



Meta Materials Inc.

NASDAQ: MMAT
November 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

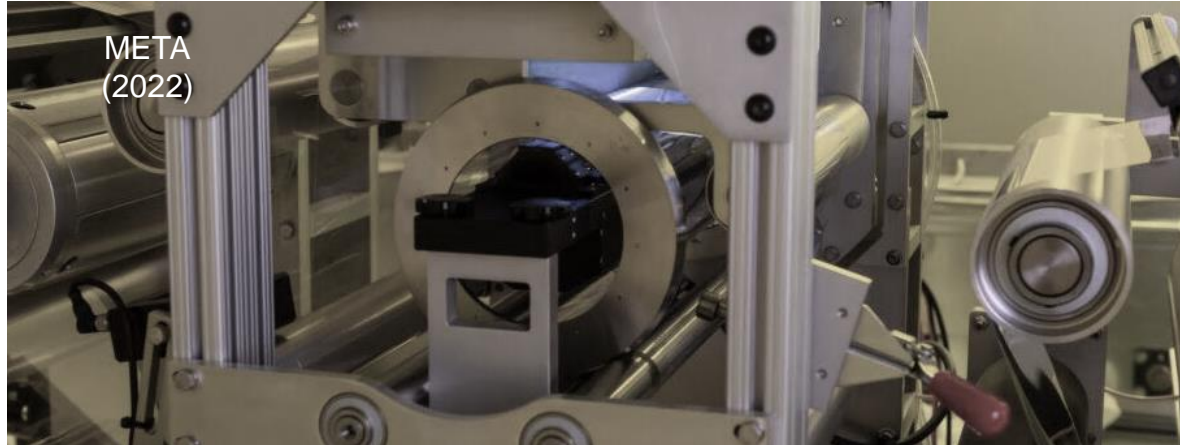
production costs, enhance metamaterials manufacturing capabilities and extend market reach into new applications and industries, the ability to accelerate commercialization plans, the possibility of new customer contracts, the continued engagement of our employees, the technology industry, market strategic 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 November 9, 2022, and in subsequent filings made by Meta Materials 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.



Solutions for Everyday Life

META delivers breakthrough performance, across a range of applications and industries, by designing, developing and manufacturing sustainable, highly-functional materials.

The META Advantage



SPEED

META uses AI software to design a library of patterns for different applications, it typically develops new custom solutions within hours vs months

SCALE

META is one of the first companies to develop proprietary roll-to-roll production equipment to produce large area, high volume nanocomposites

COST

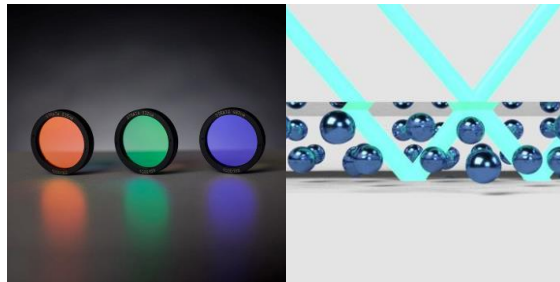
Increasing the roll-to-roll web width and line speed should drive costs down to a few \$/m²

Production Scale

Expanding Technology Platform Capabilities & End-Markets

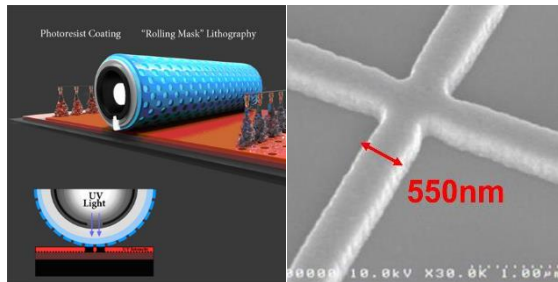
Markets:	Aerospace & Defense	Augmented Reality	Automotive	Banknotes and Brand Protection	Batteries	Clean Energy	Communications	Consumer Electronics	Health & Wellness
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HOLOGRAPHY



holoOPTIX® and metaAIR®

LITHOGRAPHY



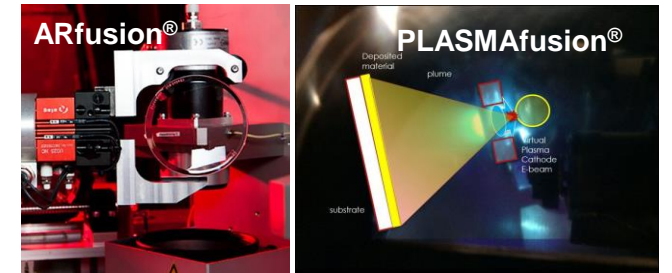
NANOWEB®

WIRELESS SENSING



glucoWISE®

PRECISION INTEGRATION



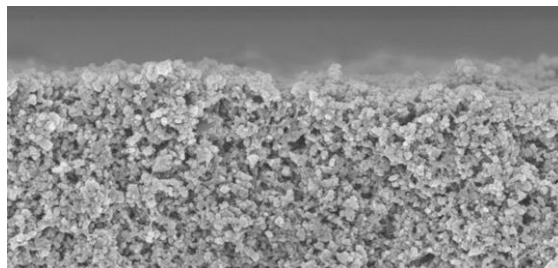
ARfusion® and PLASMAfusion®

NANO-OPTIC



KolourOptik®

NANO-CERAMIC



NPORE® and NANOPORE®

ELECTRO-OPTICAL & IR



VLEPSIS™

472 Active Patent Documents
 292 Issued Patents
 112 Patent Families, of which
 63 Patent Families with
 at least one issued patent

Enhancing Performance and Safety for Electric Vehicles

META is developing **two new battery materials** and **manufacturing techniques** to help deliver:

- Increased Range, Fast Charging
- Improved Material Performance, Stability and Safety
- Better Material Utilization and Cost Reduction

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

- \$5.1B TAM in 2021; Shipments 5.5B m², 30% CAGR
- ~15 million m² per GWh of battery capacity (range 10-20)

2) PLASMAfusion[®] used to make thin ***coated copper current collectors***, **reducing weight by 80%**, **extending range** and **inhibiting thermal runaway**.

- One million EVs would require ~650MM m² of material

EVs are META's Largest Market Opportunity



META's materials are compatible with all Li-ion battery types

Sources: Yano Research Institute Ltd., SNE Research

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.

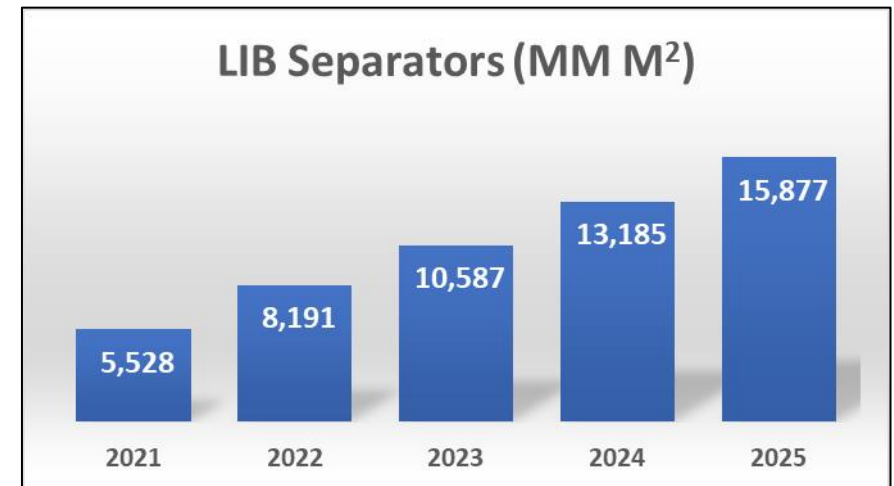
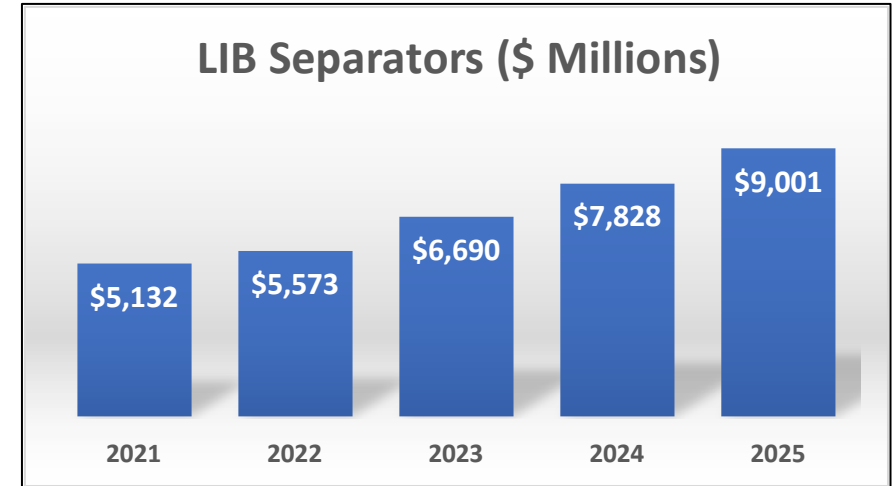
Safe battery separators must optimize porosity and ion transport, reduce the weight and thickness of inactive materials, while maintaining thermal/mechanical stability.

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 2021, \$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[®] Nanoporous Ceramic Separators

Independent Testing by Coulometrics Confirms:

- NPORE[®] cell survives nail penetration with **no fire**
- **Standard** pouch cell was **burned, unsealed and destroyed**
- **Positive** cell cycling results with NPORE[®] (ongoing)

Discussions/Evaluations Ongoing with OEMs

- Exploring range of electrode chemistries, electrolytes
- Potential collaborations include JDAs and Licensing

META Exhibited at the 70th Annual APMA Conference

- Showing NPORE[®] and NANOWEB[®] solutions for EVs
- Sneak peak of **Project Arrow** concept car, going to CES 2023

New Facility for Battery Materials Team

- Expanded lab/office to include pilot mixing/coating capacity
- Outsourced coating trials underway w/ partner for scale-up



NPORE[®] prevents thermal runaway in nail penetration test



Standard pouch cell is destroyed in nail penetration test

Coated Copper Current Collectors: Reduced Weight, Enhanced Safety

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

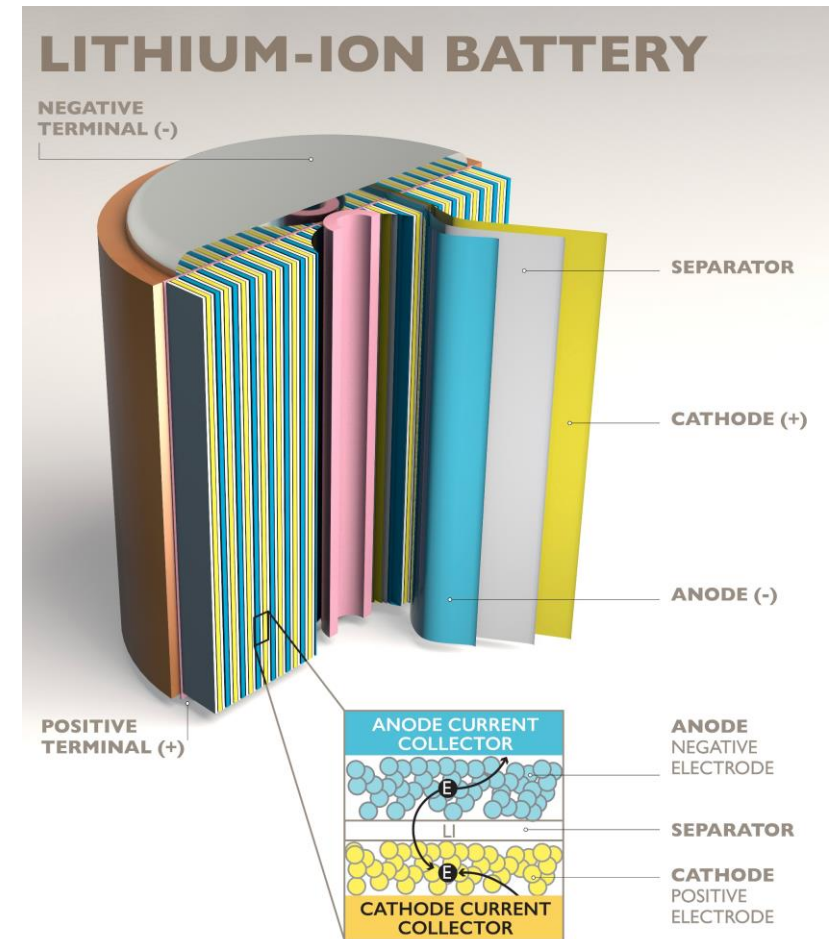
Aluminum (Al) and **Copper** (Cu) foils used for cathode/anode, respectively, account for ~15% of battery mass.

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.



PLASMAfusion® Coated Copper Current Collectors

Mini Roll-to-Roll Machine Completed

Learning tool for design of Pilot-Scale machine:

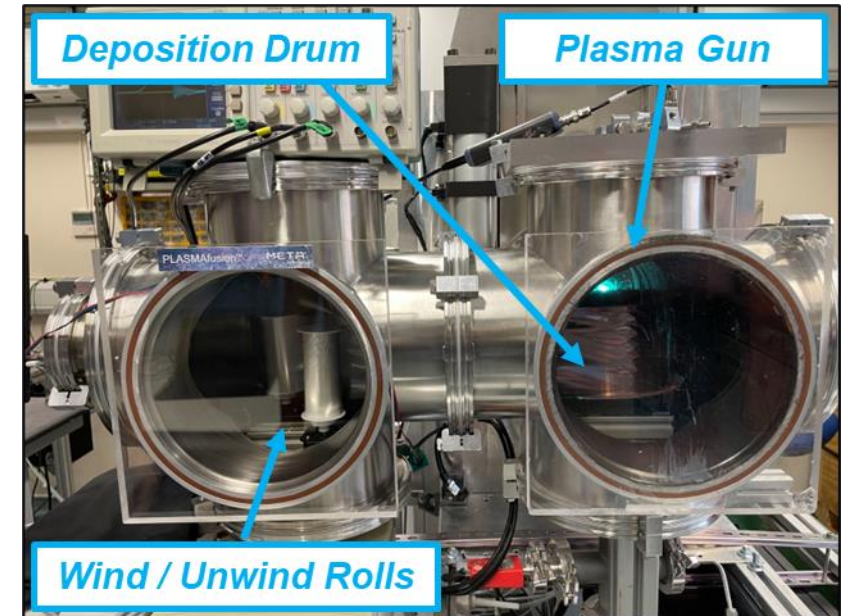
- 12 cm wide roll x 20-meter length
- Water cooled target holder
- Quartz crystal monitor controlled
- Improved safety features

3D Thermal Modeling of Mini R2R

- Study pros/cons of different architectures
- Understand deposition rate vs. substrate heating

MOU: DuPont Teijin Films and Mitsubishi Electric

- Team to scale up coated copper current collectors
- DTF supplies substrates, MEG provides factory automation
- Stages: pilot scale, industrial scale, solid state batteries



Mini R2R PLASMAfusion® system and sample output



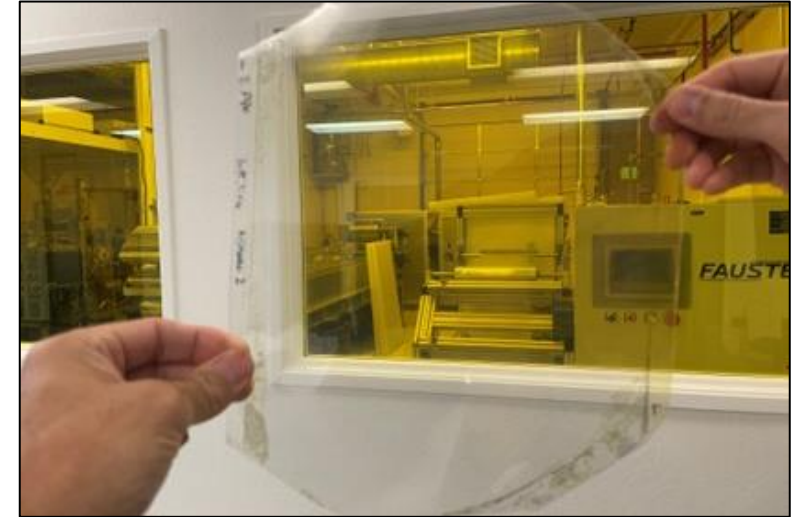
NANOWEB[®] Scale-Up and 5G Film R2R Quality

First pilot-scale, 300mm, **RML[®]** roll-to-roll line being optimized at META's Pleasanton, CA facility.

Roll-to-roll **5G Reflector** film now **matches/exceeds functional performance** of wafer-based samples.

Cosmetic **uniformity** and **transparency** achieved.

Samples now **exceed customer specifications** for transmission, haze and sheet resistance.



5G R2R Signal Enhancement FILM



Application Specification	Customer Spec	July	September
Transmission (%)	87.4 +/- 1	84.7 +/- 0.25	88.2 +/- 0.2
Haze (%)	4.4 +/- 0.5	4.7 +/- 0.1	3.0 +/- 0.1
Sheet resistance (Ohm/sq)	7.0 +/- 0.5	8.0 +/- 0.5	6.9 +/- 0.3

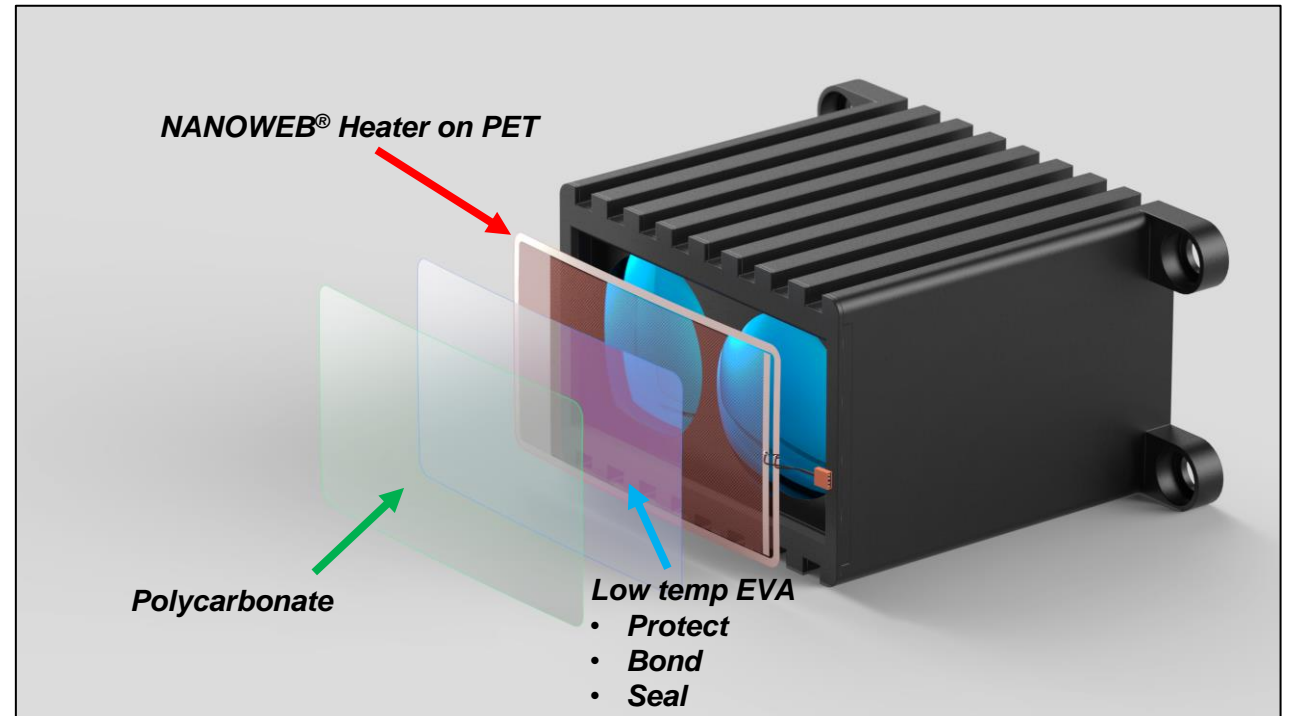
Sample now exceeds customer specifications

NANOWEB® Demos: LIDAR/RADAR/Camera Heated Window

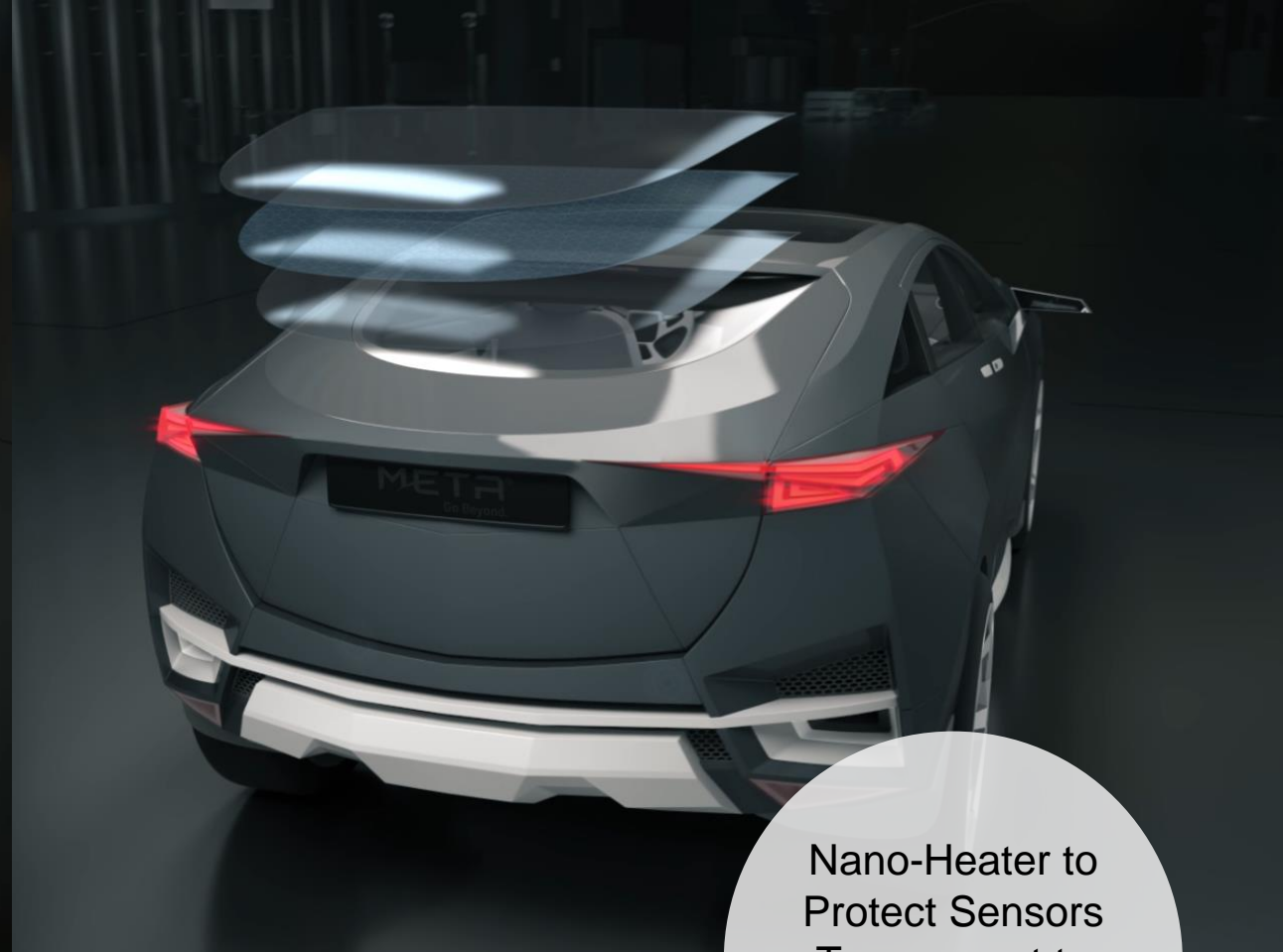
- NANOWEB® cell in sturdy plastic frame
- Lens with Antenna/Electrochromic in frame
- External controller activates heater/electrochromic
- Battery in controller or external power supply
- Standard evaluation kit precedes custom order
- CES 2023 demos: Heater, Antenna, Electrochromic



NANOWEB® Heater Evaluation Kit



NANOWEB® Sensor Protection Packaging



LIDAR Protection: De-Ice/De-Fog + EMI Shielding

PROBLEM

ADAS and Autonomous vehicles depend on an array of cameras and sensors to “see” and understand their surroundings

SOLUTION

NANOWEB[®] transparent conductive film provides deicing and defogging without blocking the camera/sensor functions

Nano-Heater to
Protect Sensors
Transparent to
RADAR & LIDAR
simultaneously

Transparent
Window Film
Transforms
Outdoor 5G
Coverage

META[®]

Transparent Passive 5G Reflector

PROBLEM

Highest-speed 5G signals need line of sight, requiring placement of many small cells

SOLUTION

META's passive transparent window film reflects signal to cover dead zones

MEGA-TREND

Carriers are spending \$ Billions on Infrastructure

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META[®]
Go Beyond.

NANOWEB[®] Transparent Sensors and 5G Antennas

Competitive Advantages

- META's lithography capability enables fabrication of sensors and antennas completely invisible to the human eye
- META's touch sensors and transparent 5G antennas can be integrated into smartphone displays, on windows of vehicles or buildings and home appliances
- NANOWEB[®] is flexible - unlike the incumbent ITO (Indium Tin Oxide) technology – enabling sensors on foldable phones
- META's antennas can operate from low to high frequencies (3G, 5G/6G and beyond) and provide communication systems for conventional, EV and autonomous vehicles



META
Transparent
5G Antenna

Nano-Optic Security Products – **KolourOptik®**

Frame Agreement: Developing a unique security feature for a confidential G10 central bank, up to \$41.5MM over up to 5 years.

New Purchase Orders: \$4.3MM new orders in September. Orders under frame agreement now total \$13.5MM.

Roadmap: Win selection for first banknote with flagship customer, expand to other denominations, follow-on business with others.

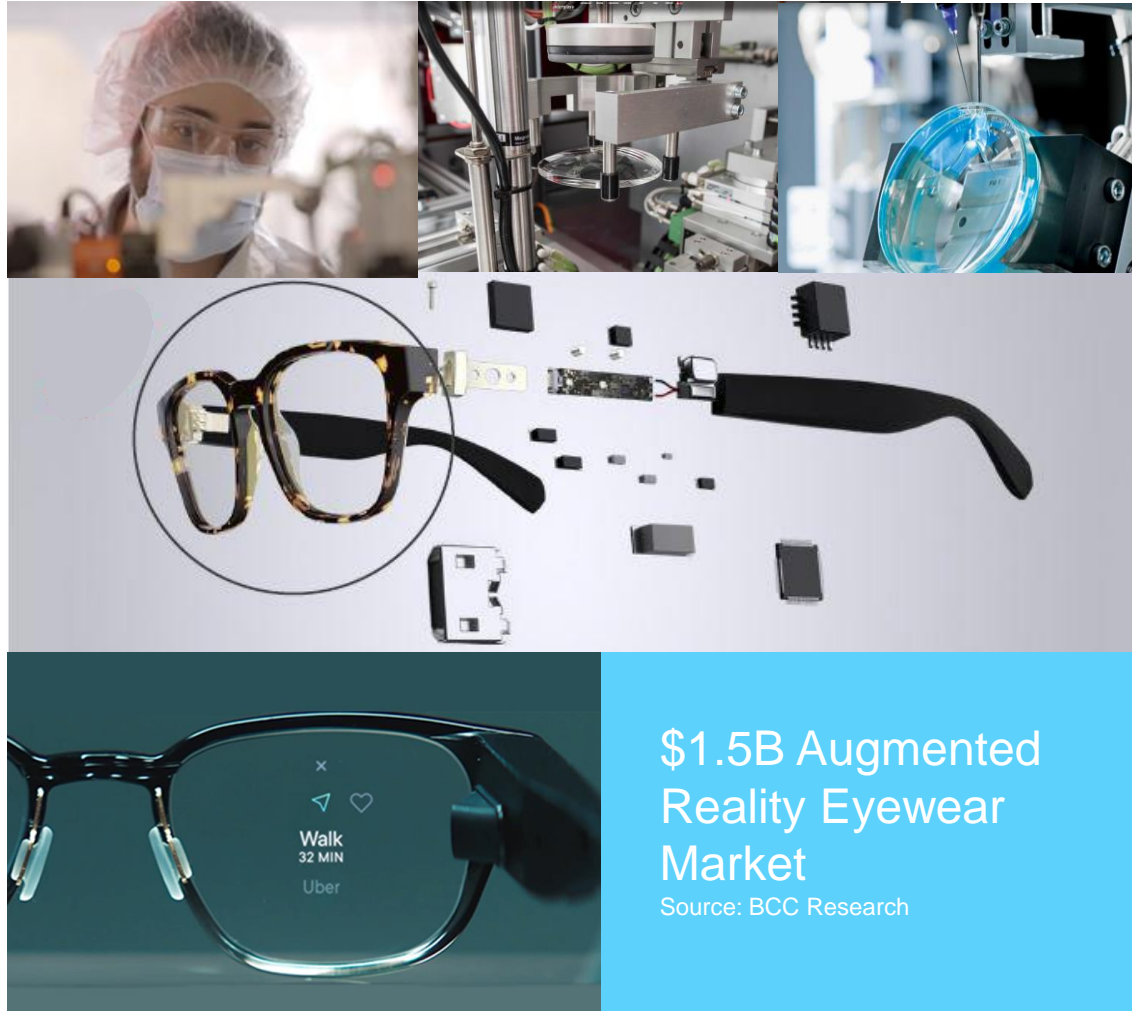
KolourOptik® Stripe (KOS): testing and optimization in preparation for commercial launch.

- Pilot-line runs of 10,000 meters delivered
- Customer trials underway
- Application on standard paper retains visual quality
- Adhesion and crumpling tests with good results





KOS Round 1 Production Run

ARfusion® Integrates AR with Prescription Lenses



- ARfusion® integrates optical elements for AR (augmented reality) combined with lens casting technology developed by Interglass Technology AG
- META acquired assets & IP of Swiss lens manufacturer Interglass, 36 patents, trademarks and trade secrets, proprietary software and designs
- High volume fully automated lens casting, workstations, tools, test equipment, and technical data
- Proprietary specialty materials/foils supply in cooperation with Covestro AG
- Integrated production of prescription lenses and embedded elements such as optical combiners, waveguides, and eye tracking sensors
- Highly Sustainable Process:

 **Less energy**
(10 sec vs 50 hrs curing time)

 **Less material usage**



glucoWISE® New Prototypes and Human Studies

New prototypes for pre-clinical studies

- Next human trials planned before year-end 2022

glucoWISE® non-invasive glucose monitor

- 16 active patent documents, of which 5 are issued

Metamaterial antireflective film

- Enhances signal penetration through the skin

Dual sensors – radio wave and optical

- Measure signals transmitted through the tissue

Roadmap

- First 510K approval in 30-36 months
- Table-top, portable, wearable devices



Dr. Helena Cano-Garcia with glucoWISE® pre-clinical prototype

OEM Partners & Customers: Solving Global Challenges Together

Select Targeted Co-Development Partners and Customers in Automotive, Medical, Aerospace & Defense, Consumer Electronics and Energy



Advanced Materials Competitive Landscape

1 | Metamaterials Companies

Emerging, Disruptive performance, Low cost, High Margins



2 | Chemical and Specialty Materials

Incumbent, Bulk materials, Incremental performance, Commoditized



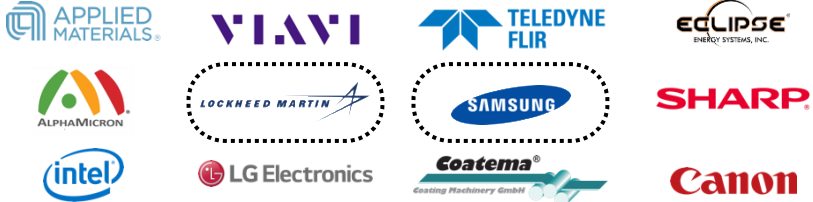
3 | Carbon Nanomaterials

Incumbent, Process slow and expensive to scale, Rare earth price exposure



4 | Semiconductor Materials

Incumbent, Process slow & expensive to scale, Rare earth price exposure



5 | ITO and Specialty Coatings

Precious metal price exposure, Average performance



Existing META relationships

Intellectual Property & Know-How

Proprietary, custom manufacturing processes and trade secrets, developed over 10 years with multi-million \$ investment

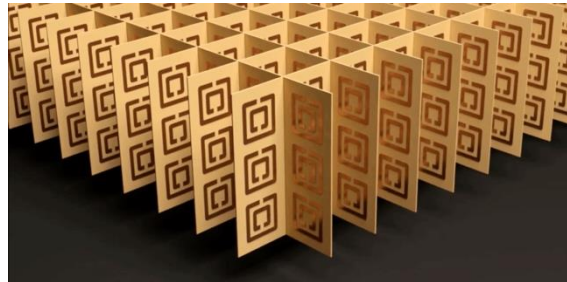
472

active utility and design patent documents



40

issued patents and **60** pending applications in the U.S.

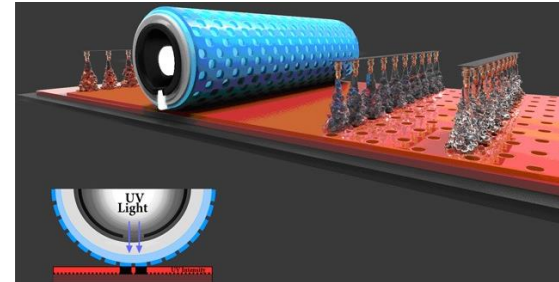


12

registered trademarks

12

design patent documents



UTILITY PATENT DOCUMENTS BY L1 TECH

- 340** Devices & Components
- 79** Scaled Manufacturing
- 41** Fabrication & Origination

292

patents have issued **112** patent families



252

issued patents and **120** pending applications in **28** other countries

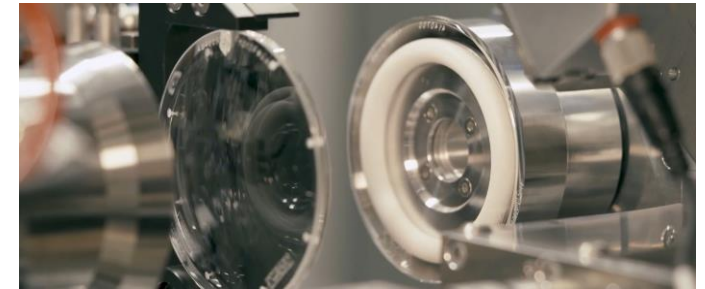


Processes and methods were patented early, providing multi-year competitive advantage

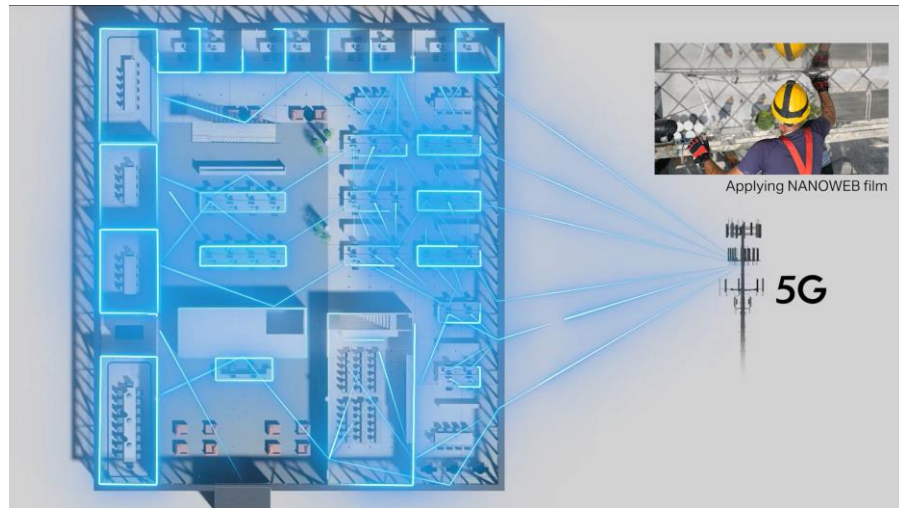
ESG is in our DNA – Metamaterials do more with less



NANOWEB® Transparent Conductive Film – replaces scarce materials like ITO with commodity metals



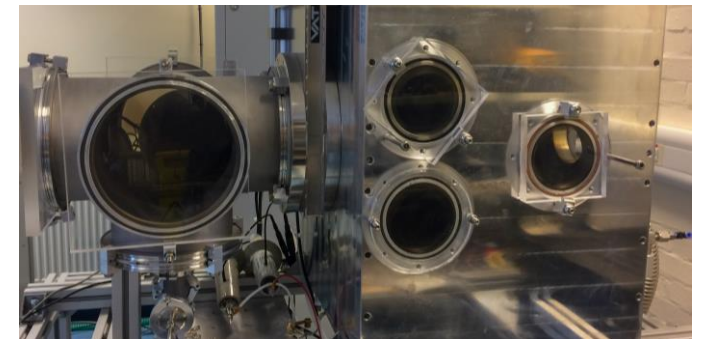
Less energy (10 sec vs 50 hrs curing time) **Less material usage**



Lux Research 2021 Innovator of the Year
Passive 5G Reflector Uses No Power



Production Facility in Thurso, QC
99% Clean Renewable Hydroelectric Power



60x more efficient than PLD
8x more efficient than Magnetron Sputtering

Selected Financial Highlights – Q3 FY:2022

Revenue:

- Q3:22 \$2.5MM, +329% Y/Y vs. \$0.6MM in Q3:21
- YTD \$8.8MM, +388% vs. \$1.8MM in 9 months:21

Opex: \$23.9MM vs. \$12.0MM in Q3:21

- SG&A \$17.7MM vs. \$10.2MM
- R&D \$6.2MM vs. \$1.8MM

Operating Loss: \$22.2MM vs. \$11.6MM

Other Expense: \$2.3MM vs. \$0.08MM other inc.

Net Loss: \$24.5MM vs. \$11.4MM

Per Share: (0.07) vs. (0.04)

Shares Outstanding as of 11/9/22: 361,930,468

Cash and Equivalents: \$32.2MM

L-T Debt: \$2.9MM @ 0% interest, unsecured

Operating CF: (\$19.5MM), (\$48.5MM) YTD:22

Non-cash Expenses: \$7.2MM

- Stock-based compensation: \$2.1MM
- Depreciation and amortization: \$1.9MM
- Unrealized FX loss: \$1.9MM
- Non-cash interest, lease expense, consulting expense: \$1.3MM

Working Capital: \$2.2MM cash used


Capital Expenditures: \$3.0MM

This information should be read in conjunction with the complete financial statements and the associated management discussion and analysis, available on the Investors section of our website at www.metamaterial.com, as well as on the SEC EDGAR website at www.sec.gov

Pioneering Metamaterials Production at Scale



Multinational
Subject Matter
Experts



Broad & Growing
IP Estate

IOIO
IOIO

Software Driven
Simulation Tools




Proprietary
Production
& Design Platform



Scalable &
Sustainable Products



Global Partnerships
with OEM &
Fortune 500
Companies



The First
Metamaterials
Company
on NASDAQ

Access to
Non-dilutive
Government
Funding

META[®]

Go Beyond.

Investor Contact:

Mark Komonoski

Senior Vice President
Integrus Communications

T: 877-255-8483

E: ir@metamaterial.com

Media Inquiries:

Rob Stone

VP, Corporate Development
and Communications

Meta Materials Inc.

E: media@metamaterial.com

