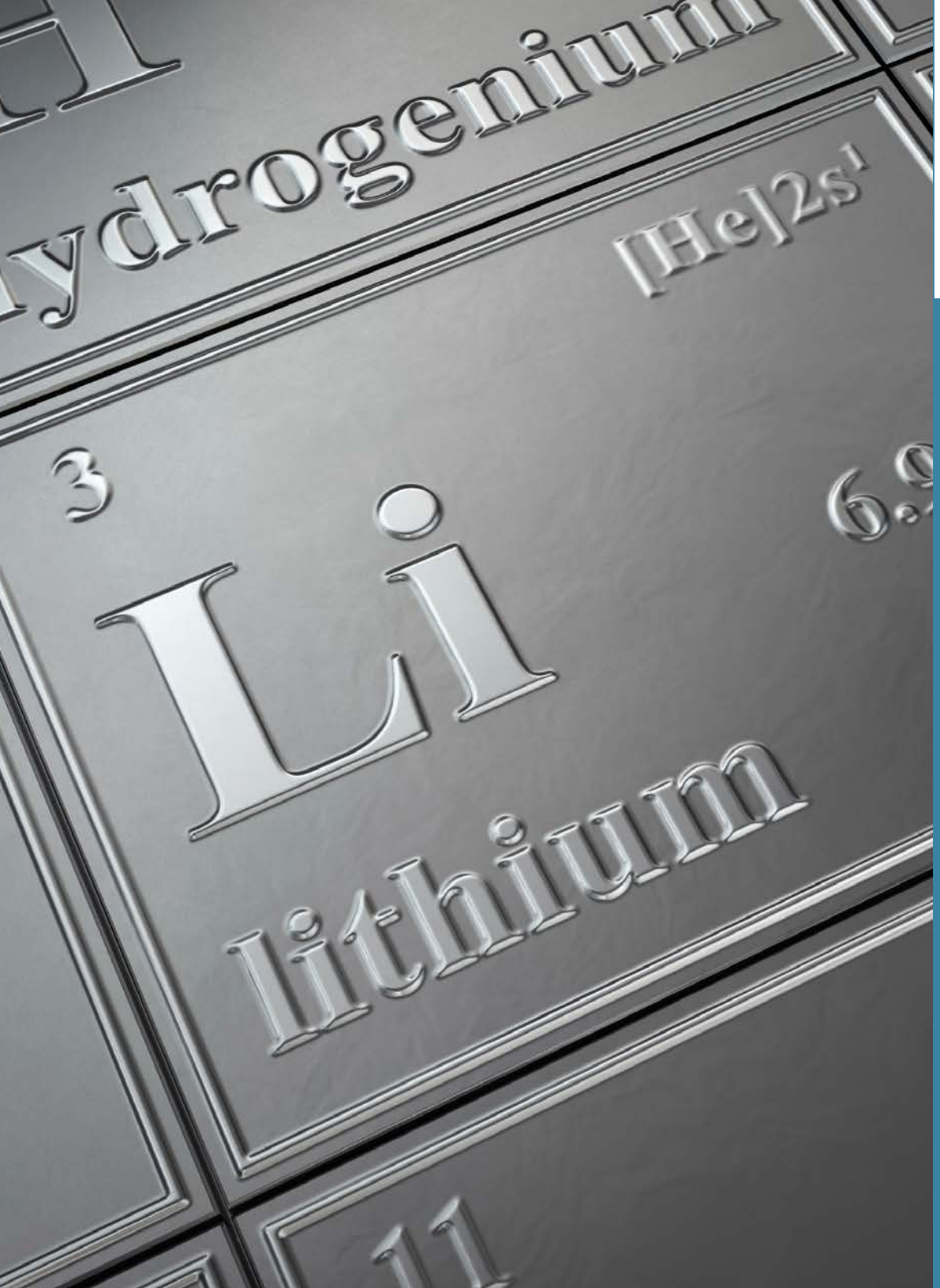


αlpha-En

Nano Engineered Li-M Anodes

ENABLING NEXT GENERATION BATTERIES

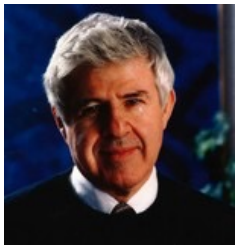
Autumn, 2019

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 αlpha-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.

αlpha-En



- αlpha-En was founded in 2013 by **Jerome I. Feldman** (who patented the soft contact lens and surgical staples to name two disruptive products) to bring to market a significant discovery in the world of advanced batteries.

- αlpha-En's patented, unique, pioneering and proprietary room temp. process to produce high purity lithium was invented by **Lawrence Swonger** in 2013. By background, Larry is a mechanical engr. with 25 years experience in design of production processes and automation. He proudly served in US navy for 8 yrs. and 2 yrs. on a submarine as a supervisor of nuclear propulsion plant and related systems.

- αlpha-En's is listed on OTCQB market under the ticker **ALPE.**

- αlpha-En has received a patent for its breakthrough technology of producing pure Lithium Metal (LiM) and since filed for other patents

- αlpha-En technology is addressing a market which is growing at an incredible pace. Electric vehicle market, consumer electronics & backup storage is the key to the world's future and αlpha-En wants to be a significant part of that future.

αlpha-En's TECHNOLOGY

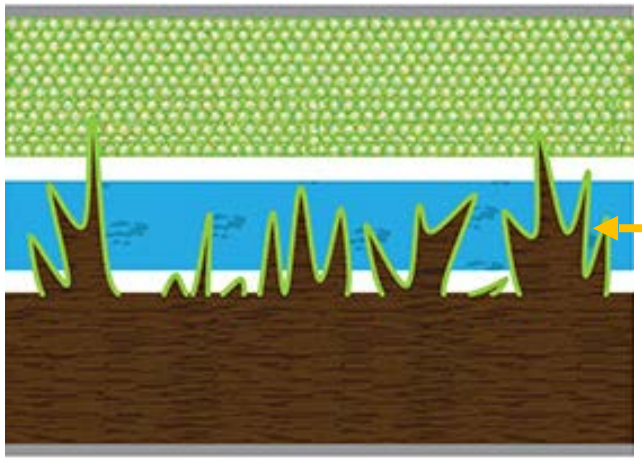
αlpha-En'S NANO ENGINEERED LI-M ANODES

Could be a critical component in next generation batteries:

- Thin Li layers could allow for more precise and efficient battery configurations
- Low temperature and environmentally friendly production process could lower costs
- Purity of Li could improve battery performance and life

PURITY - WHY IT MATTERS

dendrite /ˈdendrīt/, 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
* 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.

αlpha-En’s PROCESS

αlpha-En'S PATENTED PROCESS

αlpha-En has developed a patented process to refine naturally occurring lithium compounds into:

- Pure lithium with a highly consistent morphology
- In very thin films (< 10 microns)
- Using a scalable green production technology

αlpha-En'S PROCESS	EXISTING PROCESS
Higher Purity 99.996%	**Lower Purity** 99.90%
LiM Produced at Room Temperature Process conducted at 20°-30°C	**Li-M Produced at Very High Temperatures** Electrolysis of molten salts at ~450°C
Chlorine Gas Free No toxic byproduct	**Chloride Process Step** Chlorine gas byproduct adds cost
Feedstock Flexibility Uses Low Grades of Lithium Carbonate	**Requires battery grade feedstock** Higher raw material cost

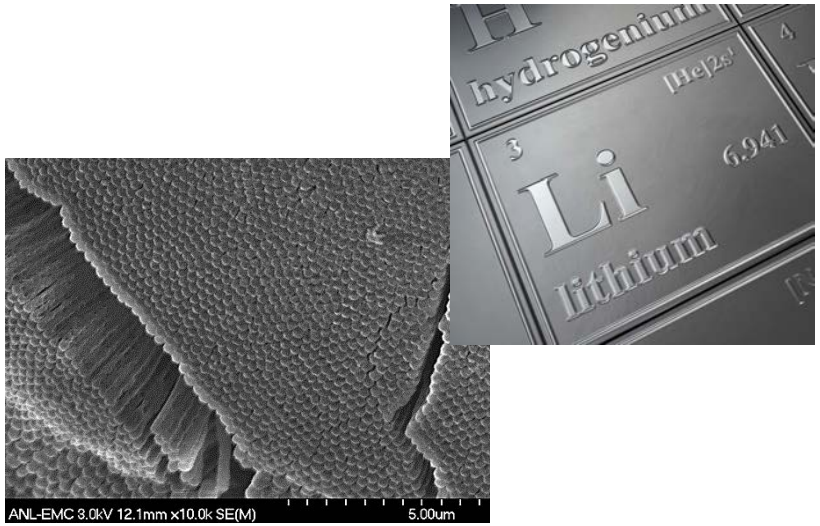
αlpha-En'S PROCESS HAS BEEN VALIDATED BY LEADING RESEARCH LABS

From a report in June 2017 by Argonne National Lab:

ABSTRACT

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 the battery discharge



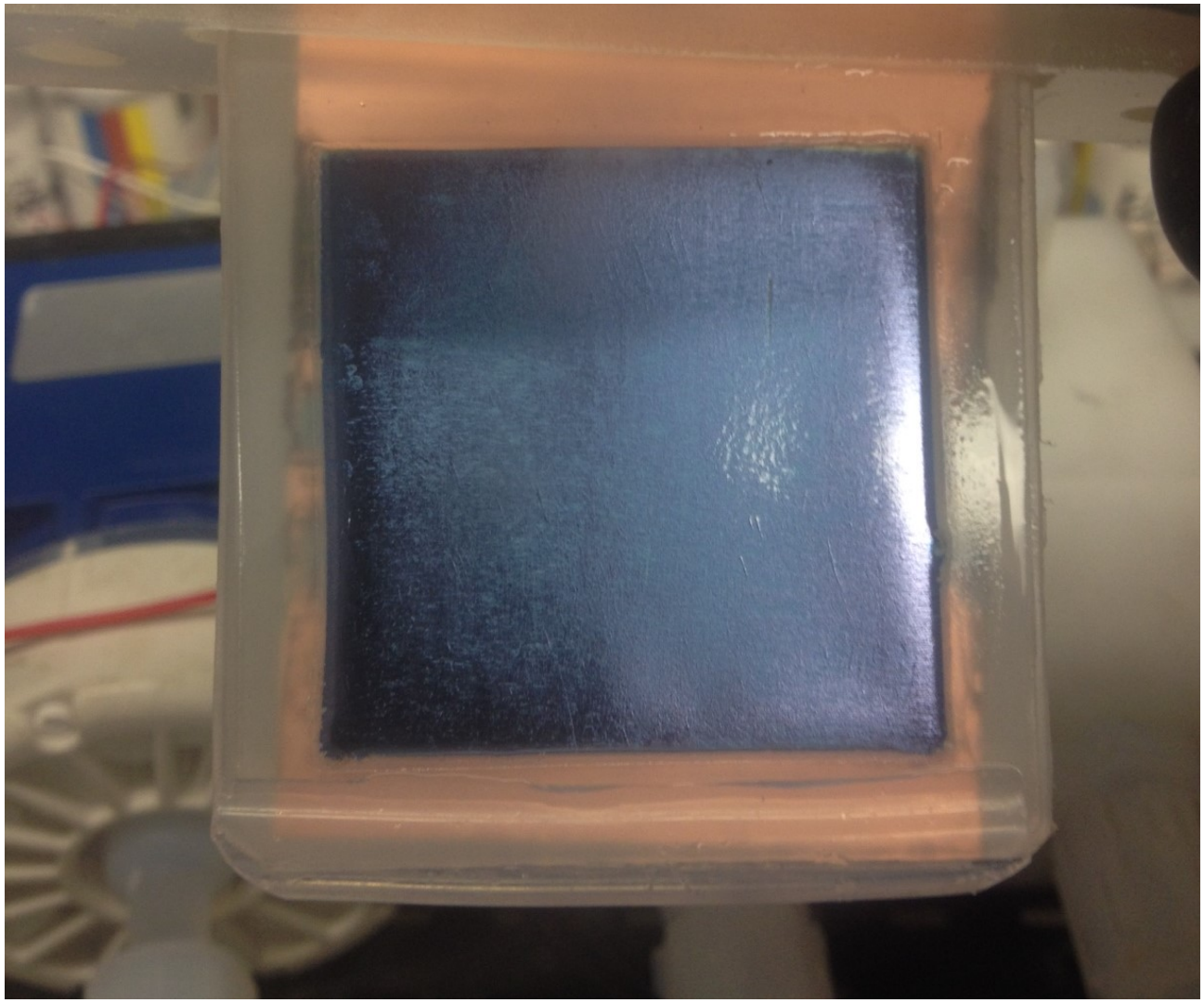
CONCLUSION

- 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 instrumental for the profitability of battery companies by reducing raw material and energy cost in the lithium metal anode production process


αlpha-En’s PRODUCT

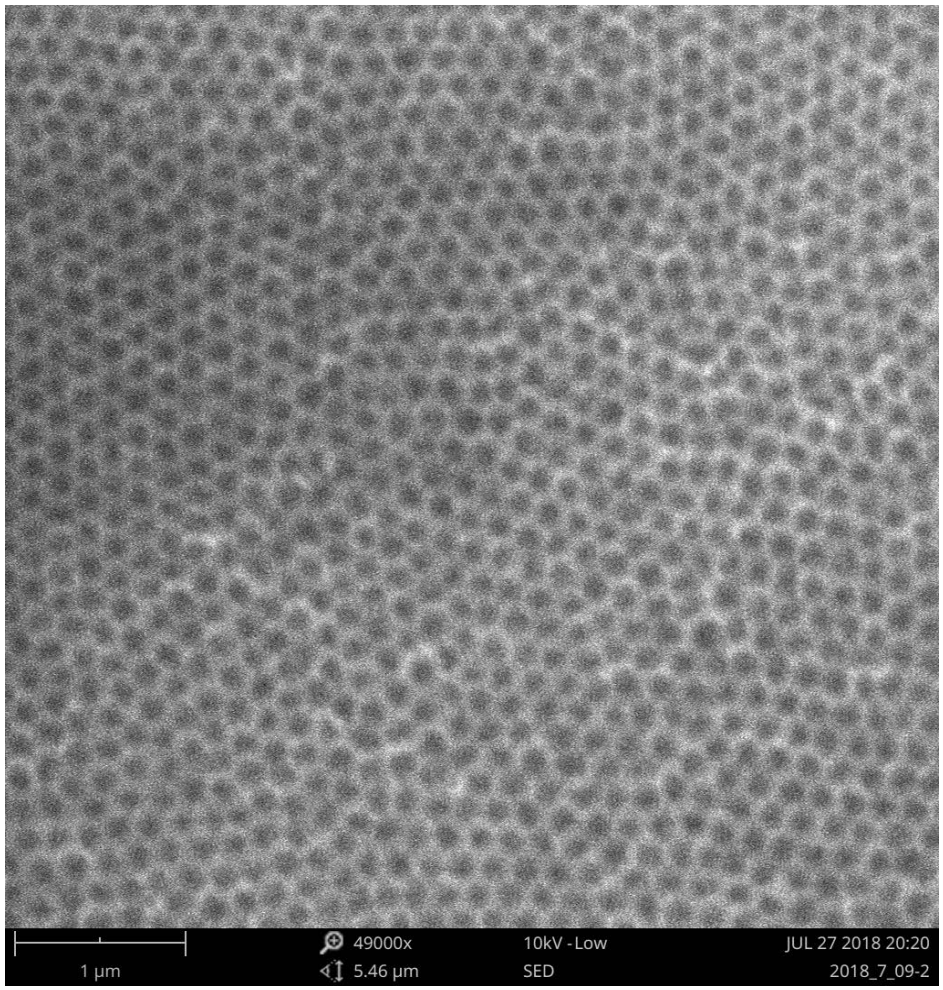
αlpha-En'S INITIAL PRODUCT

A Key Application of αlpha-En's process is to produce nano-engineered Li Metal anodes

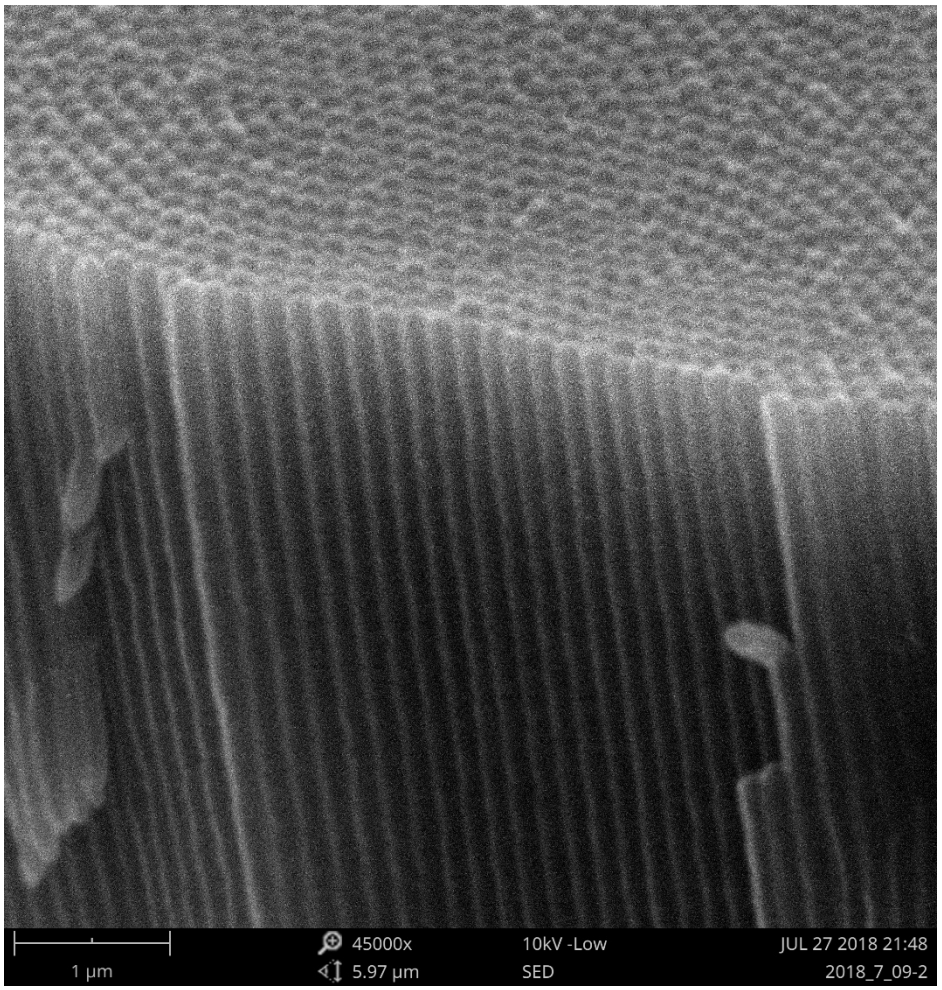


4cm x 4cm Li-M anode on a copper substrate

αlpha-En'S NANO-ENGINEERED LI-M ANODES



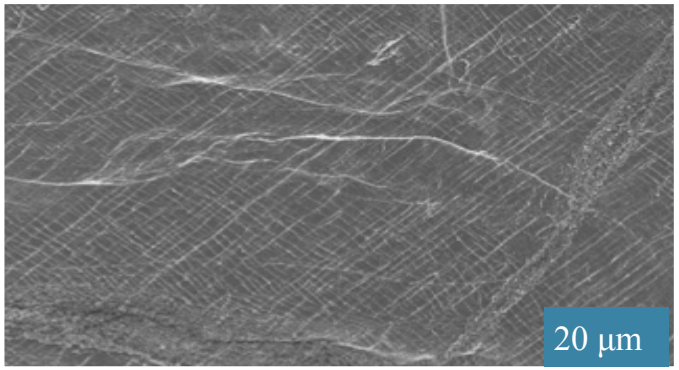
Top view at 49000x

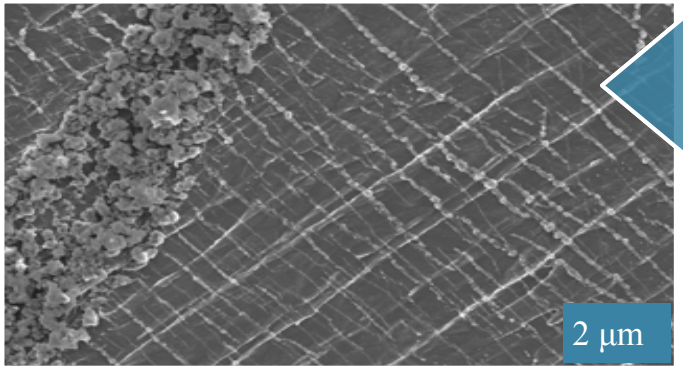


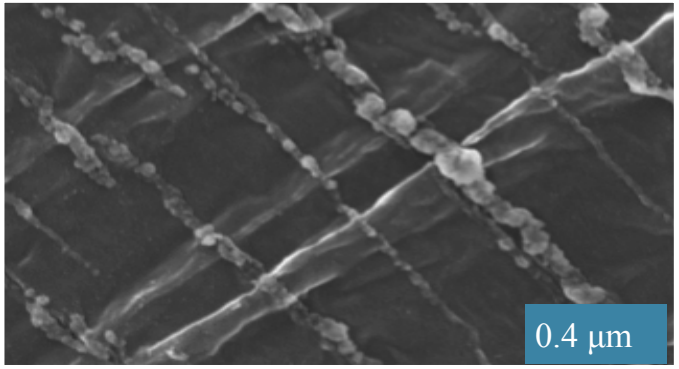
Side view at 45000x

MORPHOLOGY OF EXISTING Li FOILS VS αlpha-En's Li-M

Commercially available lithium foils







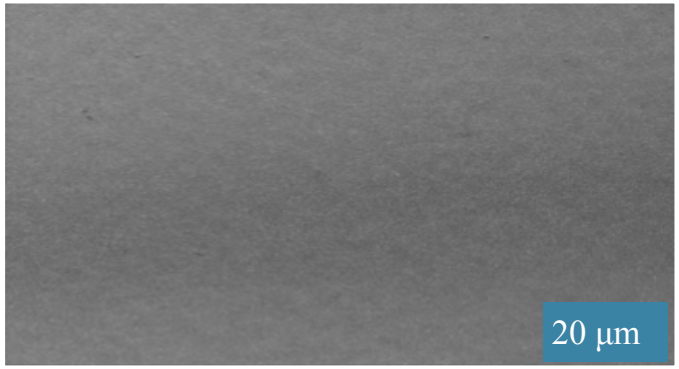
99.90%
750 µm thick

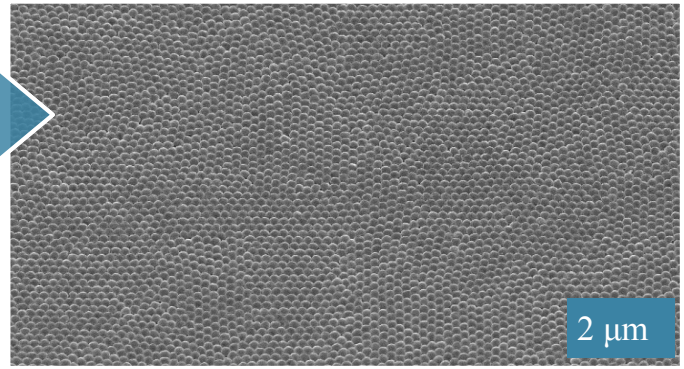
COMMERCIAL

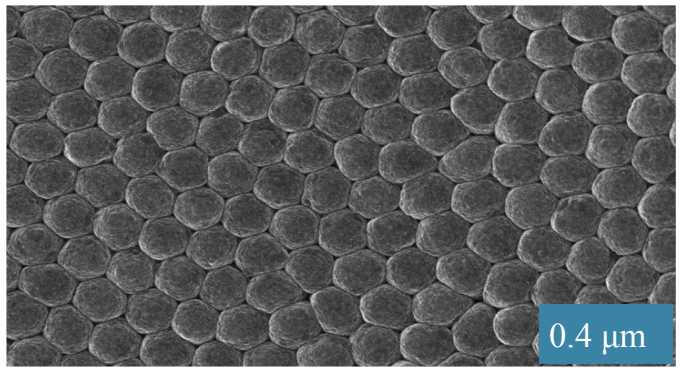
αlpha-En

99.996%
10 µm thick

αlpha-En's Li-M on copper







αlpha-En's DEVELOPMENT

αlpha-En'S R&D PARTNERSHIPS

αlpha-En's Partners

From 2014 through 2018 αlpha-En partnered with several universities and labs to develop its process.

- αlpha-En's own laboratory in its 8,000 sq. foot facility in Yonkers, NY began operations on May 31, 2018
- αlpha-En's state of the art research laboratory includes equipment for Li-M anode fabrication and testing
- αlpha-En's own staff of scientists and lab technicians now conduct almost all of its R&D activities.

αlpha-En's TECHNICAL ROADMAP (short-term)

➢ Anode Development

- Currently developing LiM anodes up to 70mm x 70mm, Intermediate goal to pioneer100mm X 100mm deposition
- Li thickness: focusing on thin lithium films from 1um to 35 um
- Uniformity – typically for a 20 um thick film ~ 15%
- Dual sided Li-M Anodes
- Dev on Li-ion anode replacement, Li-metal w/ solid electrolyte and Li-Sulphur battery technologies with partners

➢ Electrolyte Improvement

- Trying with different electrolytes for faster deposition – Currently 5-12 um/hr
- Morphologies – exclusive control over morphology (rods, etc) of the deposited Lithium
- Surface chemistry/composition control - SEI layers
- Trying new additives with existing electrolytes during deposition and cell cycling
- Add electrolyte monitoring for electrolyte maintenance

➢ Substrates

- Different substrates: current dev with copper & graphite – copper mesh, nickel and others are slated for dev. work.
- Improvements to (and streamlining of) copper cutting and pre-cleaning processes – plasma pretreat

αlpha-En's SCALE-UP ROADMAP

➢ Lab scale automated deposition (Phase1 - funded) (next 3-5 months)

- Produce LiM anodes up to 7.5 sq in (49 sq cm - 70mm x 70mm) using automated production method
- Small robotic system for deposition to increase to 1000 anodes / month for sample production in research phase
- Key focus on improving deposition with large format, dual sided and multi-cell setup

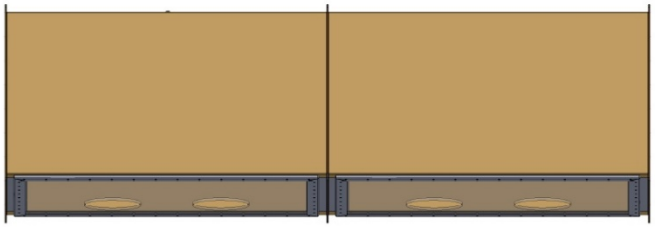
➢ Second phase of scale-up is fully automated batch system (9-12-month execution to commission)

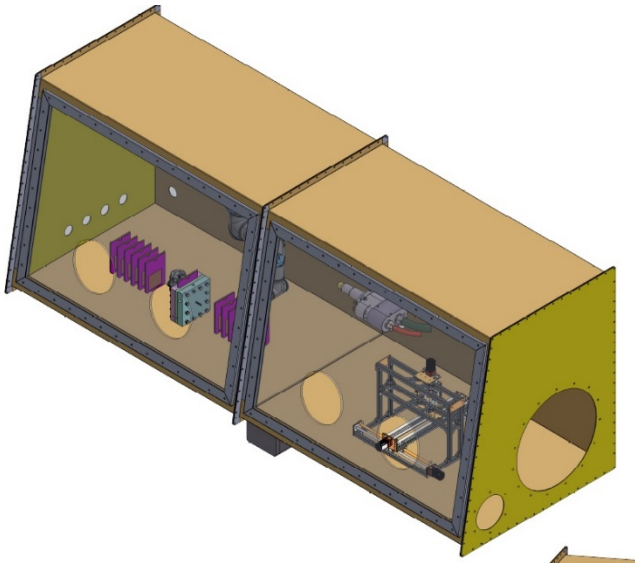
- Key focus on end to end automation which includes substrate preparation, deposition, dry and prep before packaging for storage and shipment OR use in an inline production
- Variable width capability
- providing higher capacity to support current development projects with partner battery development programs for goals to 1.5-2M anodes / year (~ 5cm sq./ 10m/ 5 12-cells)
- Seeking $5M project in project funding
- Modular system could be replicated for increased capacity

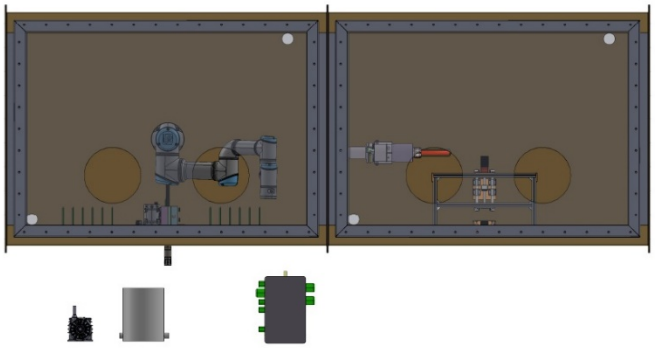
➢ Third phase scale-up to a roll-to-roll system , this will enable full-rate production

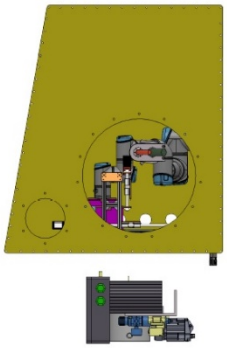
- Under review, Development budget of $2M

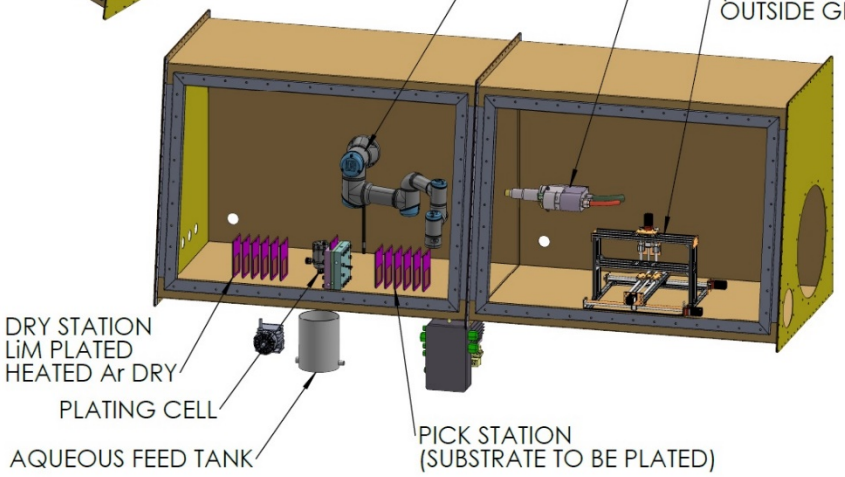
αlpha-En's SCALE-UP P1 LAYOUT











		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

alpha-En Corp.

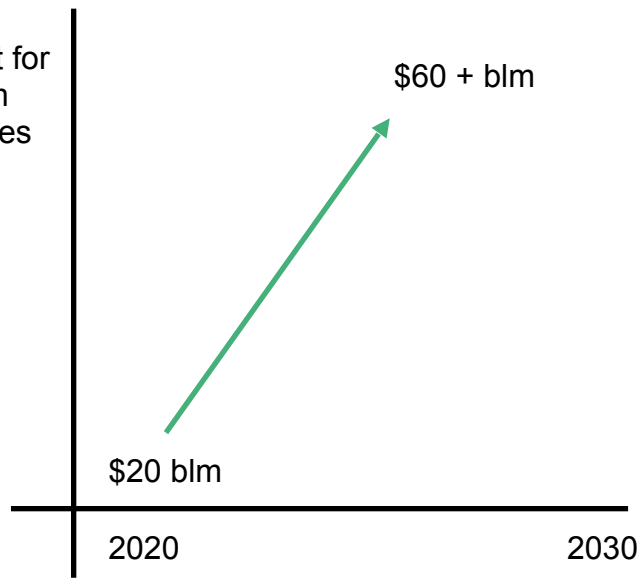
TITLE:

Automated Glovebox System

SIZE	DWG. NO.	REV
B	alpha-En Scaleup in Glovebox	
SCALE: 1:20	WEIGHT:	SHEET 1 OF 1

αlpha-En's MARKET

The Opportunity



Source: Bloomberg, Avicenne Energy

Demand for

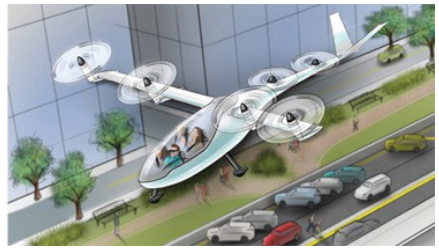
- Li-ion and similar batteries is large and growing rapidly

→ 10x expected use in Electric Vehicles(EV's)

→ 50 % reduction in cost per kWh

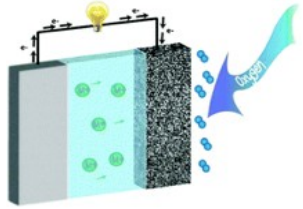
The anode is a critical component of batteries representing approx. 25% of its cost

Industry Evolution (Li batteries)

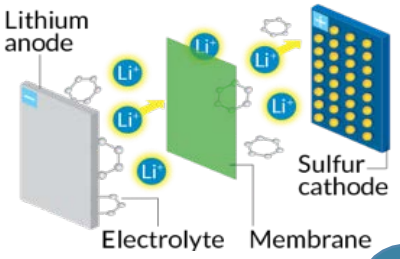


- Li Ion technology is 30 years old
- Next generation technology under development and expected to commercialize over next several years
- Could lead to a “quantum leap” in battery efficiency

Lithium Air



Lithium Sulphur



~10 X Improvement

Increased Range

Solid State

LAST ~ 30 YEARS

ALPE Li-M Anode

TRANSFORMING SOCIETY

Tomorrow

1990 2000 2010 Today

αlpha-En's Commercial Roadmap

Manufacturing Pure Li-M Anodes

Primary mandate

- Scalable production of Li-M anodes. Li-M plating of 5 to 50 microns on copper substrates (or other conductive substrate)

Enhancement of Mining Operations

Natural segway of αlpha-En's capability

- αlpha-En is engaged with the mining industry to apply its technology to directly extract Li prior to production of lithium carbonate, for production of Li-M anodes and other products

Recycling of Li batteries

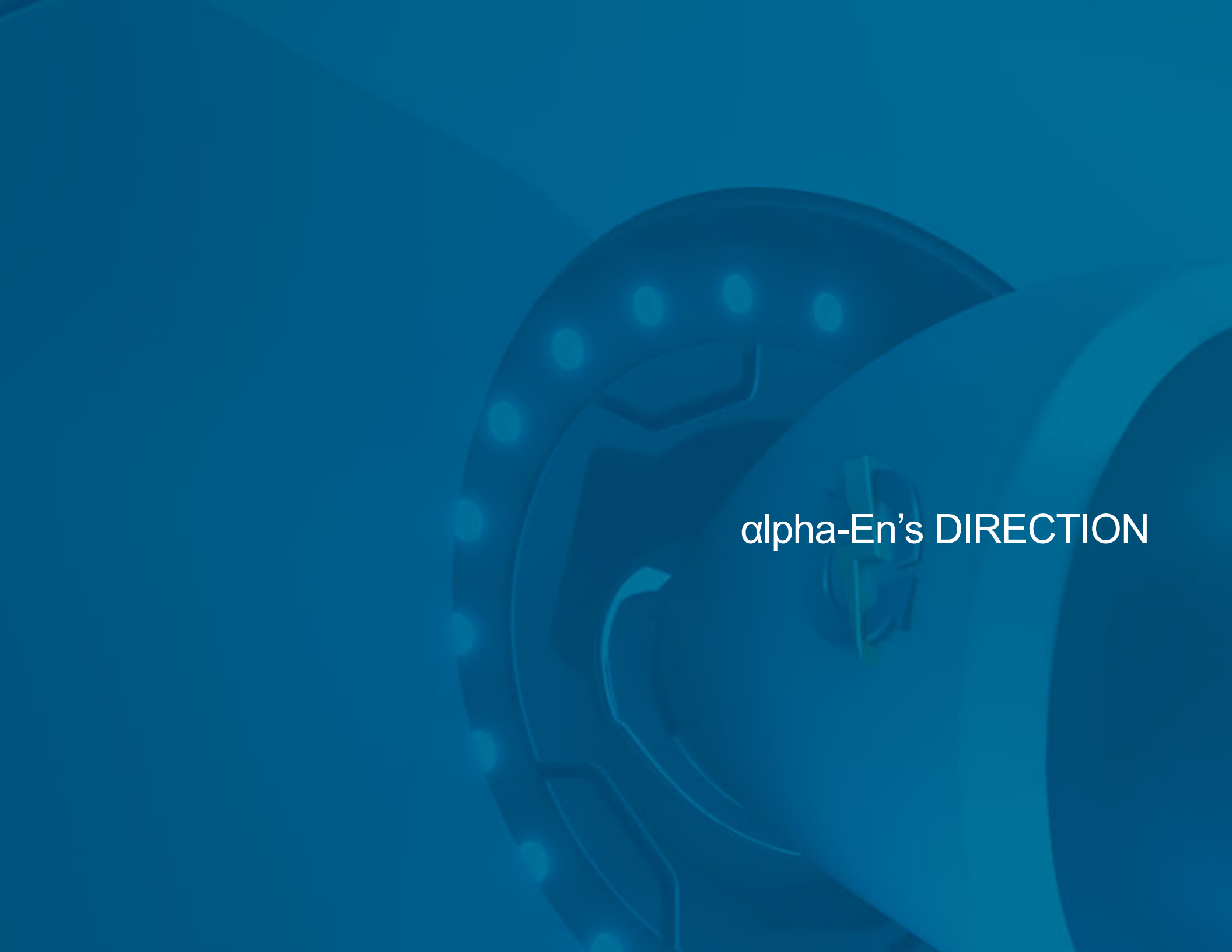
Successfully tested, under review for investment

- αlpha-En is adapting its technology to meet anticipated government regulations for recycling of Li batteries. Our technology would be inserted into existing process streams to recover LiM that is currently discarded by the recyclers

Battery Development

Extending current capability

- αlpha-En is pursuing development of next generation batteries with its Li-M anode and various electrolyte and cathode chemistries, and cell configurations


αlpha-En’s DIRECTION

αlpha-En'S BUSINESS MODEL

Revenues

- To date, αlpha-En has focused on researching and developing its process and has had no revenues
- During 2020, aplha-En would expect to begin generating revenues from:
  - ✓ Sale of batch-produced Li-M anodes
  - ✓ Contract R&D for bespoke applications of its process
- Over the long-term, αlpha-En anticipates a mix of revenues from:
  - ✓ Licensing its process and receiving royalty payments
  - ✓ Partnerships and JVs to manufacture Li-M anodes and other products using αlpha-En's process

Expenses

- αlpha-En's operating cash flow (cash burn) for the 12 months ended June 30, 2019 was $2.1 Million or approximately $175,000 per month.

αlpha-En'S FUNDING

Funding

- For the past several years, αlpha-En has raised funds through the sale of common convertible preferred shares and warrants:
  - ✓ $3.5 Million in 2018
  - ✓ $1Million in first half of 2019

NYSERDA Grant

- αlpha-En received a grant for $1M in July 2019 for research and development from the New York state energy research and development authority.

Opportunity Zone Stats

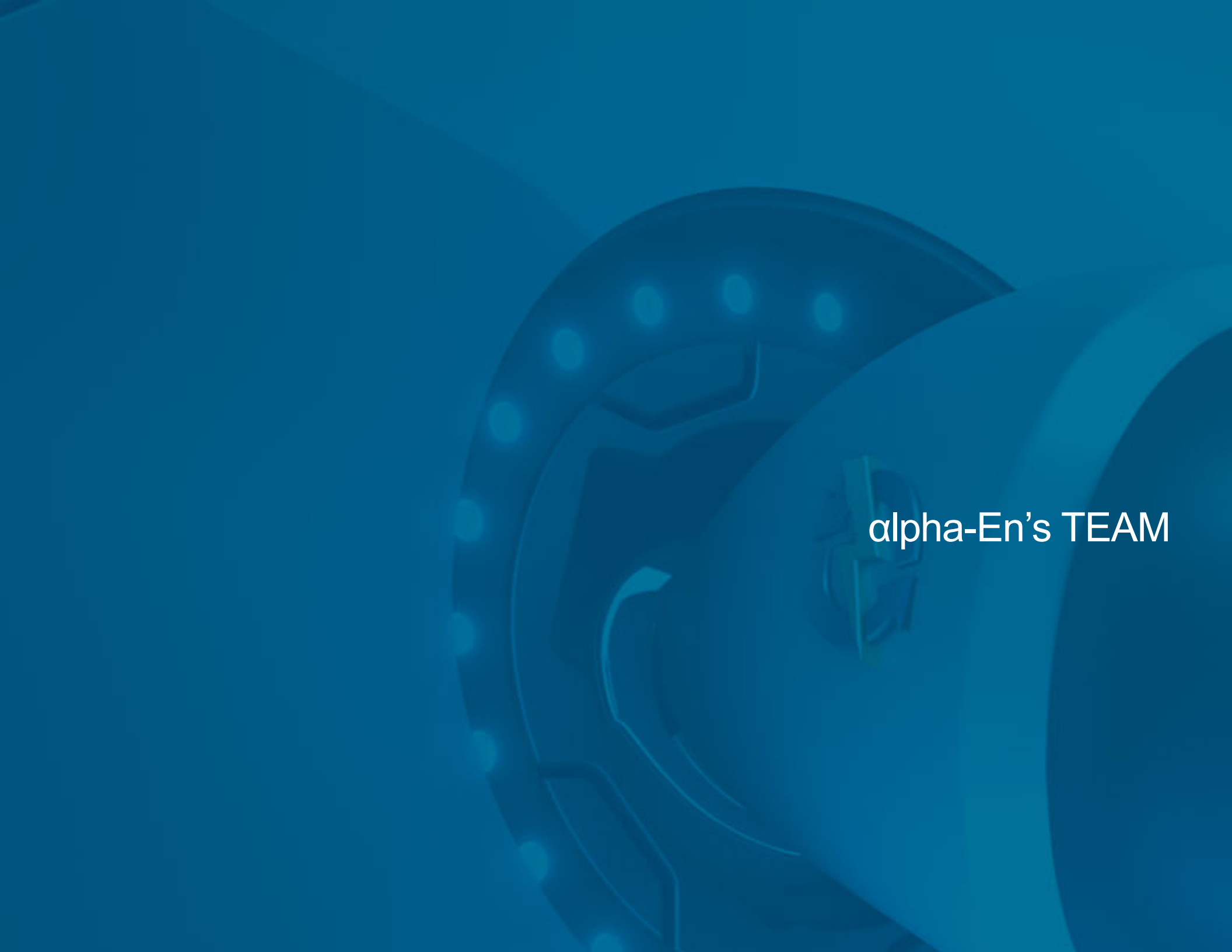
- Located in an Opportunity Zone as per 2017 Tax Act
- Working to be designated as a Qualified Opportunity Zone business
- Would allow favorable tax treatment for future investors

INTELLECTUAL PROPERTY

- In January 2019, the US Patent Office granted αlpha-En a patent on “High Purity Lithium and Associated Products and Processes” which covers αlpha-En’s process and products made from it.

- αlpha-En has filed a number of other US and foreign patent applications to cover its process and refinements and enhancements to it.

- αlpha-En continues to work with K&L Gates, its IP law firm, to insure protection of its intellectual property.


αlpha-En’s TEAM

SENIOR MANAGEMENT

Vinder Sokhi, COO

αlpha-En Board Member

Computer engr., Investor and Entrepreneur with over 20 yrs of exp. running companies or as part of fortune 500 companies

Lawrence Swonger, CTO

Lead Inventor

Mechanical engr. with over 20 yrs of process design and automation experience

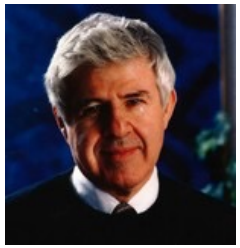
Nat Wasserman, CFO

Former Partner at Deloitte and Touche

Tom Suppanz, MD Finance

Former Investment Banker on Wall Street with over 30 yrs exp. in capital formation for small & micro-cap companies

BOARD OF DIRECTORS



Jerome I. Feldman, Exec. Chairman

Founder of αlpha-En

Founder of National Patent Development and developer of technologies including soft contact lenses and surgical staples

Sam Pitroda, Chairman & CEO

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

Jim Kilman, Vice Chairman

Former Vice Chairman of Investment Banking at Morgan Stanley

SCIENTIFIC ADVISORS

Prof. Roald Hoffmann, Chair
Cornell University, Nobel Laureate

Prof. Stephen O'Brien
City University of New York

Prof. Dan Steingart
Columbia University

Jack Marple
Former Technology Fellow at Energizer Battery

Prof. Hector Abrunã
Cornell University

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