

NAATBatt 2020 Member Update: Forge Nano

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Chief Technology Officer



FORGE NANO

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Company



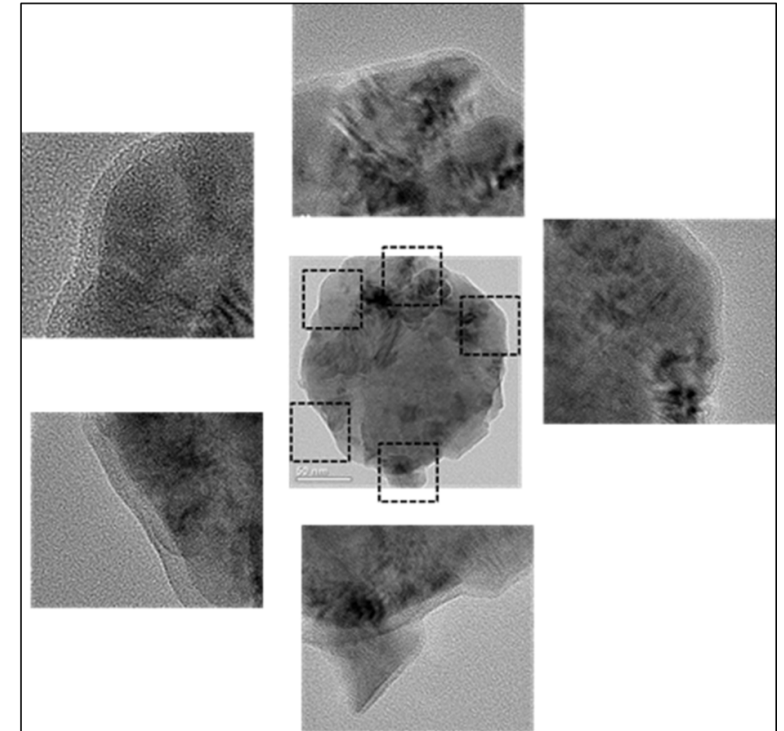
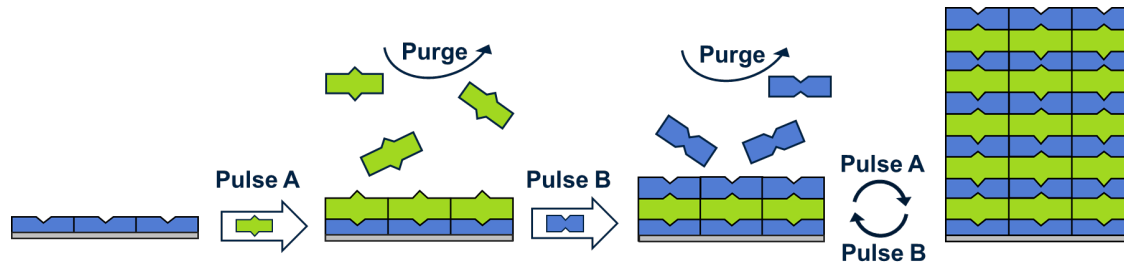
- Founded in 2013
- 43 Employees
- Headquarters in Louisville, CO

Mission:
To become the world leader of innovative materials solutions

<https://www.prnewswire.com/news-releases/forge-nano-and-ald-nanosolutions-combine-forces-making-atomic-level-manufacturing-a-reality-301000118.html>

Atomic Layer Deposition

ALD for anything, not just semi-conductor
Coatings that are conformal and uniform
Coating thickness typically 0.1nm-100nm
Nearly any chemistry can be deposited

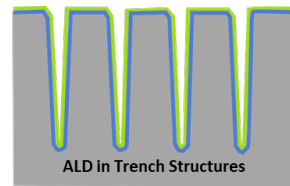
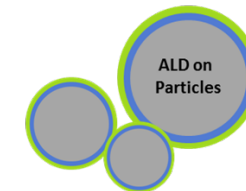
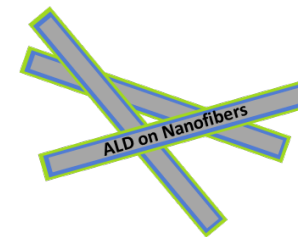


End-to-End Material Solutions Provider

R&D Services (fee for service)

Toll-Coating (milligrams to kilotons)

Equipment Sales (Lab to Commercial-Scale)



Reactions happen at the surface of materials, we can control the surface

Application Space for ALD



Energy Storage

LIB, Beyond Li,
Capacitors, Materials

Catalysts

Emissions, Chemicals,
Fuel Cells

Fillers

Thermal, Optical,
Electrical, Mechanical

Powder Forming

3D Printing, Powder
Metallurgy, Ceramics

Separations

Adsorbents, Membranes

Space

Multi-faceted,
Cross-cutting

Textiles

Anti-microbial, Special
Properties

Cosmetics

Processing,
Performance

Structural

Composites, Building,
Glass

Pharma

Controlled Release,
Processing

Medical Devices

Biocompatibility, Energy
Storage

Lubricants

Tribology, Rheology,
Dry & Wet Lubricants

Barrier Coatings

Corrosion, Anti-fouling,
Wettability

Pigments

Paint, Dispersion, Optical
Properties

Power Gen

Solar

Displays

LCD, OLED, QLED



ALD is applicable to just about anything

Energy Density



Power Density



Cycle Life



Safety



Cost



Old News (Data Available upon request)

- Li-ion, beyond Li-ion, Na, Zn, Pb, ect...
- NMC, NCA, LMNO, LCO, LMO, Sulfur
- Solid electrolytes, separators
- Graphite, Si, composites, Li-metal
- Conductive additives, cases, components

ALD improves performance and safety, and can actually reduce cost

Corporate Activity



Coming soon

Coming soon

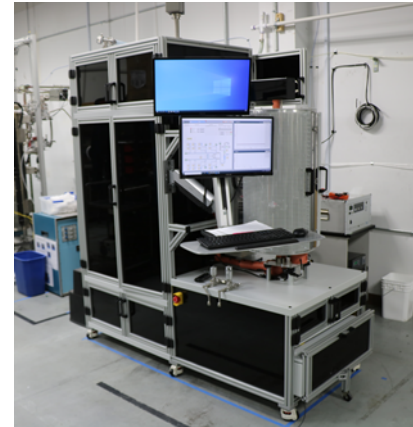


ALD nanosolutions

Commercially Ready Products



Lab-scale: ~1 mg to 1 kg



Lab-scale: Objects/Inert



PicoShield® LCO
PicoShield® Natural Graphite

Forge Nano is the largest and most comprehensive ALD provider

Thank you!



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