



ENABLING NEXT GENERATION ENERGY STORAGE

Room Temperature Production of High Purity
Lithium Metal & Associated Products

January, 2018

alpha—En
High Purity Lithium Metal - Clean Technology

SAFE HARBOR STATEMENT

This presentation is for informational purposes only and does not constitute an offer to sell, or the solicitation of an offer to buy, any securities of the alpha-En Corporation or its subsidiary, Clean Lithium Corporation; or a promise or representation that any such offer will be made to the recipient or any other party.

This presentation contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by words such as: “expect,” “anticipate,” “intend,” “plan,” “believe,” “seek,” “estimate,” “project,” “goal,” “may,” “should,” “will” and similar expressions that concern our prospects, objectives, strategies, plans or intentions. Forward-looking statements are neither historical facts nor assurances of future performance. They are based on current beliefs, expectations and assumptions that are subject to inherent risks and uncertainties and our actual results and financial condition may differ materially from those indicated in the forward-looking statements. Therefore, you should not place undue reliance on any forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in forward-looking statements include unfavorable changes in general economic and financial conditions; our lack of relevant operating history and revenues; competition and technical alternatives in the overall battery market; government regulation; our ability to attract and retain key personnel; our ability to successfully collaborate with partners; the availability of financing; marketplace acceptance of our technology; and such other factors discussed in our filings with the Securities and Exchange Commission. Any forward-looking statement speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether written or oral, whether as a result of new information, future developments or otherwise.

The background is a solid blue color. Overlaid on this is a large, semi-transparent circular graphic. Inside this circle, there is a series of small, light blue dots arranged in a ring. In the center of the circle, there is a stylized, abstract figure that appears to be a person or a robot, rendered in a lighter blue color. The figure has a head, torso, and limbs, but is simplified in design. The overall composition is clean and modern.

COMPANY UPDATE

ALPHA-EN 2017 MILESTONES

- Continued progress on technology development
 - Entered “Phase 2” of commercial scale up work at Argonne Nationals Labs
- Raised \$1.8 million in capital in May
- Moved into new Yonkers lab in May
- Announced a research partnership with Mercedes-Benz in August
- Won US Department of Energy Technology Commercialization Award with Argonne for \$750,000 (solid state battery)
- Hired Sam Pitroda, a seasoned technology executive as CEO in November



Mercedes-Benz



Argonne National Laboratory

- Build and test next- generation batteries
- Optimize alpha-En's Lithium into next generation battery process (Solid Electrolyte)
- Process scale-up
- Help alpha-En productionize, including developing techno-economic model



Mercedes-Benz

Princeton University/Mercedes Benz

- Research collaboration using alpha-En's process to create a battery

alpha-En's Internal Lab

- Focused on improving current process
- Creating Lithium in different form factors
- Integrate our Lithium into an existing Li-ion battery manufacturers facility



R&D OBJECTIVES

ALPE process has been proven to produce pure lithium deposited on a “bench” scale

Current R&D focused on

- Optimizing components and materials for commercial use
- Scaling up process for production in commercial quantities
- Demonstrating use in Li-M batteries
- Solid state battery development

Goals

1. Demonstrate commercial viability of ALPE process to produce Li for:
 - Li-M Thin Film Anodes
 - Li Compounds
 - Li-M Batteries

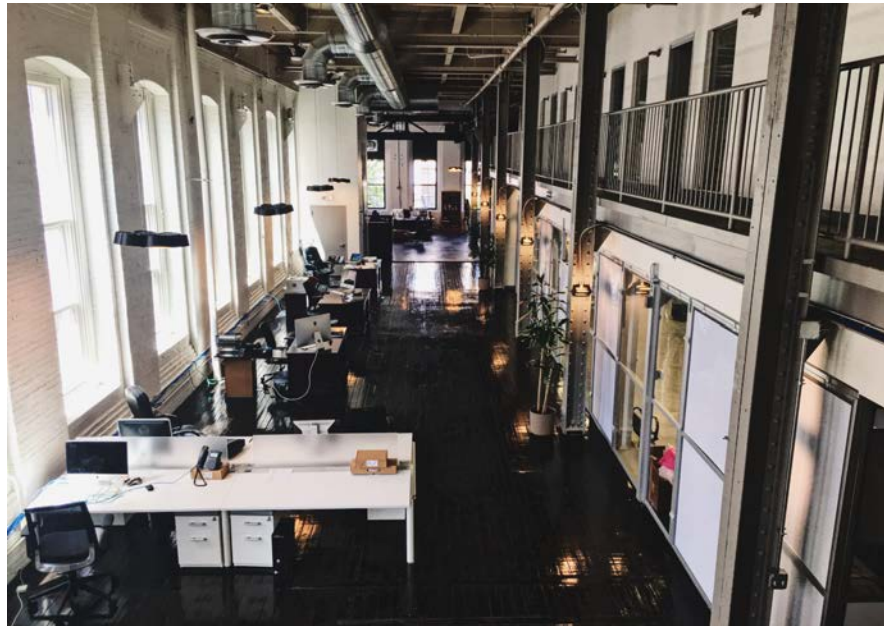
Then

1. Pursue licensing and JV opportunities with battery suppliers, makers and users for commercial electronics, EV's and energy storage



ALPHA-EN FACILITY

- ALPE leased a 8,000 sq. foot facility in Yonkers, NY outside of Manhattan
- Moved in May 31, 2017
- Old Otis Elevator building repurposed and renovated for ALPE corporate HQ and outfitted to be our new R&D center





ALPE PROCESS

REVOLUTIONARY PROCESS FOR REFINING LITHIUM

TRADITIONAL PROCESS



Heavy Industry



High Energy Operation

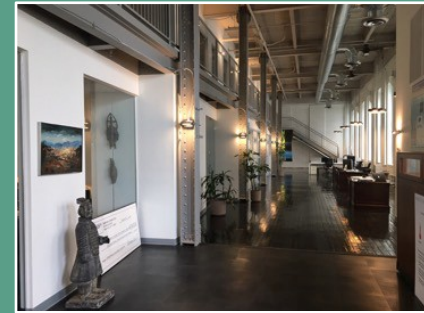


Bulk Lithium Ingots

Environmentally
Friendly

Clean Process: Eliminates
Hazardous Byproducts

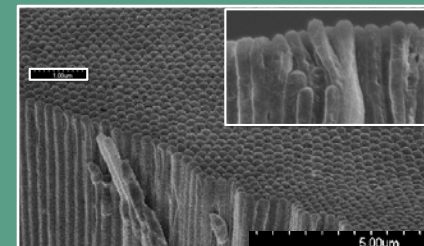
High Purity Li-M deposited
directly from standard
Lithium Carbonate at
Reduced Cost



Clean Operation



Efficient Process



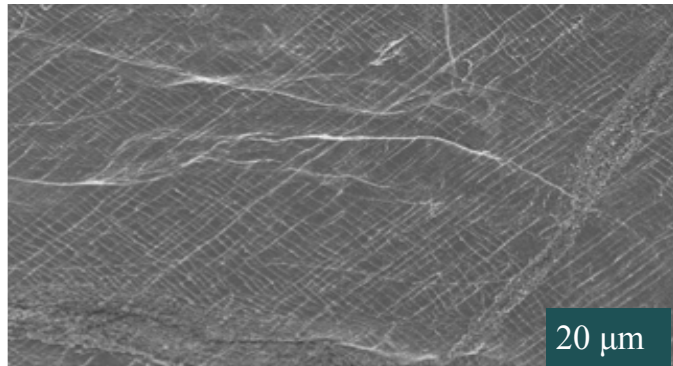
Nano Technology

ALPE PROCESS

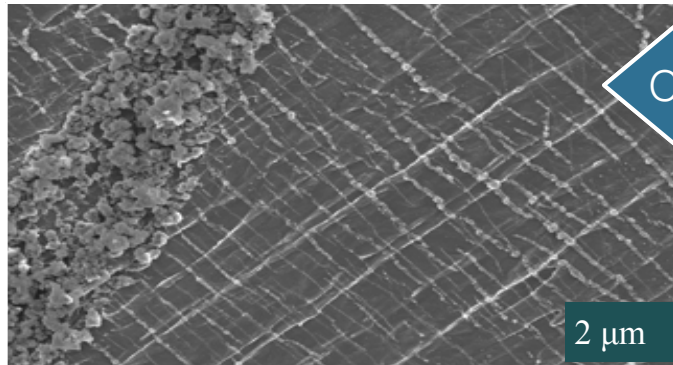
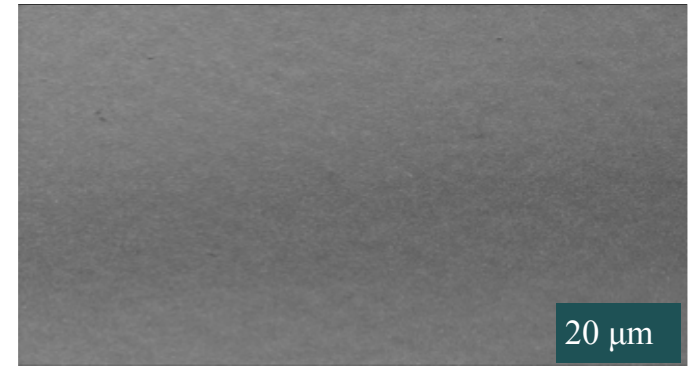
ALPE PROCESS PRODUCES HIGH QUALITY THIN FILM OF PURE LITHIUM

Thin films could be the key to next-generation batteries.

Commercial Alloy vs alpha-En Morphology



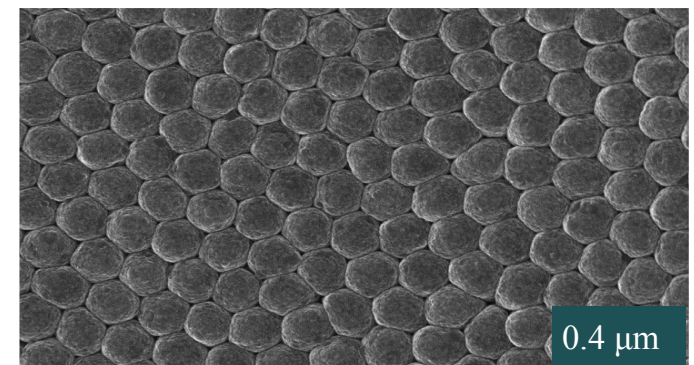
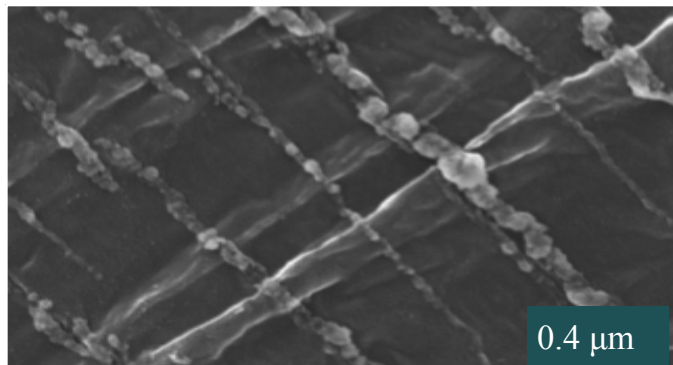
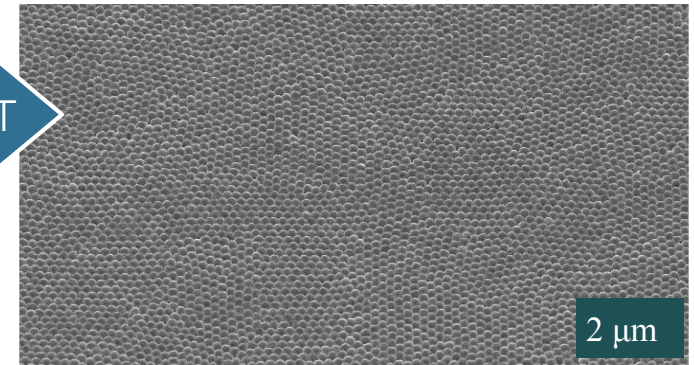
Li Foil
(Alfa Aesar)
99.9%
750 μm thick



COMMERCIAL

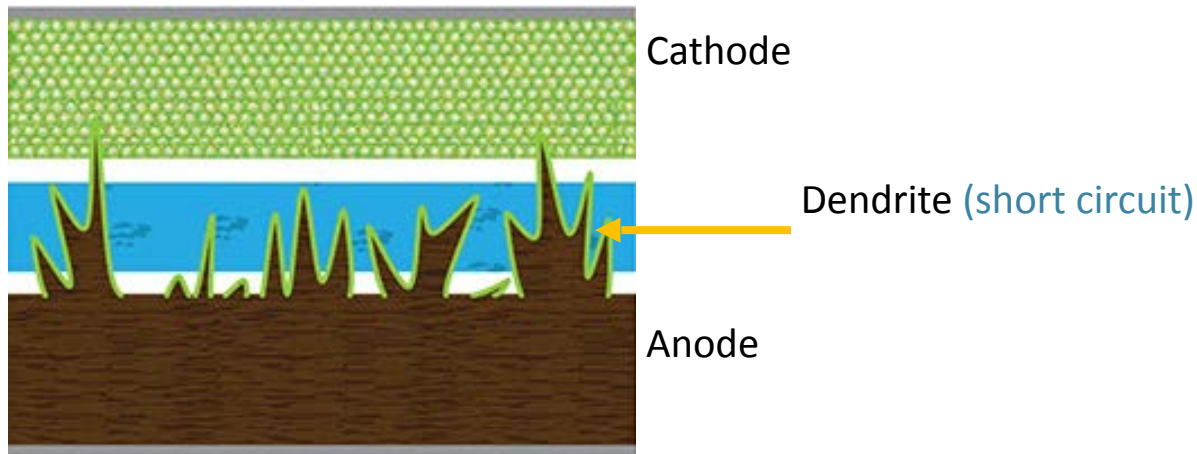
ALPE PRODUCT

Li-M (ALPE)
on Cu
99.998%



PURITY - WHY IT MATTERS

den·drite /'dendrīt/, a crystal or crystalline mass with a branching, treelike structure. From Greek dendritēs 'treelike,' from dendron 'tree.'
* Google.



SLAC National Accelerator Laboratory *



Actual lithium dendrites growing from an anode surface. Image from: R.R. Chianelli, J. Cryst. Growth, 1976, 34, 239-244. **

- Other non-lithium elements (e.g., K, Na, Ca, N) are found in existing battery-grade lithium metal.
- Formation of dendrites, which are microscopic fibers that can expand into the electrolyte, in some instances short-circuit the battery causing premature failure or “thermal runaway”.
- Lawrence Livermore National Lab researchers report dendrites nucleate inside a Li-M electrode at the site of impurities. ***
- Reduction of other metallic elements in Li-M may enhance Li-M anodes for advanced batteries.

* [HTTP://ein.iconnect007.com/index.php/article/90840/next-gen-lithium-batteries-that-prevent-fires/90843/?skin=ein](http://ein.iconnect007.com/index.php/article/90840/next-gen-lithium-batteries-that-prevent-fires/90843/?skin=ein)

* [HTTPS://areweanycloser.wordpress.com/2013/06/21/dendritic-lithium-and-battery-fires/](https://areweanycloser.wordpress.com/2013/06/21/dendritic-lithium-and-battery-fires/)

* Dendrites of Substance structures underneath dendrites formed on cycled lithium metal electrodes, Nitash P Balsata et. al. Nature Material published online
* 24 November 2013.



From a report in June 2017 by Argonne National Lab:

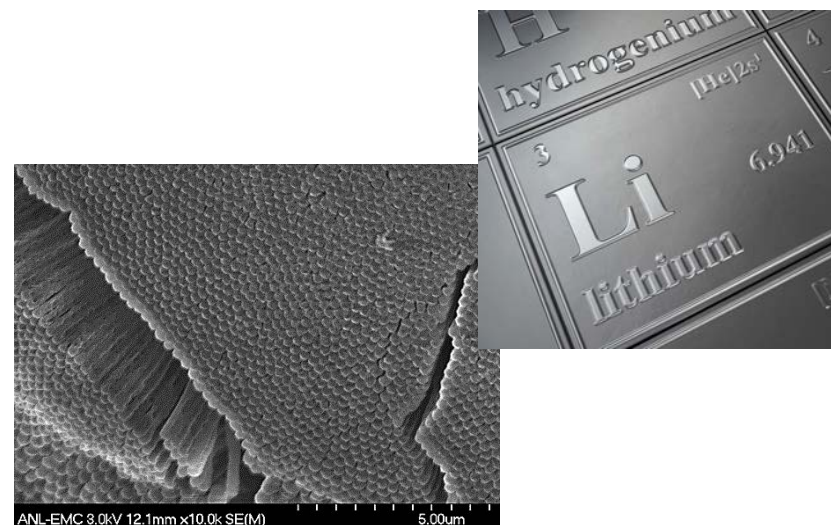
ABSTRACT

Lithium metal as an anode in batteries

- Lightest and most electropositive metal
- Commercially produced via high temperature electrolysis of molten mixture of LiCl and KCl

Novel room-temperature electrodeposition method

- A layer of Li-metal onto a conductive substrate from an aqueous lithium source through a Li-ion conducting separator
- Control of process parameters yields uniform, densely-packed dendrite-free lithium metal nanorods
- Precise control over lithium morphology is expected to improve battery performance as a result of uniform Li-metal dissolution during battery discharge



CONCLUSION

- We produce high-purity lithium metal via room-temperature electrodeposition in a process that eliminates energy-intensive steps and does not require or release noxious chemicals (i.e. chlorine).
- This clean technology is key to profitability for battery companies by reducing raw material costs associated with lithium metal anode.

INTELLECTUAL PROPERTY IN PLACE

- ALPE engaged the K&L Gates law firm in 2014 to implement IP strategy.
- Initial 2013 ALPE patent portfolio was broadened and strengthened and now includes filings for international markets.
- The Company is securing additional IP related to other aspects of its core technology.
- ALPE has filed process and use patents totaling over 100 claims, and continues to innovate.

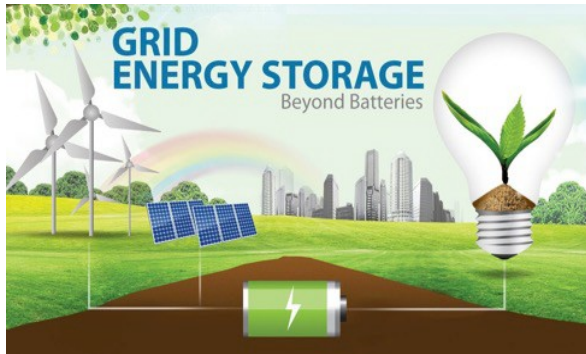
K&L | GATES



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THE LITHIUM BATTERY MARKET

LITHIUM METAL THE NEW S-CURVE



Increased Range



Solid State



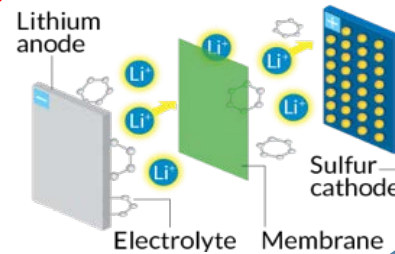
LAST ~ 30 YEARS



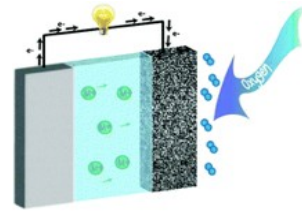
ALPE Li-M
Anode



Lithium Sulphur

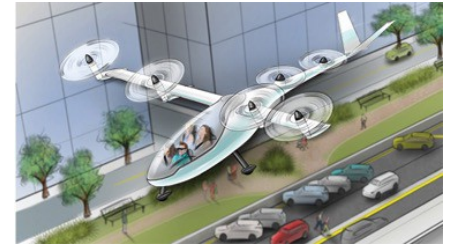


Lithium Air



~10 X
Improvement

TRANSFORMING SOCIETY



1990

2000

2010

Today

Tomorrow

INDUSTRY DEVELOPMENTS



Nikkei Electronics Magazine
February 2017 Breakthrough
Acceleration of post-Li-ion batteries, Existing technology has only five more years



Researchers Create New, High Capacity Battery Technology Without Lithium-Ion's Explosive Risks

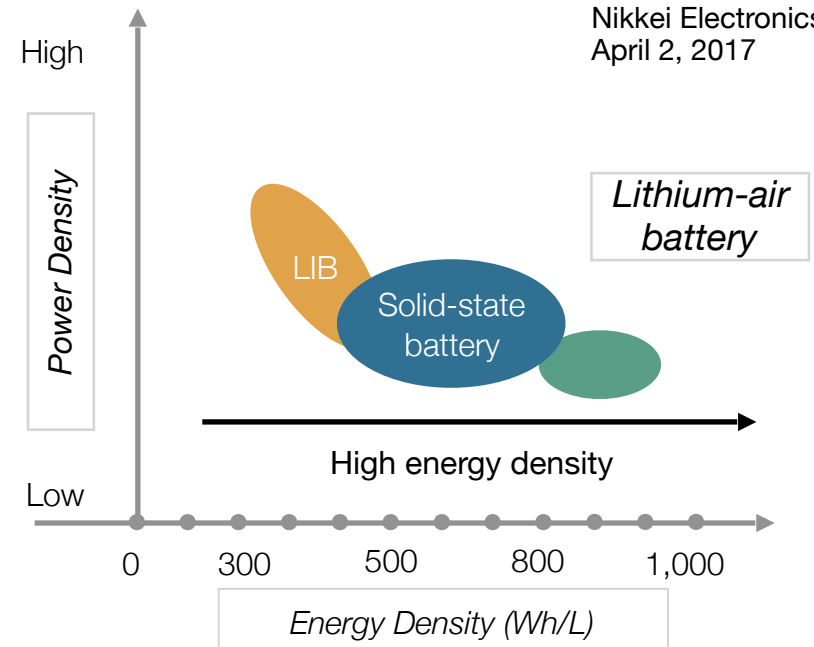
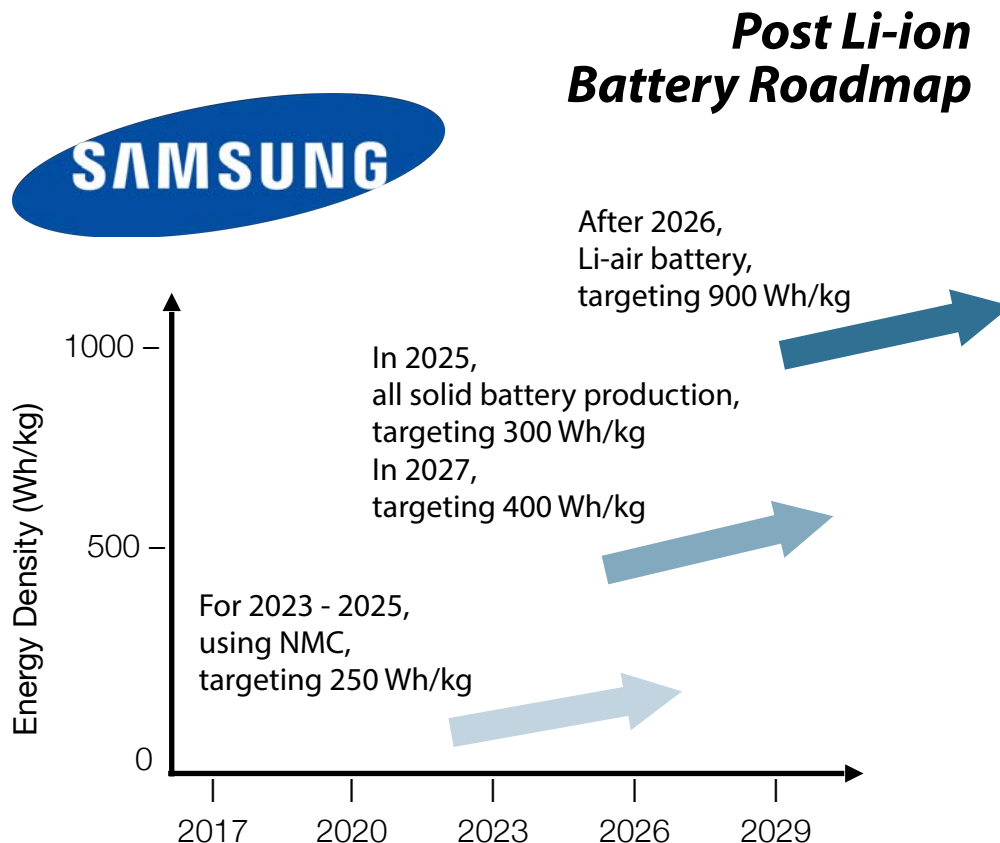
Forbes

Marco Ciapetta
Jan 31, 2017

NIKKEI ASIAN REVIEW

Toyota Motor's proposed battery development roadmap

TETSUO NOZAWA
Nikkei Electronics
April 2, 2017



Development scenario Toyota researchers presented at the Battery Symposium in Japan in 2016



THE TEAM

SENIOR MANAGEMENT



Sam Pitroda, CEO

Founder of six technology companies, former Cabinet Minister and Chairman of the Smart Grid task force of the government of India



Lawrence Swonger, CTO & Lead Inventor

Mechanical engineer with over 20 years of process design and automation experience



Nat Wasserman, CFO

Former Partner at Deloitte and Touche

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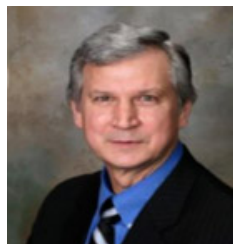
Roald Hoffmann, Chair
Cornell University, Nobel Laureate



Stephen O'Brien
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Dan Steingart
Princeton University



Jack Marple
Former Technology Fellow at Energizer Battery

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