



Meta Materials Inc.
New Nanomaterials to Enable
Cleaner, Safer Transportation

NASDAQ: MMAT
June 2022



Forward Looking Statements

This presentation includes forward-looking information or statements within the meaning of Canadian securities laws and within the meaning of Section 27A of the Securities Act of 1933, as amended, Section 21E of the Securities Exchange Act of 1934, as amended, and the Private Securities Litigation Reform Act of 1995, regarding the Company, which may include, but are not limited to, statements with respect to the business strategies, product development, expansion plans and operational activities of the Company. Often but not always, forward-looking information can be identified by the use of words such as “pursuing”, “potential”, “predicts”, “projects”, “seeks”, “plans”, “expect”, “intends”, “anticipated”, “believes” or variations (including negative variations) of such words and phrases, or statements that certain actions, events or results “may”, “could”, “should”, “would” or “will” be taken, occur or be achieved. Such statements are based on the current expectations and views of future events of the management of the Company and are based on assumptions and subject to risks and uncertainties. Although the management of the Company believes that the assumptions underlying these statements are reasonable, they may prove to be incorrect. The forward-looking events and circumstances discussed in this release may not occur and could differ materially as a result of known and unknown risk factors and uncertainties affecting the Company, the capabilities of our facilities and the expansion thereof, research and development projects of the Company, the market potential of the products of the Company, the market position of the Company, the need to raise more capital and the ability to do so, the scalability of the Company’s production ability, capacity for new customer engagements, material selection programs timeframes, the ability to reduce

production costs, enhance metamaterials manufacturing capabilities and extend market reach into new applications and industries, the ability to accelerate commercialization plans, the possibility of new customer contracts, the continued engagement of our employees, the technology industry, market strategic and operational activities, and management’s ability to manage and to operate the business. More details about these and other risks that may impact the Company’s businesses are described under the heading “Forward-Looking Information” and under the heading “Risk Factors” in the Company’s Form 10-K filed with the SEC on March 2, 2022, in the Company’s Form 10-Q filed with the SEC on May 10, 2022, and in subsequent filings made by META with the SEC, which are available on SEC’s website at www.sec.gov. Although the Company has attempted to identify important factors that could cause actual actions, events or results to differ materially from those described in forward-looking statements, there may be other factors that cause actions, events or results to differ from those anticipated, estimated or intended. Accordingly, readers should not place undue reliance on any forward-looking statements or information. No forward-looking statement can be guaranteed. Except as required by applicable securities laws, forward-looking statements speak only as of the date on which they are made and the Company does not undertake any obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events, or otherwise, except to the extent required by law. Unless otherwise stated, all references to \$ herein are to US dollars.

Enhancing Performance and Safety for Electric Vehicles

EV Consumers Desire:

Increased Range, Fast Charging

Higher Energy Density and Charge Rates Demand:

Improved Material Performance, Stability and Safety

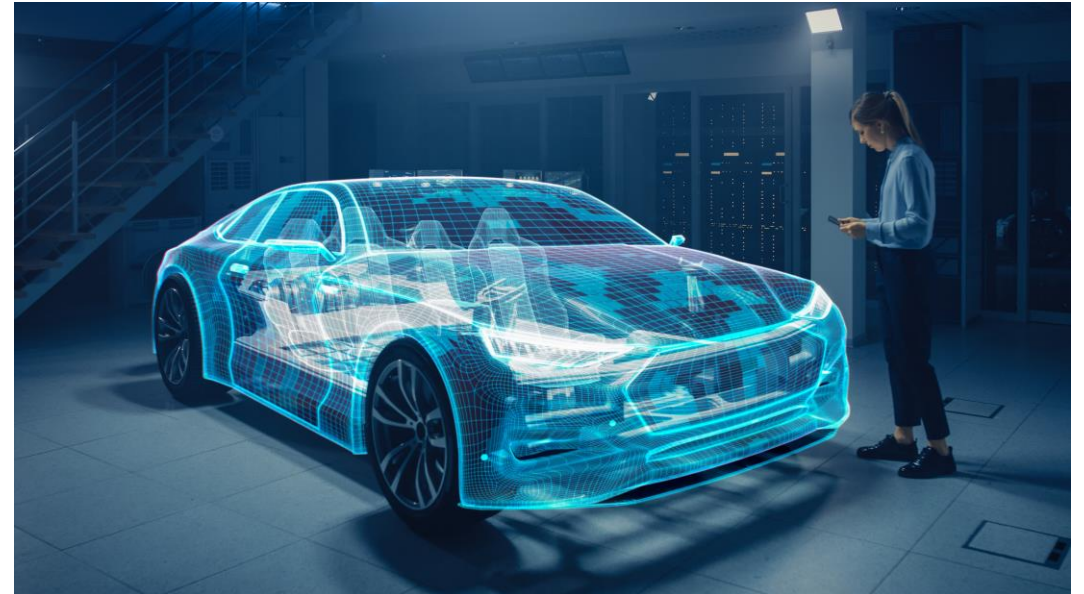
Wider EV Adoption Requires:

Better Material Utilization and Cost Reduction

META is developing **new battery materials** and **manufacturing techniques** to address these challenges.

PLASMAfusion™ used to make thin coated copper current collectors, **reducing weight by 80%** and **inhibiting thermal runaway**.

NPORE® nano-ceramic battery separators feature <1% heat shrinkage for **increased safety** and offer **superior electrochemical performance**.



Coated Copper Current Collectors: Reduced Weight, Enhanced Safety

Copper foil is over 10% of the weight of a typical battery cell

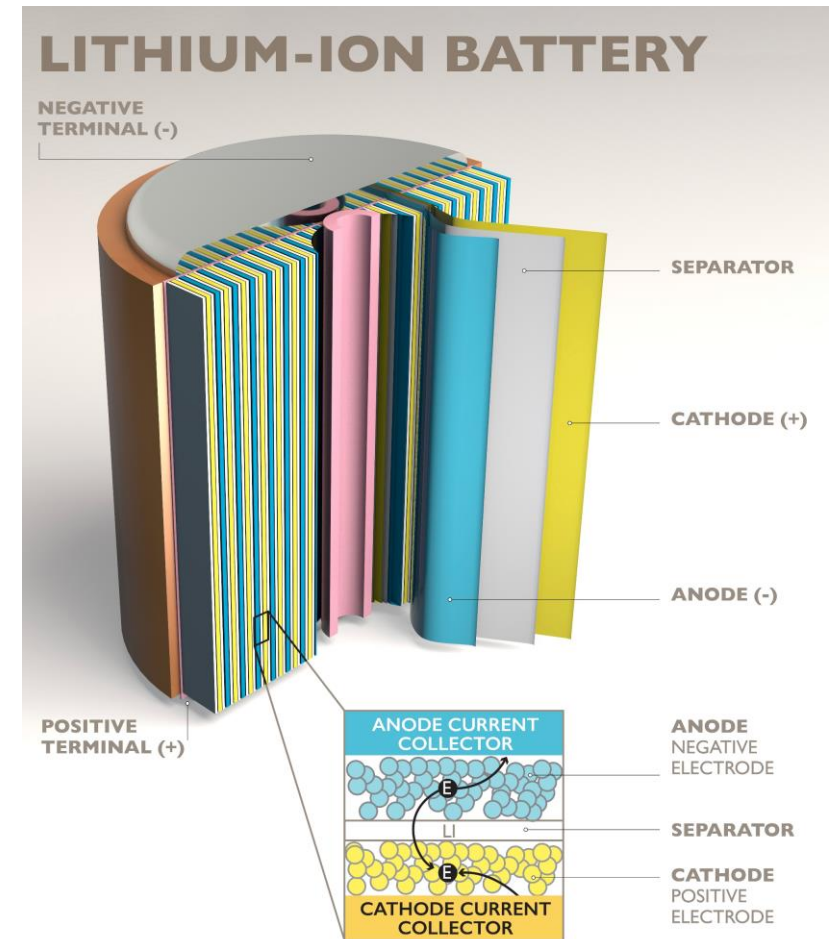
Aluminum (Al) and **Copper** (Cu) foils used for cathode/anode, respectively, account for ~15% of battery mass.

Cu is more than 3x heavier than Al, accounts for >10% of weight.

Plastic substrate acts as a fuse to impede thermal runaway

A PET/PEN plastic substrate coated with 150nm of Cu on each side promises the same functionality and cost as copper foil, while providing several benefits:

- Weight is reduced by ~80%, increasing energy and power density.
- In case of thermal runaway, the plastic melts, improving safety by retarding battery self-ignition.
- Lower copper content reduces the energy input to produce the battery and enhances recycling.



Battery Separators: Essential for Safety and Stability

A porous membrane placed between the electrodes. Prevents contact between the anode and cathode while facilitating the transport of lithium ions.

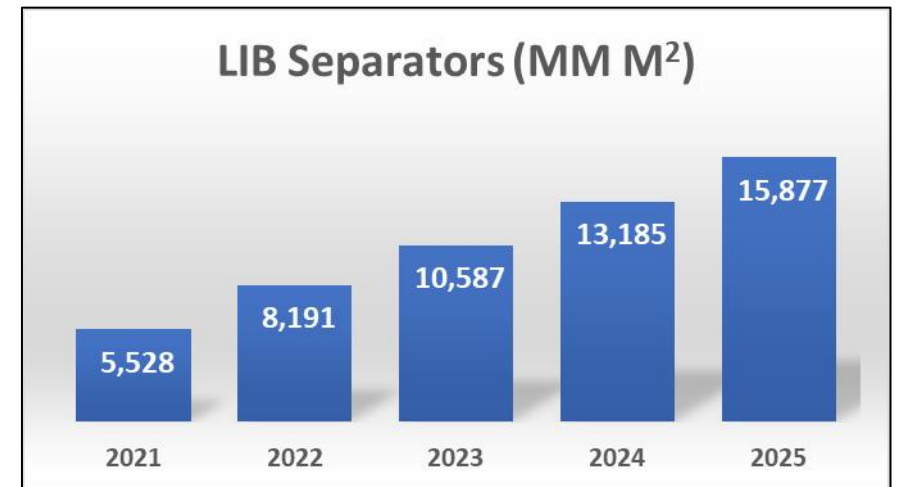
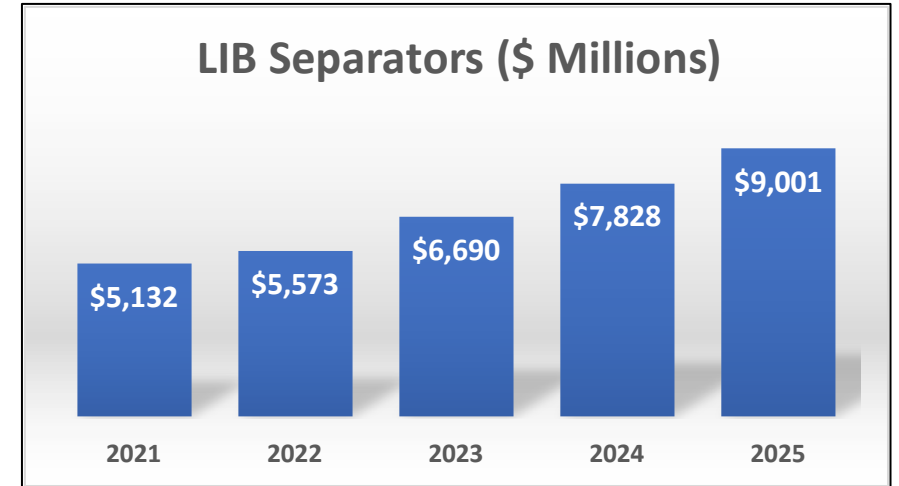
Safe battery separators must optimize porosity and ion transport, reduce the weight and thickness of inactive materials, while maintaining thermal/mechanical stability.

First generation separators are typically made by coating a plastic substrate on one or both sides with ceramic material.

Second Generation NPORE[®] nano-ceramic separators eliminate the use of plastic substrate and provide best in class dimensional stability with <1% heat shrinkage.

- Global market \$5.1B in 2001, \$9.0B in 2025 (Yano Research)
- Shipments 5.5B m² in 2021, 15.9B m² in 2025 (SNE Research)
- About 15 million m² per GWh of battery capacity (range 10-20)

Sources: Yano Research Institute Ltd., SNE Research



NPORE[®] All-Ceramic Separators

<1% *heat shrinkage for increased battery safety*

World's first flexible, free-standing ceramic nanoporous membrane separator for lithium-ion batteries.

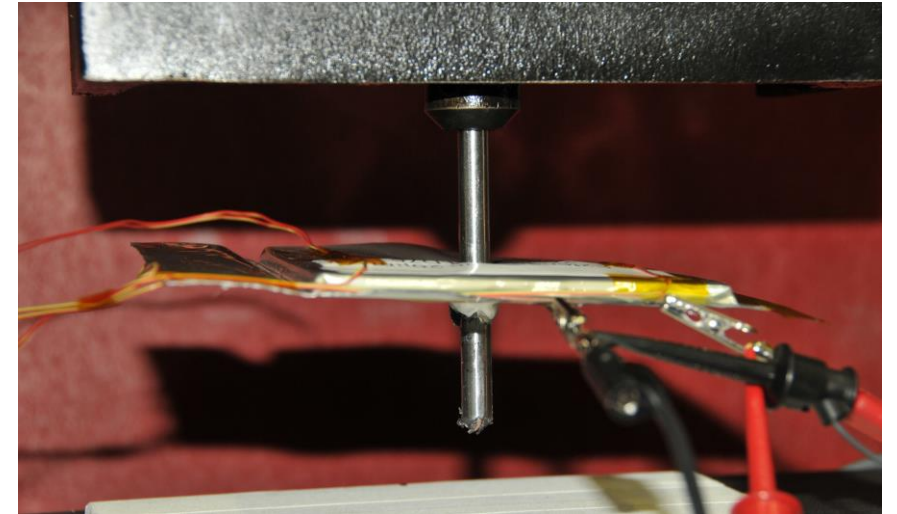
NPORE[®] features include:

Thermal Stability

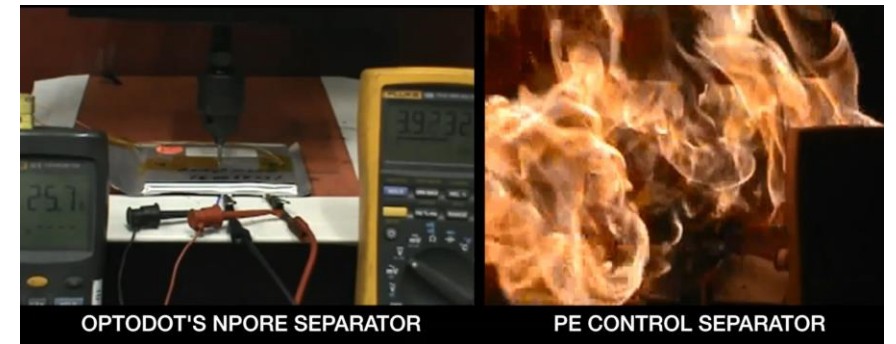
- Best in class[®] dimensional stability
- 5x higher thermal conductivity vs. plastic separators
- Flame resistant

Electrochemical Performance

- Superior abuse resistance
- Rapid wet out with battery electrolytes
- 3x greater compression resistance vs. plastic separators
- Excellent electrolyte conductivity
- Uniform and narrow pore size distribution



NPORE[®] separator prevents thermal runaway in nail penetration test



Click [here](#) to see the video

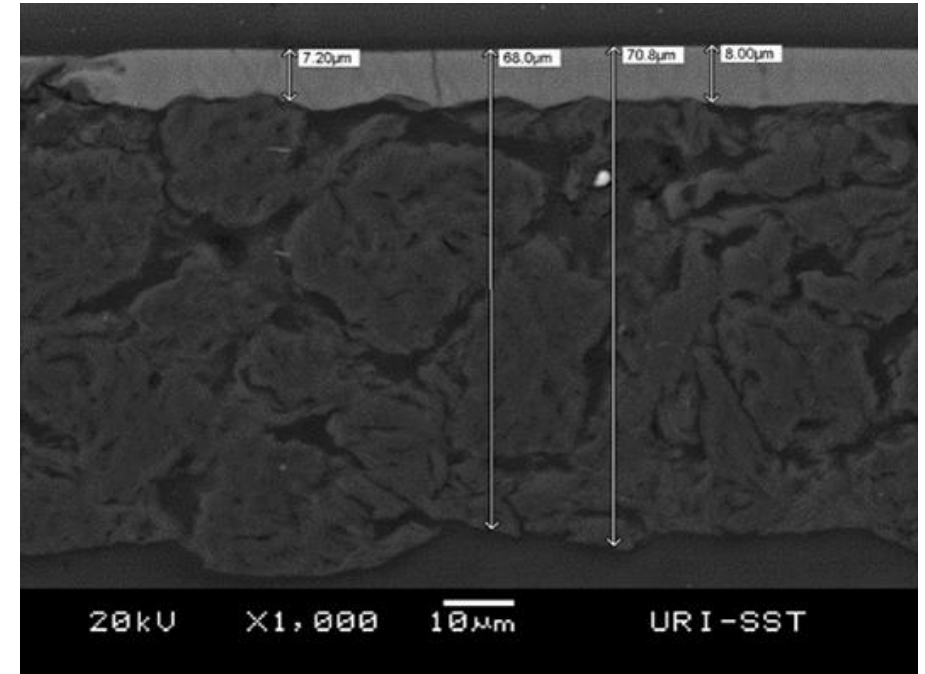
Electrode Coated Separator (NPORE[®] ECS)

A Simpler and Faster Battery Assembly Process

Electrode Coated Separator technology, developed with funding by the DOE, aims to reduce the cost of manufacturing lithium-ion batteries and the inactive components cost by 20-40%, while improving battery safety, lifetime, and energy and power density.

NPORE[®] ECS incorporates new inactive components of separator, current collectors, and termination materials, and utilizes a simpler and faster battery assembly process. Electrodes are directly deposited onto the separator to form a separator/electrode stack.

- The 8-micron thick ceramic separator reduces inactive component cost >20% and improves safety and cycle life
- Developing new processes for metal current collection layers and for tabbing and termination



Optodot Asset & IP Acquisition

A leading developer and licensor of nano-composite battery separators and infrared optical coating technologies

Extensive IP Portfolio: 67 issued and 22 pending patents

Benefits: R&D team with decades of experience in nanomaterials for batteries and IR coatings. Collaborations with leading OEMs, innovative start-ups, and U.S. government agencies. SBIR Phase II project led by Imperia Batteries (division of Physical Sciences Inc.)

Synergies: Products can be combined and coated with PLASMAfusion™ technology, capacity expansion in Thurso, QC. NANOPORE® membrane technology for ultrafiltration, medical metamaterial devices. Security marking for brand protection.

- Expected to close in June 2022, \$45MM stock, \$3.5MM cash
- R&D office in Devens, Massachusetts



META[®]

Go Beyond.

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