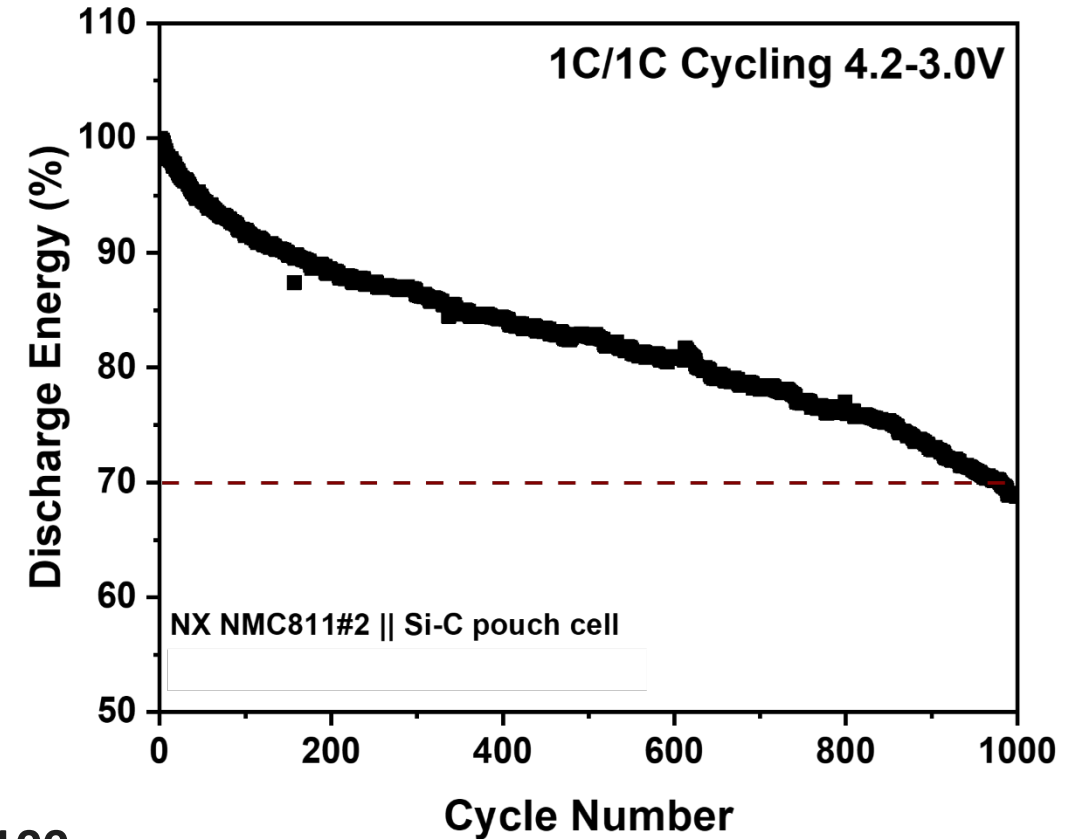


NEOCARBONIX SILICON DOMINANT ANODE – NMC811 || – 9 Ah CELLS

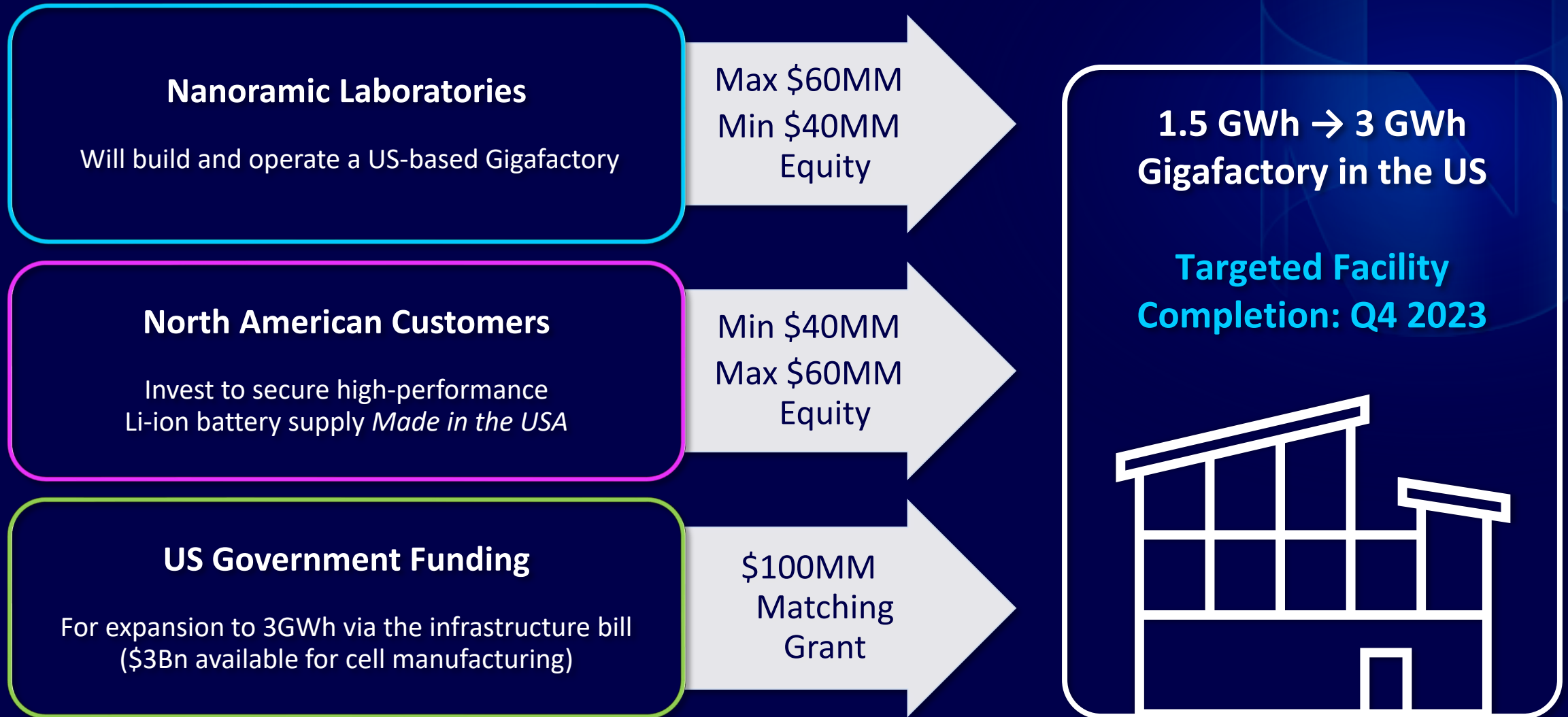
Cell Capacity	Specific Energy	Energy Density
9Ah Cell	≥315 Wh/kg	≥820 Wh/L



- ≥315 Wh/kg, ≥820 Wh/L in 9 Ah format cells:
- **Less than 8.8%** volume expansion from SOC0 to SOC100
- Excellent cycle stability: **~70% at 1000 cycles**



Battery Gigafactory - Concept





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