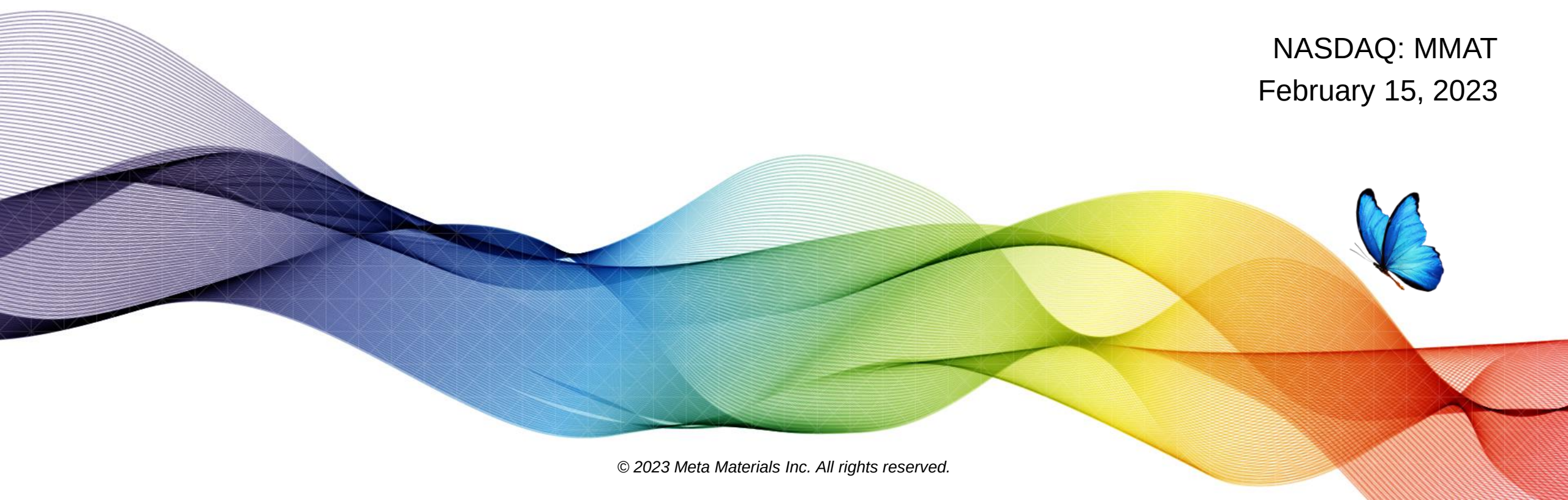
Meta Materials Inc.

NASDAQ: MMAT

February 15, 2023

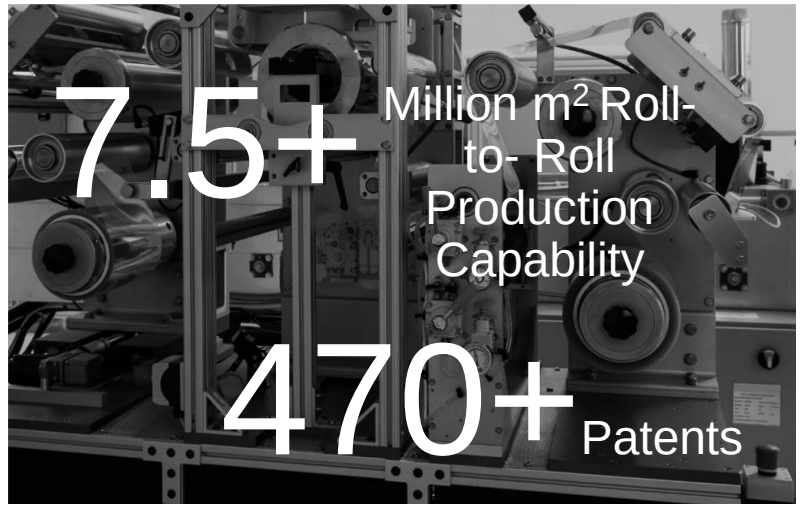


Forward Looking Statements

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.

Nanostructured Materials Leader

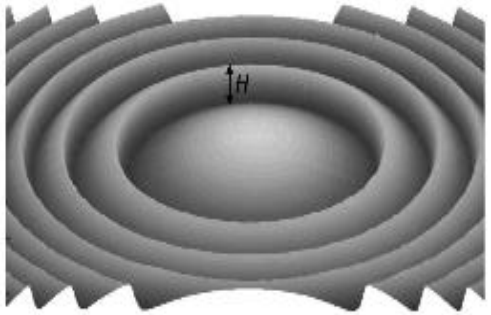
Nanostructured materials and devices to dramatically improve **safety, performance and connectivity** with semiconductor accuracy, more sustainable materials, at the speed of printing newspaper.



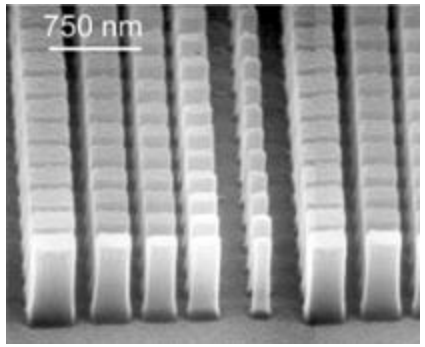
META® Go Beyond.

Enabling the 21st Century “Age of Invisible Materials”

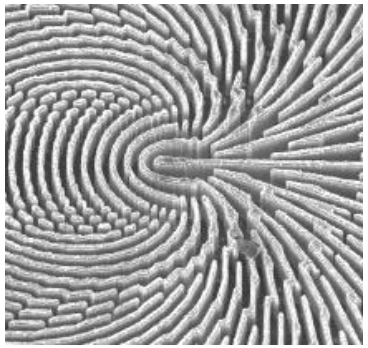
Échelette DOE
(1970’s)



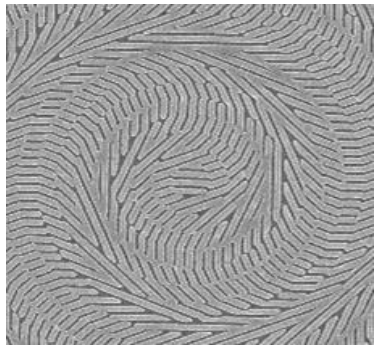
Blazed binary grating
(1998)



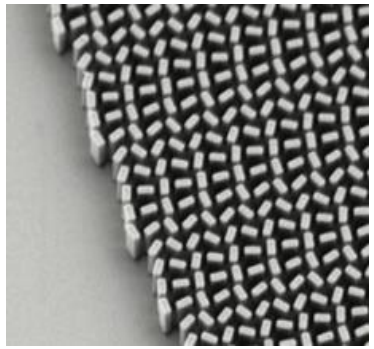
Geometric Phase
(2001)



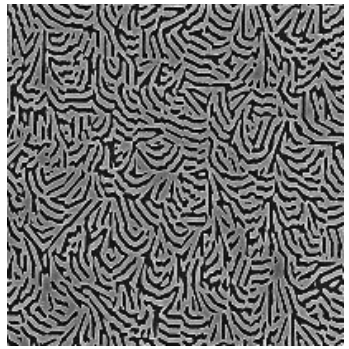
Mie resonators
(2014)



High performance
(2016)



Light field
(2019)



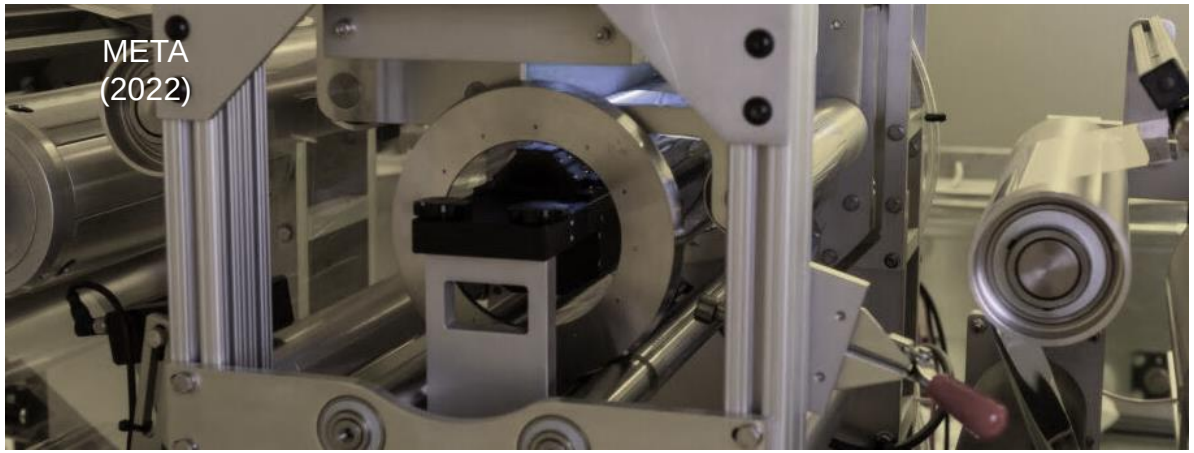
Laboratory Scale

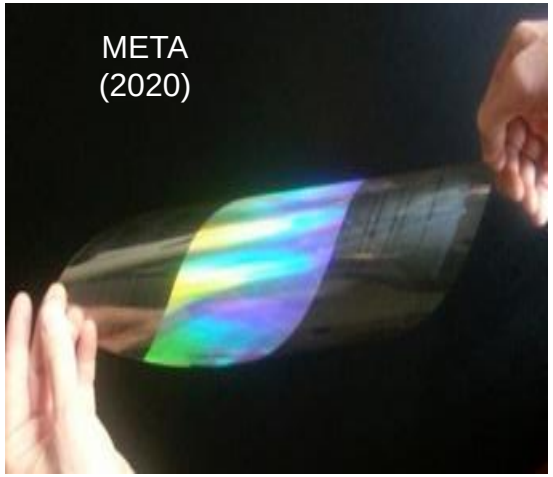
What are Metamaterials?

- Metamaterials control on demand unique functional properties in absorption, emission, sensing, transmission, and guiding of light, sound, energy, and heat, as well as friction, strength, and electric energy
- Metamaterials are typically created by patterning composite and nanomaterials (e.g. metals, dielectrics etc.)
- Until recently, development has taken place only at the laboratory scale on very small substrates

META®
Go Beyond.

META® Competitive Advantages





Production Scale

SPEED

META® uses AI software to design a library of patterns for different applications, it typically develops new custom solutions within **hours vs months.** It can also handle **data** with advanced big-data algorithm techniques.

SCALE

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

COST & EASE OF INTEGRATION

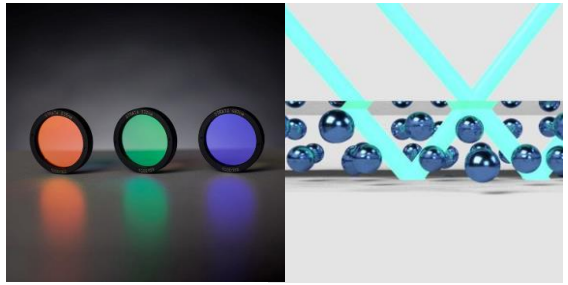
META® nanomaterials are easy to integrate. Increasing the roll-to-roll web width and line speed should drive costs down to a few $/m^2

META® Go Beyond.

Expanding Technology Platform Capabilities & End-Markets

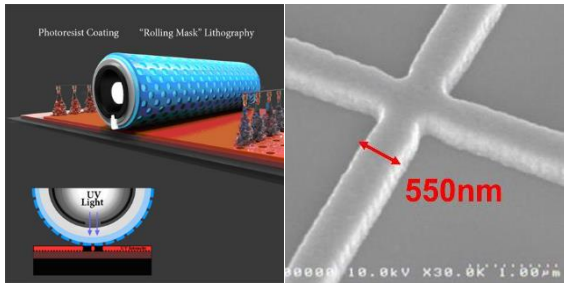
Markets:	Aerospace & Defense	Augmented Reality	Automotive	Banknotes and Brand Protection	Batteries	Clean Energy	Communications	Consumer Electronics	Health & Wellness

HOLOGRAPHY



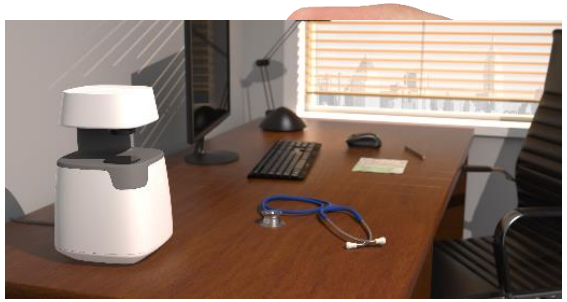
holoOPTIX® and metaAIR®

LITHOGRAPHY



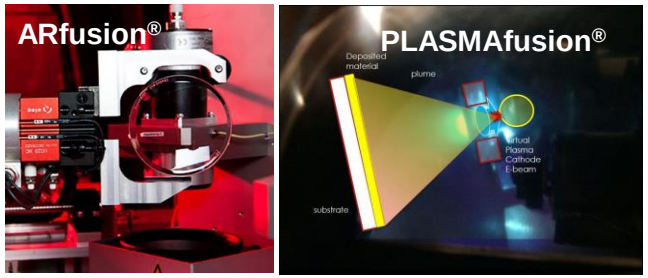
NANOWEB®

WIRELESS SENSING



glucoWISE®

PRECISION INTEGRATION

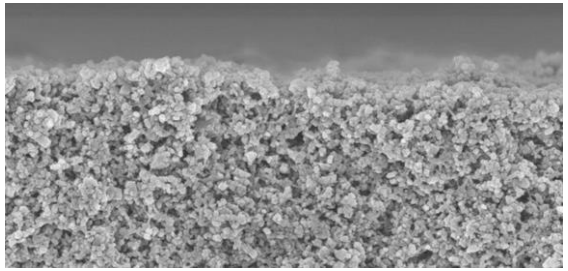


ARfusion® and PLASMAfusion®

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

META® Go Beyond.

Large and Growing Addressable Markets

Sub-Segments

Battery Materials:

- Current Collectors
- Separators

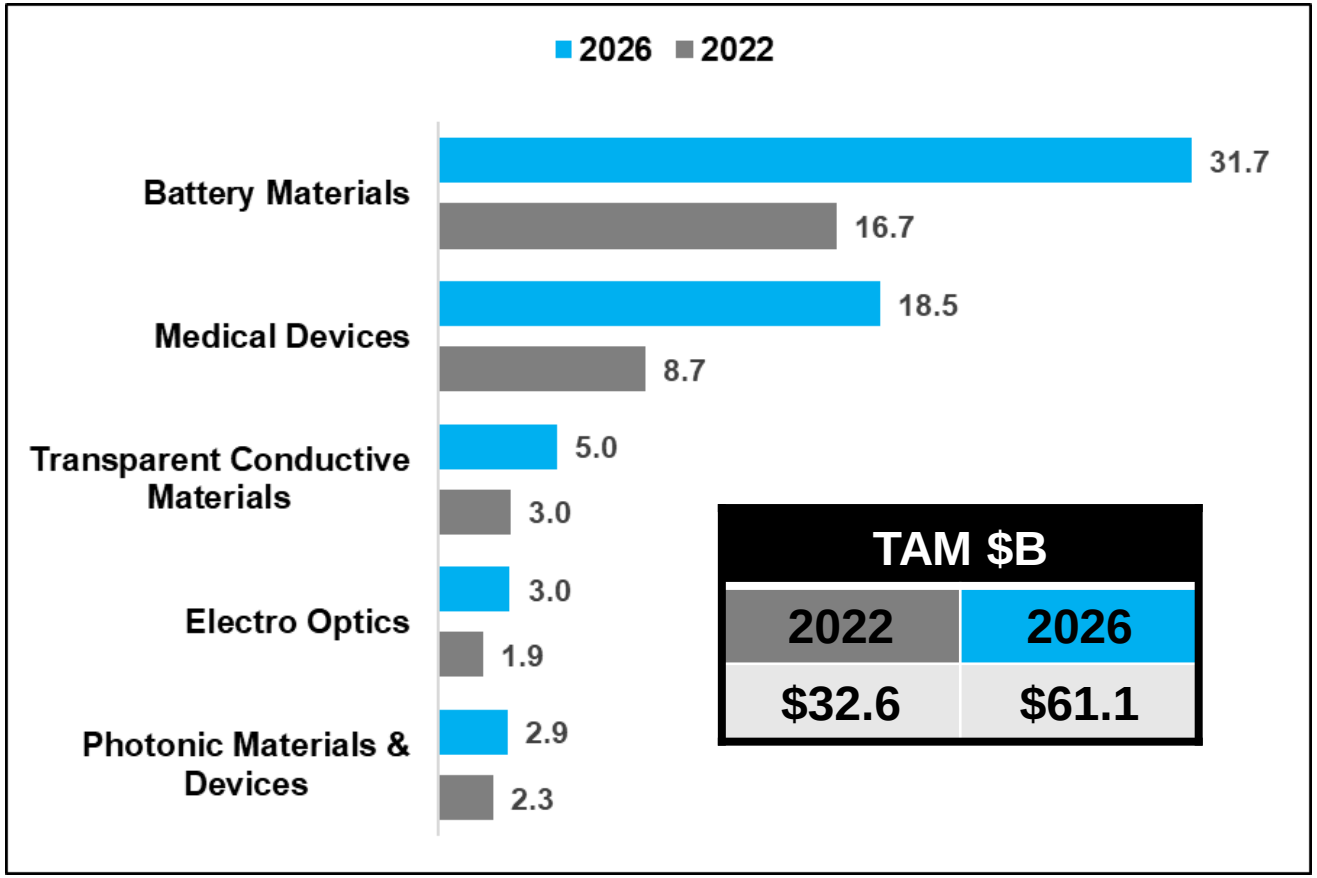
Transparent Conductive Materials:

- EMI Shielding
- 5G/6G Communications
- De-ice/De-Fog Heating Films

Photonic Materials & Devices:

- Banknotes & Authentication
- Brand Protection
- Optical Filters
- Smart Eyewear & Augmented Reality

META® Addressable Markets, 2022-2026E ($B)



TAM $B	
2022	2026
$32.6	$61.1

Sources: IDTechEx, Statista, Verified Market Research, Yano Market Research, Lux Research, internal META estimates

META® Go Beyond.

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 m^2, 30% CAGR
- ~15 million m^2 per GWh of battery capacity (range 10-20)

2) NCORE™ ***polymer composite thin copper current collectors***, **reducing weight by 85%, extending range** and **inhibiting thermal runaway**.

- One million EVs would require ~650MM m^2 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

META® Go Beyond.

Battery failures can pose a danger if cells **enter thermal runaway**

3-stages

I

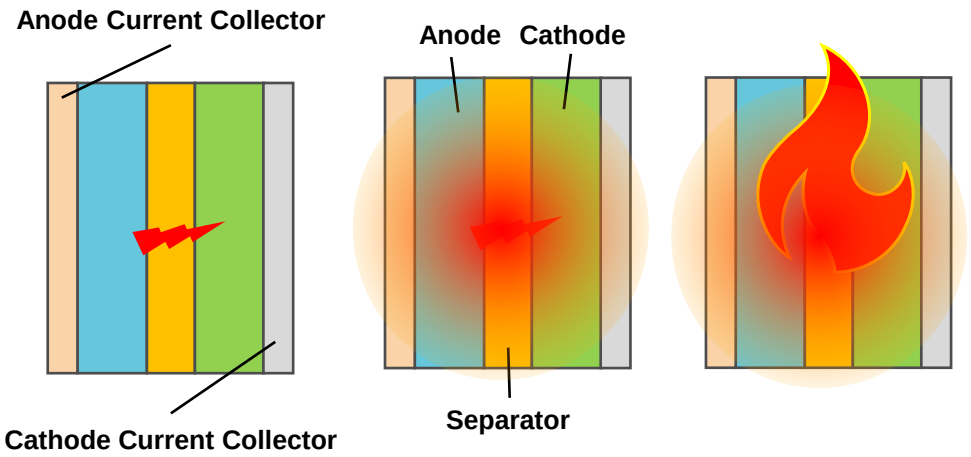
Low-resistance electrical connection between the positive and negative electrodes creates an internal electrical short.
- Local current spikes
- Local temperature spikes

II

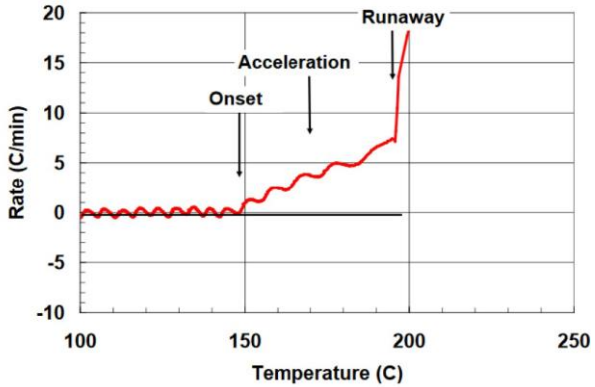
Heat accumulation and gas release
- Separator shrinks and fails
- Electrolyte starts to decompose

III

Combustion
- Extremely exothermic reaction leads to a hard-to-extinguish fire



An example of thermal runaway, showing the increasing rate of heat generation at high temperatures



Liu K, Liu Y, Lin D, Pei A, Cui Y. Materials for lithium-ion battery safety. Sci Adv. 2018 Jun 22

Figure credit: Doughty and Roth, 2012

META® Go Beyond.

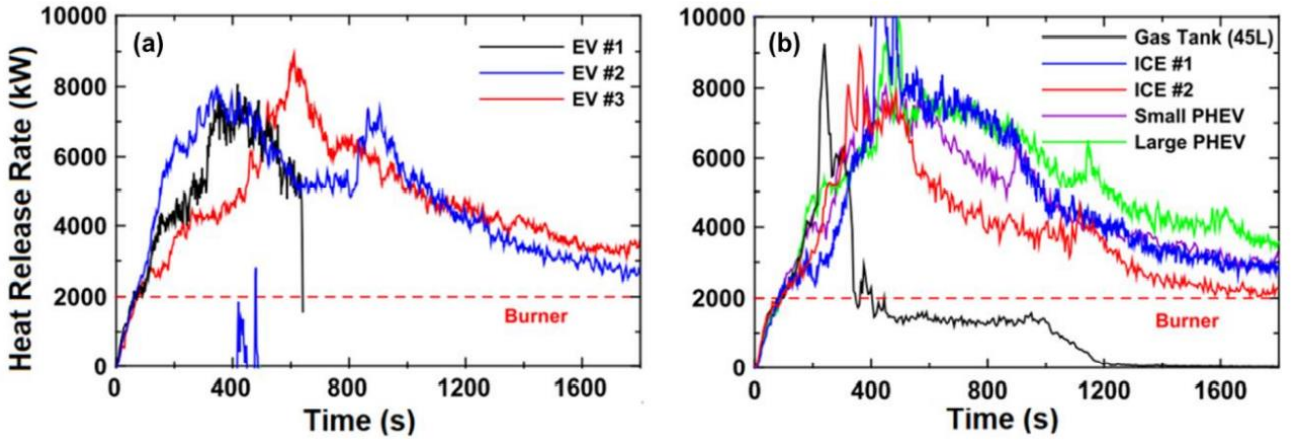
Thermal runaway events in LIBs lead to dangerous, **“inextinguishable” fires**

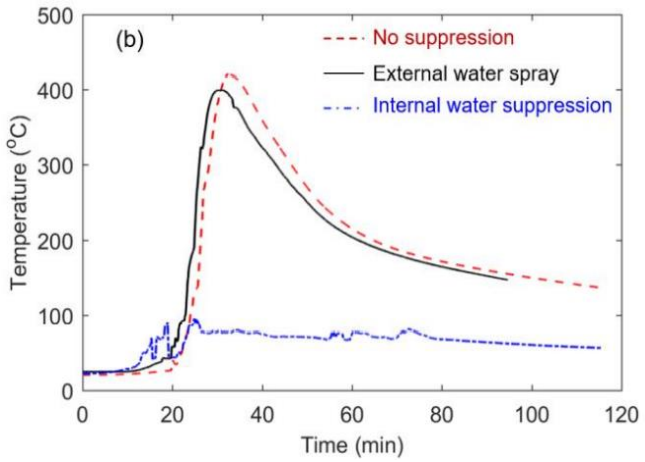
Over **10,000 L** of **water** at 200 L/min are needed **to suppress** a single **EV fire**[1]

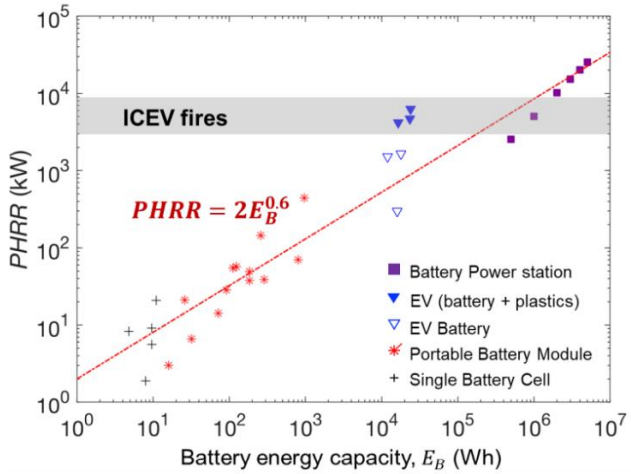
EV **battery fires** release **Mega-Watt** levels of **Heat Release Rate for hours**[2]

1.5 Kg of dangerous HF gas are released from the burning of a **single** medium-sized **EV battery**[3]

Source - tirol.ORF.at







1. *NFPA. Emergency Field Guide. NFPA; 2015*
2. *Sun, P., Bisschop, R., Niu, H. et al. Fire Technol **56**, 1361–1410 (2020). https://doi.org/10.1007/s10694-019-00944-3*
3. *Lecocq A, Bertana M, Truchot B, Marlair G. International Conference on Fires In Vehicles - FIVE 2012, vol. 2, Chicago, United States: 2012, p. 183–94*

META® Go Beyond.

META's Solutions to Battery Safety **at the Cell-level**

Failure prevention AND risk mitigation: META technologies can **prevent** failures from occurring and **mitigate** risks in the event of a failure.

NCORE™

A Novel Metal-Polymer Composite **with through (core) conductivity**

Breaks circuit when in-rush current reaches local temperature threshold

NPORE®

A High-performance Nanoceramic Separator

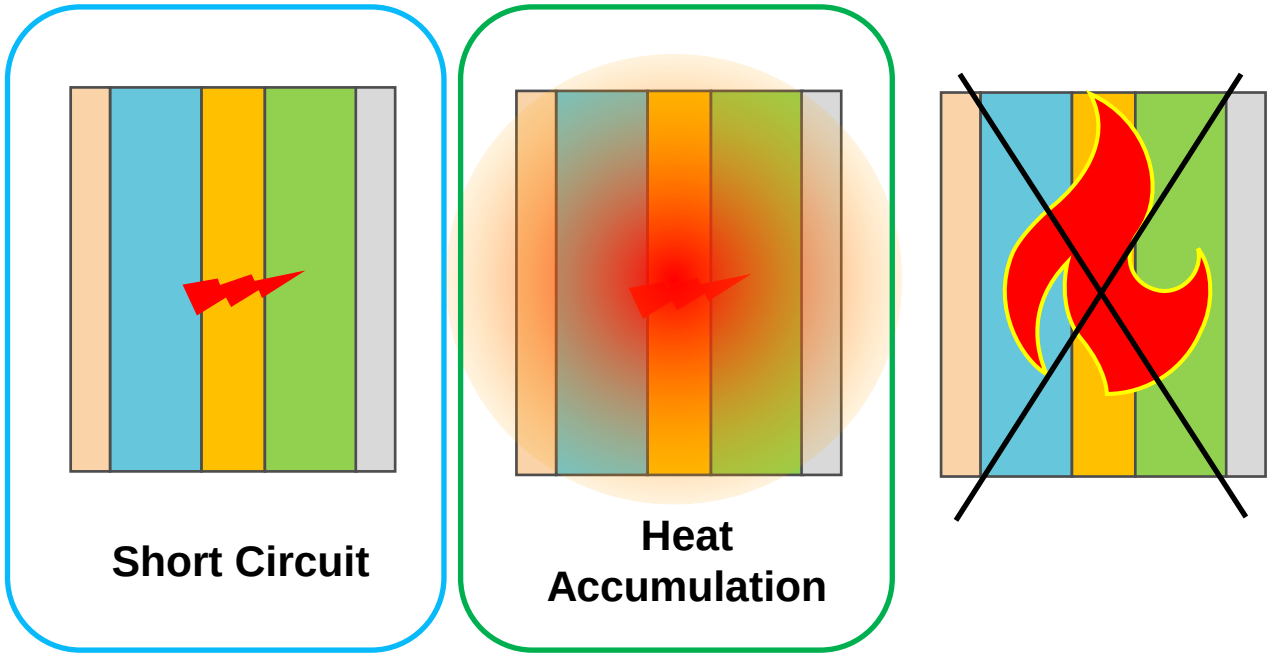
Ultra-robust, does not swell or melt under extreme stress in excess of 200°C

Cell-level combined prevention AND mitigation

NCORE™ Prevention

NPORE® Mitigation

No FIRE and Thermal Risks Mitigated!



META® Go Beyond.

NCORE™

METAL-POLYMER COMPOSITE CURRENT COLLECTOR

NCORE™ : Replaces traditional Metallic Foil Current Collectors with a Metal-Polymer composite (Cu and Al), offering **the world's 1st through-plastic-core conductivity.**

ULTRA-Lightweight and Thin

- Reduced weight (-85% for current collector, -5% at cell level)
- Increased Energy and Power Densities

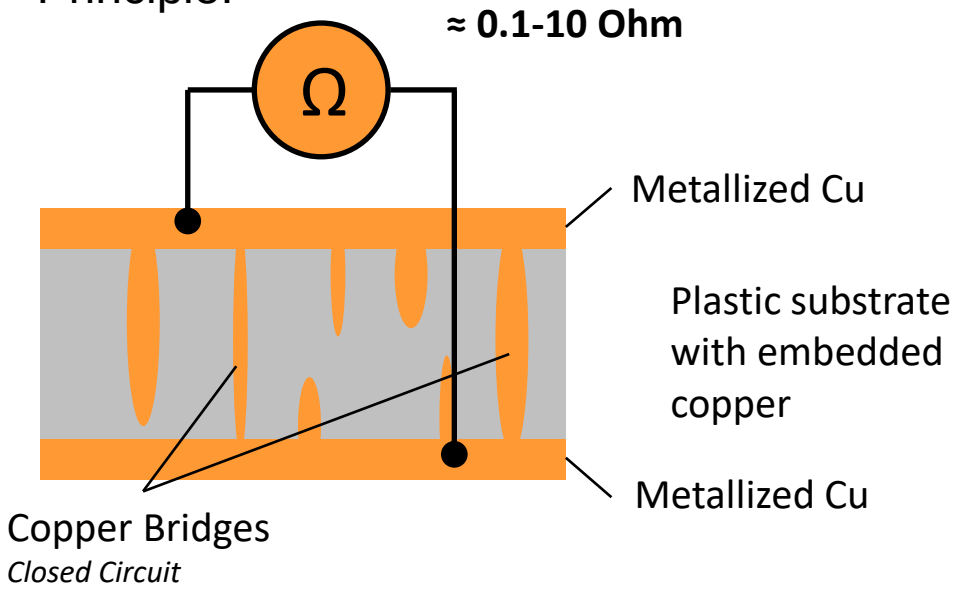
Added Safety

- Fuse-like protection from thermal runaway
- Chemistry agnostic

Scalable Manufacturing

- Roll-to-roll manufacturing using proprietary PLASMAfusion®
- Same cost of metallic foil

Principle:



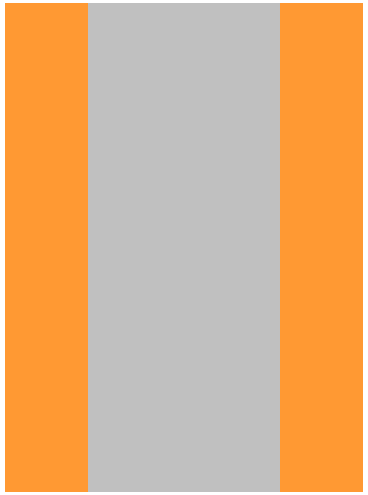
Under development and in collaboration with:

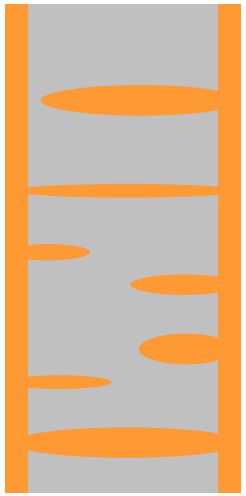
DuPont Teijin Films™
Innovation | Partnerships | Sustainability

MITSUBISHI ELECTRIC
Changes for the Better

META®
Go Beyond.

NCORE™ Outperforming Alternatives





Feature Comparison

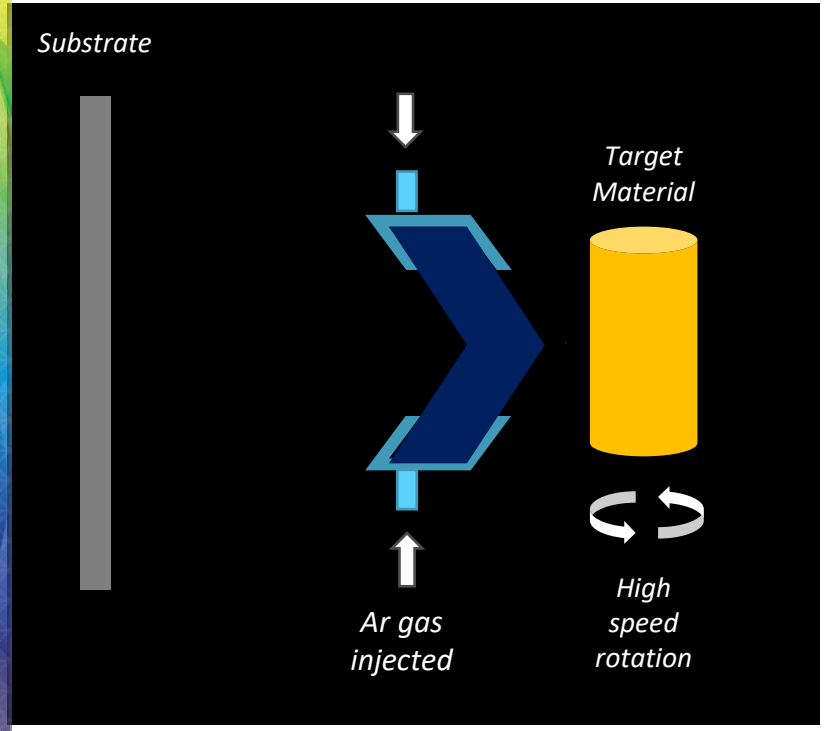
	Metal Foils	Metallized Polymers[1]	NCORE™
Weight	High	Low	Ultra Low
Total Thickness	12-8 µm	7-8 µm	6.5 µm
Sheet Conductivity	Very High	High	High
Through Conductivity	Solid State	None	Very High
Elongation to Break	Low	High	High
Fuse-like safety	None	Yes	Yes
Tab welding	Yes	Non-Standard	Yes
Cost of Manufacturing	Low	High	Low

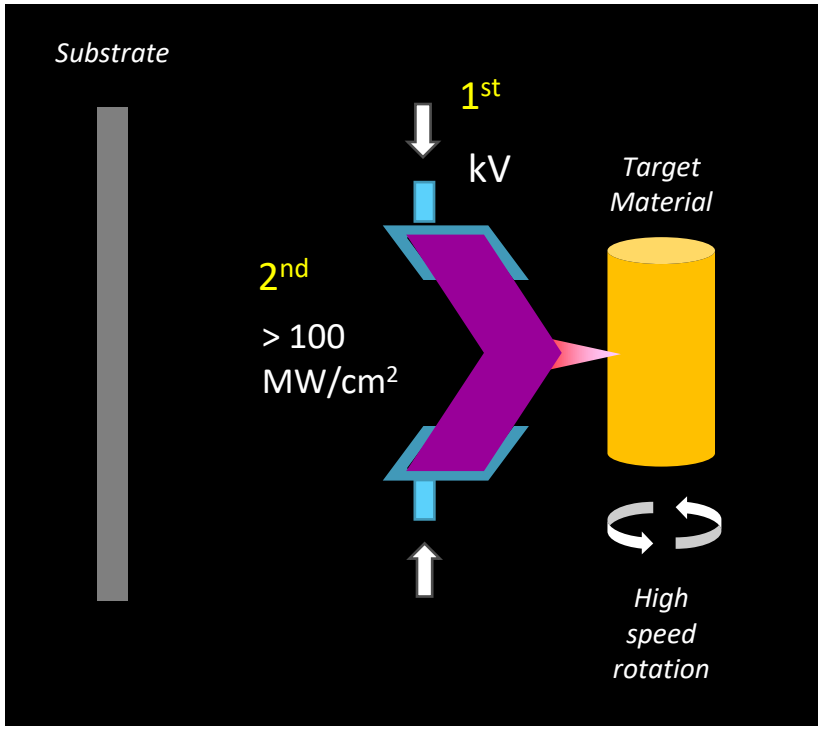
[1]*Metallized plastic current collectors", E.Darcy et al. - IBSW 2019, Beijing*

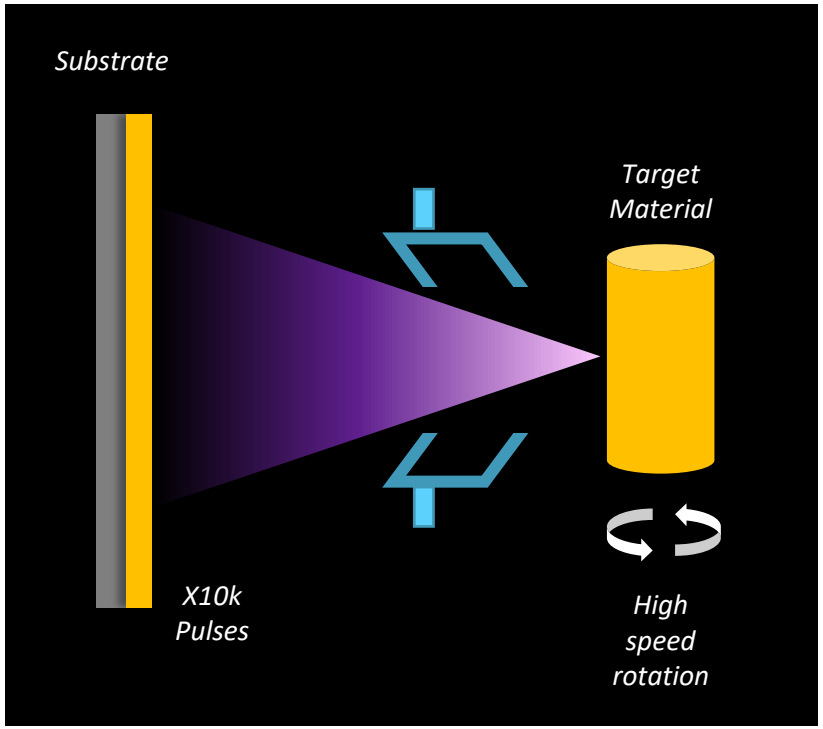
META® Go Beyond.

Proprietary Coating Technology - **PLASMAfusion®**

A globally unique vacuum deposition technique capable of depositing any material on any substrate at extremely high throughput







META® Go Beyond.

PLASMAfusion® Roll-to-Roll Production of **NCORE™**

Gen2 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
- Improving material handling, deposition rate (thermal management), and process control

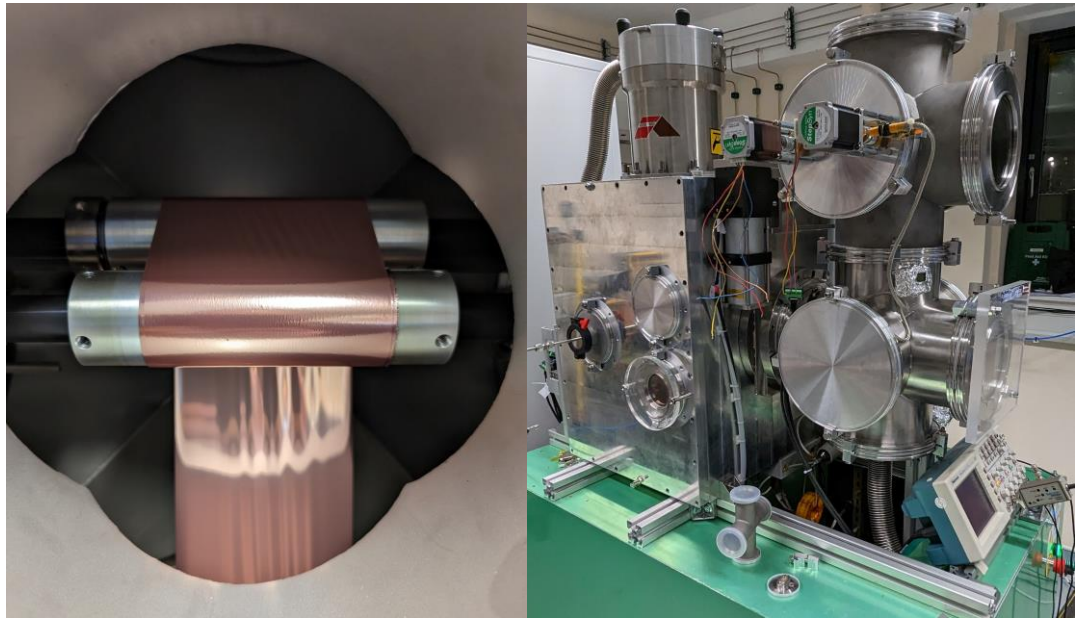
3D Thermal Modeling of Mini R2R

- 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

PLASMAfusion® coats any solid on any substrate



Gen2 Mini R2R PLASMAfusion® system and sample output

META® Go Beyond.

NPORE®

ALL-CERAMIC BATTERY SEPARATORS

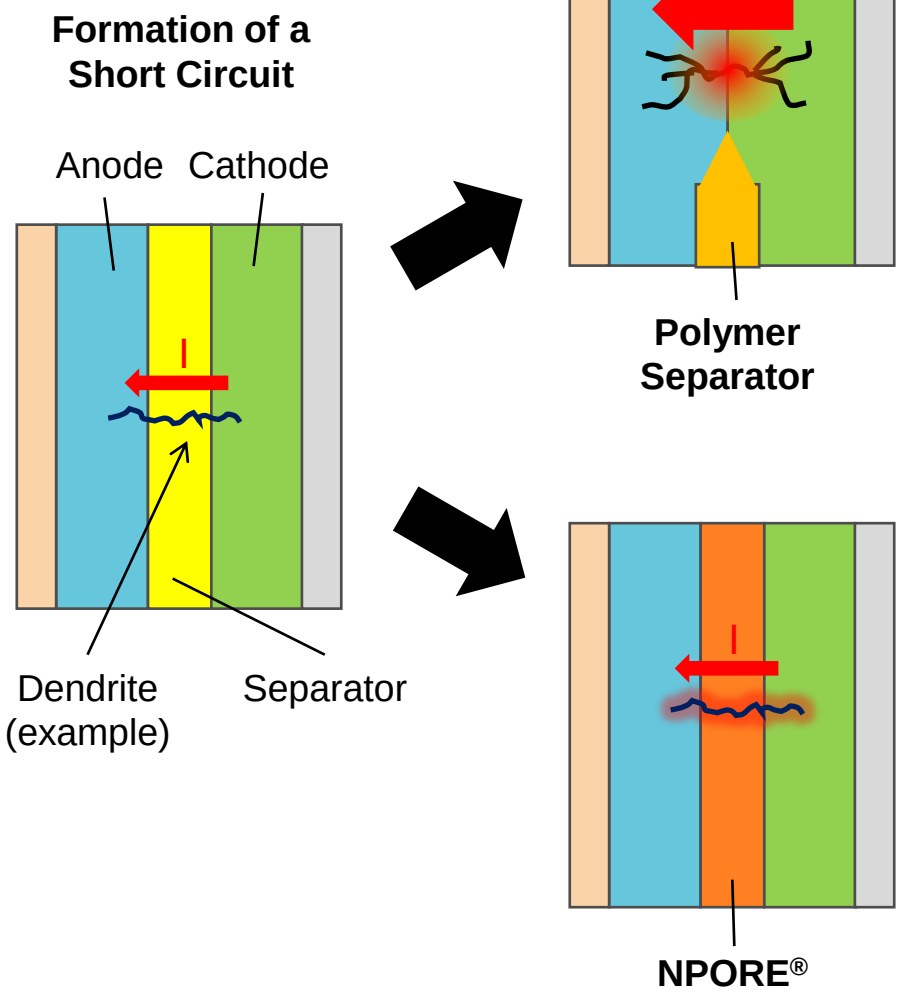
NPORE®: the **world's 1st flexible, free-standing ceramic** nanoporous membrane separator for LIBs.

Ultra Thermal Stability

- <1% heat shrinkage for increased battery safety
- Best-in-class dimensional stability
- 5x higher thermal conductivity compared to plastic separators
- Flame resistance

Superior Electrochemical Performance

- Superior abuse resistance
- Rapid wet out with battery electrolytes
- 3x greater compression resistance compared to plastic separators
- Excellent electrolyte conductivity



Standard Polymer Separators

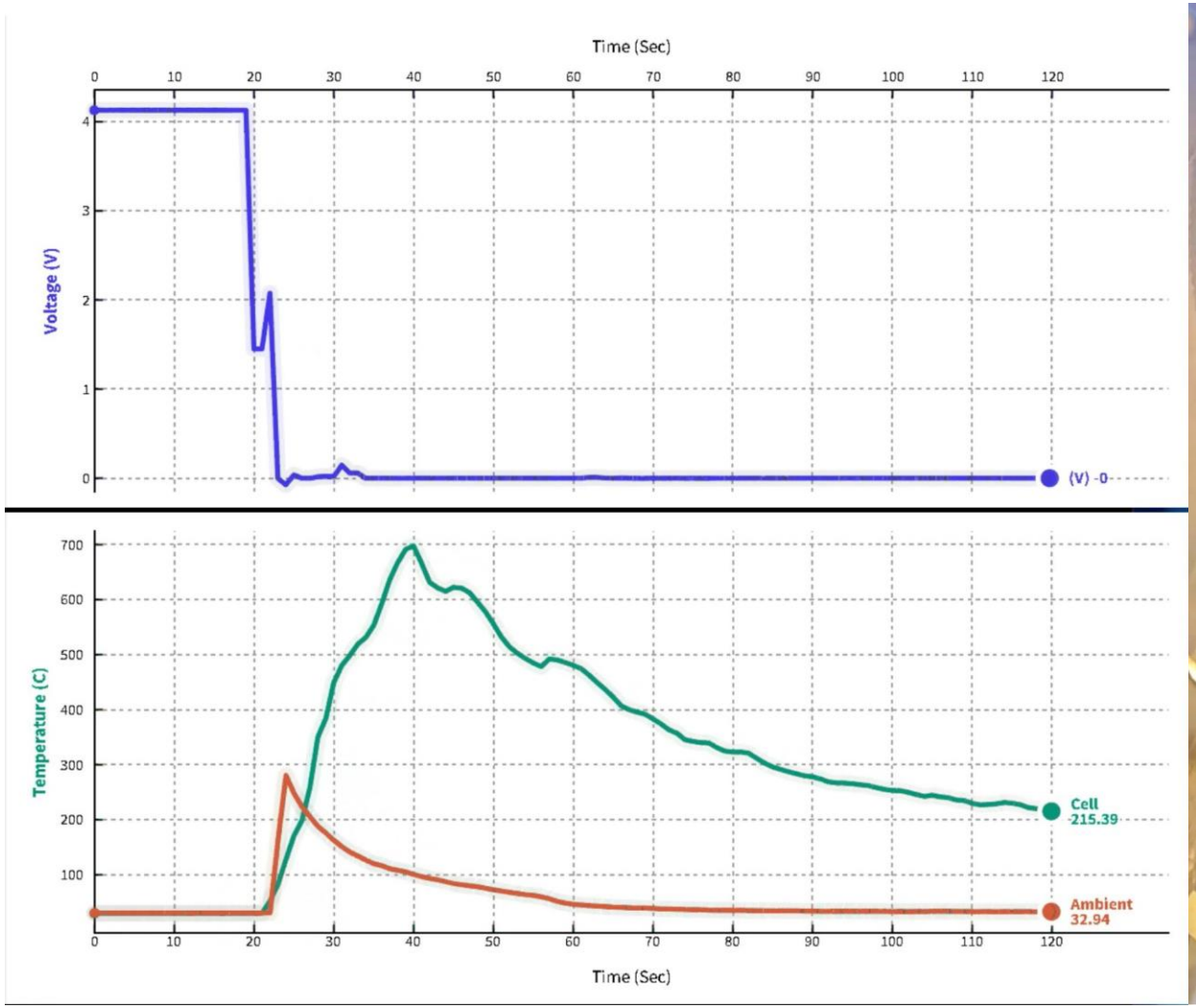
1. In-rush current
2. Heat accumulation
3. Separator shrinks
4. Exponential increase in current
5. Combustion

The NPORE® Advantage

1. In-rush current
2. Heat accumulation
3. Separator remains intact
4. Fire Prevented

META® Go Beyond.

Safety Performance with Standard Polymer Separator



- Nail test with a fully charged battery
- NMC Cathode
- Graphite Anode

In less than 3 sec:

Voltage drops to zero!

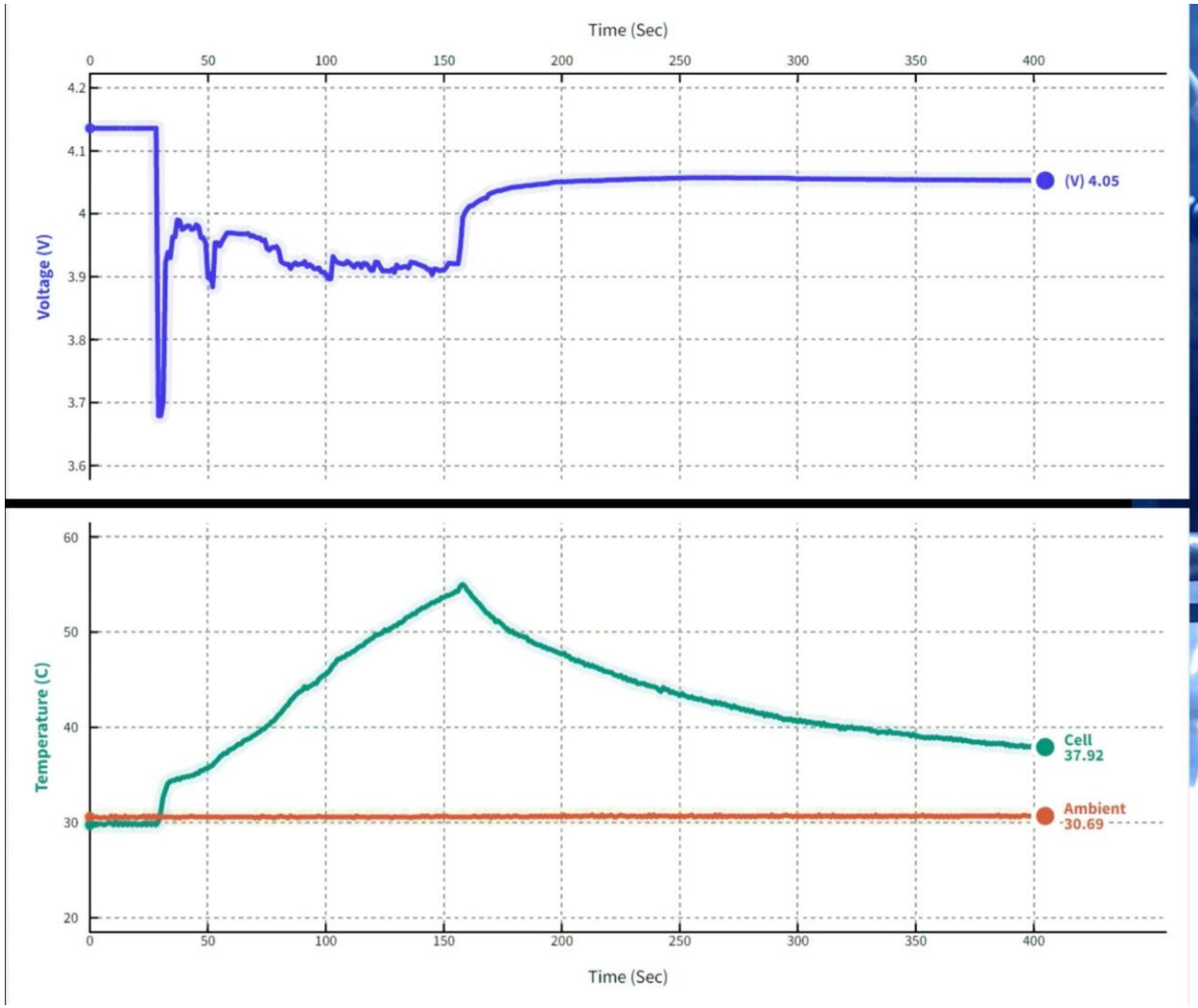
Cell temp hits 700° C

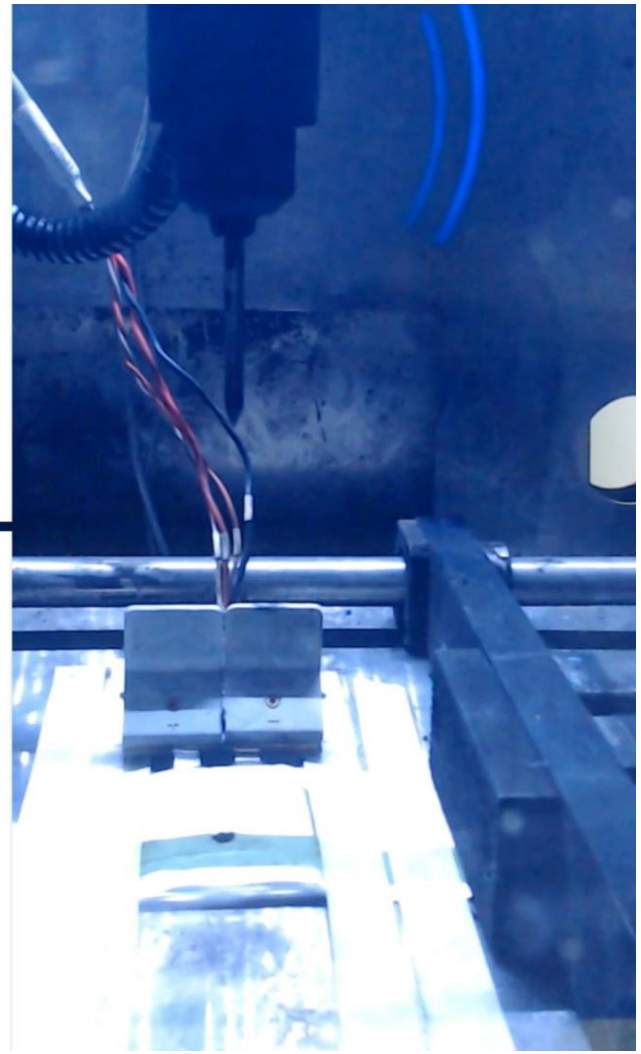
Ambient temp 280° C

Cell is destroyed!

META® Go Beyond.

Safety Performance with NPORE® Separator





- Nail test with a fully charged battery
- NMC Cathode
- Graphite Anode

Nail is removed.
In 15 sec:

Voltage recovers!

Cell temp <55° C

Ambient temp stable

Cell survives!

META® Go Beyond.

NPORE®

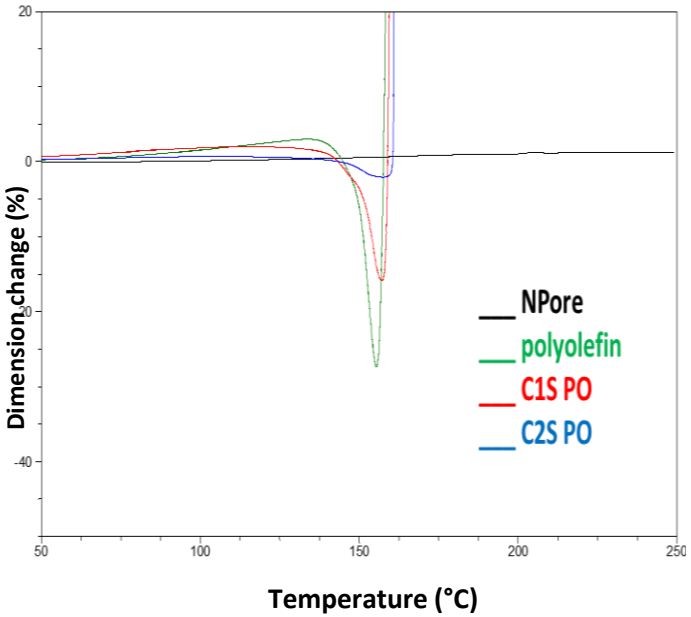
ALL-CERAMIC BATTERY SEPARATORS

- **Very narrow** and **uniform pore size** distribution, tailorable for different applications
- **Outstanding stability** (<1% shrinkage at 200°C) due to high inorganic loading and a high-performance binder
- **5x higher thermal conductivity** compared to plastic separators

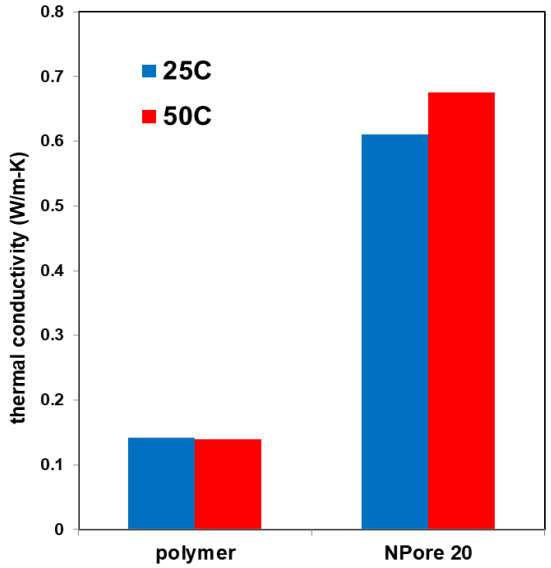
Life cycle testing of 5-Ah pouch cells with NPORE® **shows a stable and long cycle life** (NMC/graphite chemistry)

Outsourced production scale-up at **high speed** on a 1.5-m-wide line w/ global partner

Thermomechanical analysis

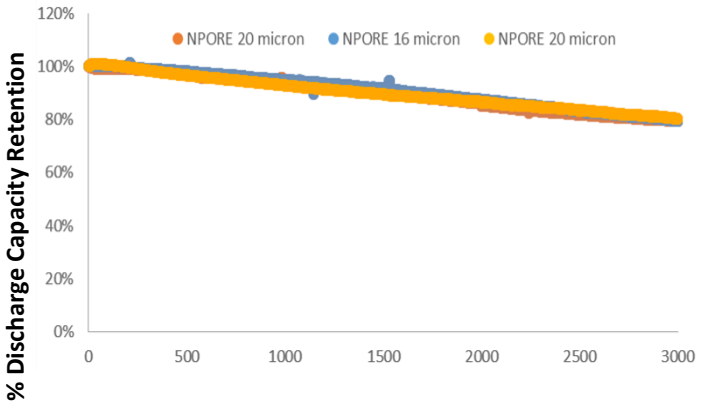


Thermal conductivity

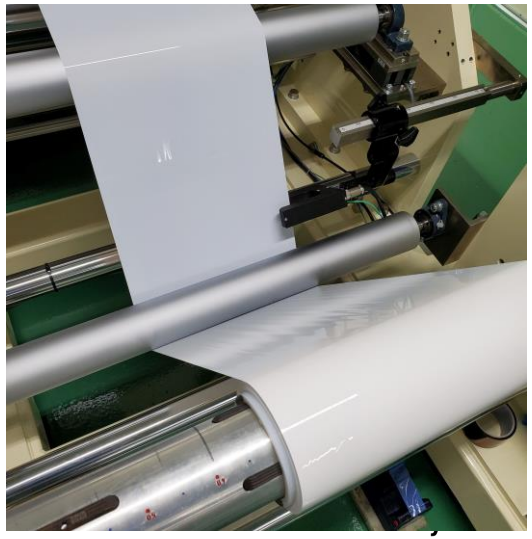


ASTM E1461 Laser Flash

Life Testing



1C Charge/Discharge cycles



NANOWEB® Scale-Up: 5G Reflector & EMI Shielding Film

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

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

Producing **large-area EMI shielding** film for microwave ovens

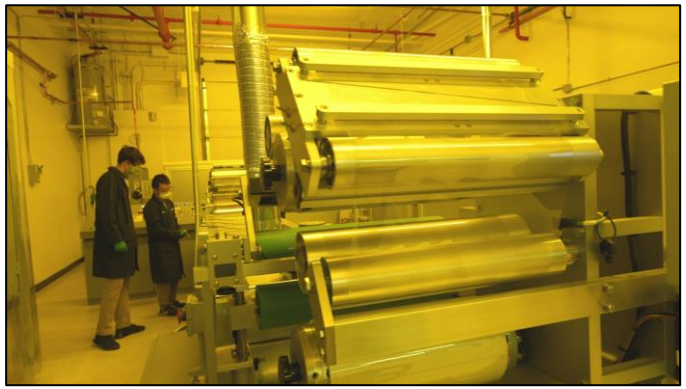
5G Reflector samples now **exceed customer specifications** for transmission, haze and sheet resistance.

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**

Two scale-up paths to 600mm web width, next line in Thurso and/or outsourcing partnership with global producer in Asia

NANOWEB® is META's proprietary transparent conductive film

EMI Shielding FILM for Microwave Ovens



META® Go Beyond.

NANOWEB® EMI Shielding: CES 2023 Innovation Award Honoree

NANOWEB® EMI Shielding:

- High transparency provides clear visibility of food while cooking
- Metal mesh is not visible to the unaided eye

Working Demo Units:

- Shipping to OEMs for evaluation at their facilities
- On Display at the Innovation Awards Showcase at CES 2023

Ready to Fit All Sizes:

- 300mm roll-to-roll line covers larger rectangular windows

NANOWEB® EMI Shielding (right) provides clear visibility while protecting against harmful radiation.

META® Go Beyond.

CES 2023 – Outstanding Brand Awareness

On Day 2 of CES 2023, META was the #1 brand mentioned on social media, as per BuzzRadar

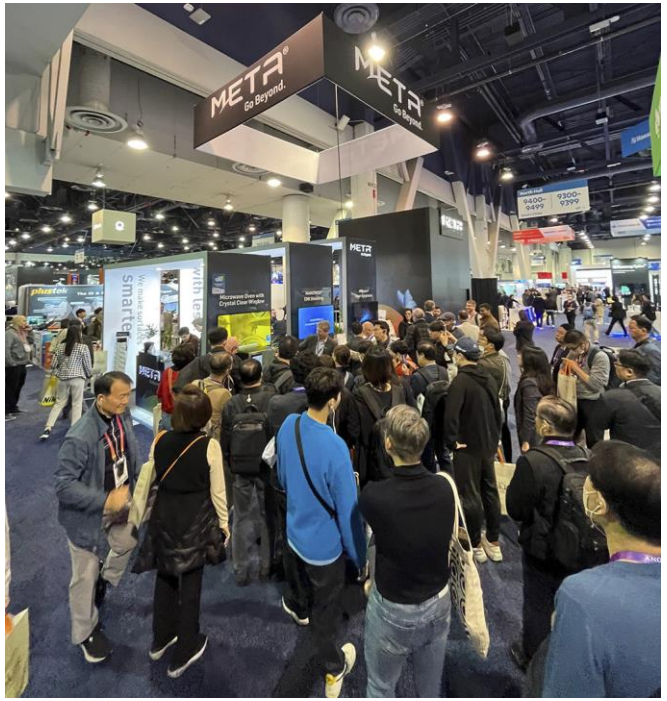
TOP 5 MOST MENTIONED BRANDS

1	@Metamaterialtec
2	@Lenovo
3	@BMW
4	@Sony
5	@LGUS

Conversation drivers for each of these brands were product launches.

META MATERIAL - Great effort from this relatively small brand to get to the top of the most mentioned brands by engaging their core audience. They presented a clear screen microwave thanks to a new kind of electromagnetic interference shielding film.

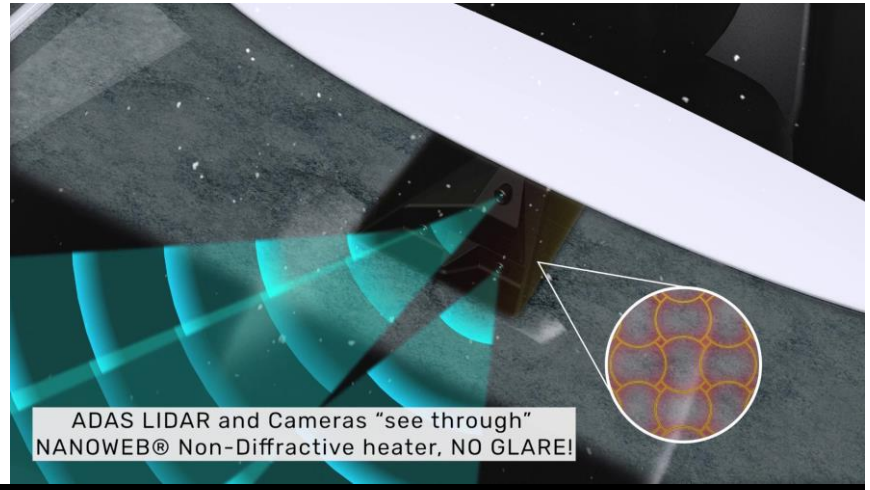
The transparent microwave window caught the eye of many visitors to the booth



META®
Go Beyond.

NANOWEB®: LIDAR/RADAR/Camera Heated Window

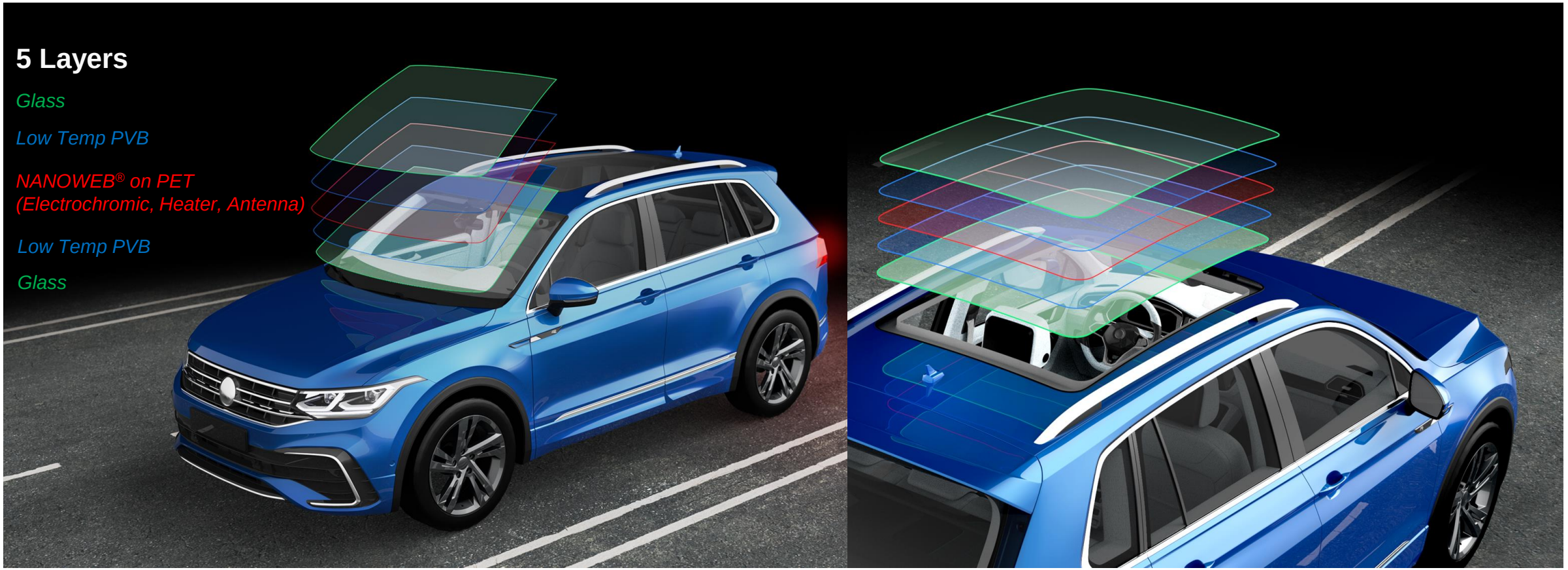
NANOWEB® mesh patterns designed for each sensor type



META® Go Beyond.

NANOWEB® SMART Windshield / SMART Sunroof

- Smart technology for deicing/defogging, active dimming, 5G connectivity



META®
Go Beyond.

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

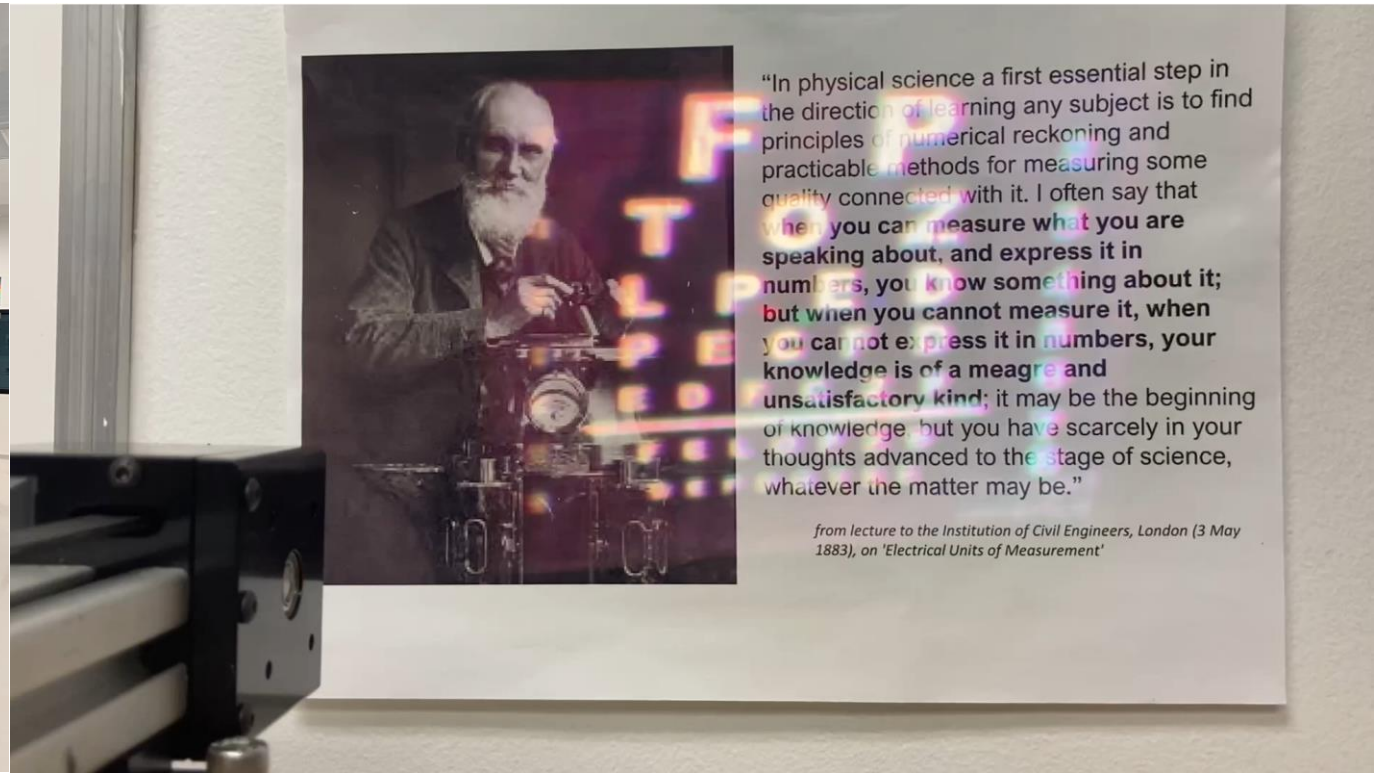
Carriers are spending $ Billions on Infrastructure

META® Go Beyond.

ARfusion® Freespace Combiner Demo

- First eye safe demo of ARfusion® holographic combiner lenses
- Automated lens casting line installed in new HQ facility

ARfusion® lens casting line installed in new HQ facility



Demo of ARfusion® holographic combiner lens

ARfusion® is META's platform technology for smart augmented reality eyewear.

META® Go Beyond.

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

glucoWISE® may be the world's first truly non-invasive glucose monitor.

META® Go Beyond.

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

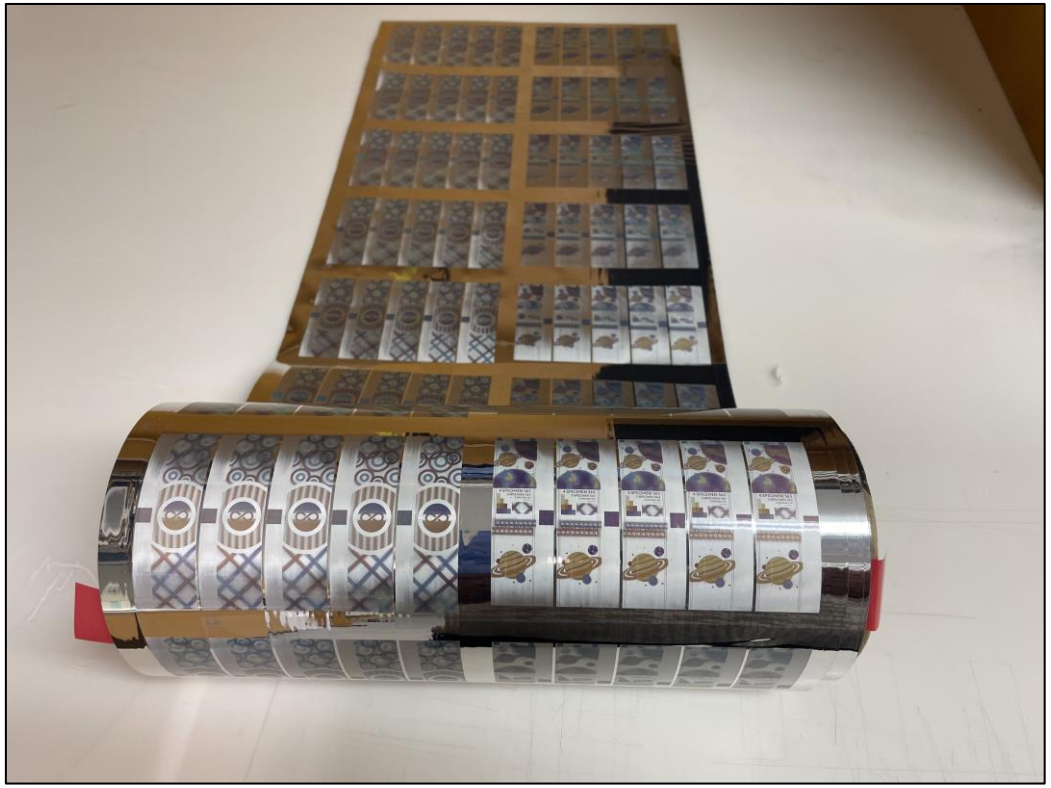
Frame Agreement: Developing a unique security feature for a confidential G10 central bank, up to $41.5MM over up to 5 years.

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



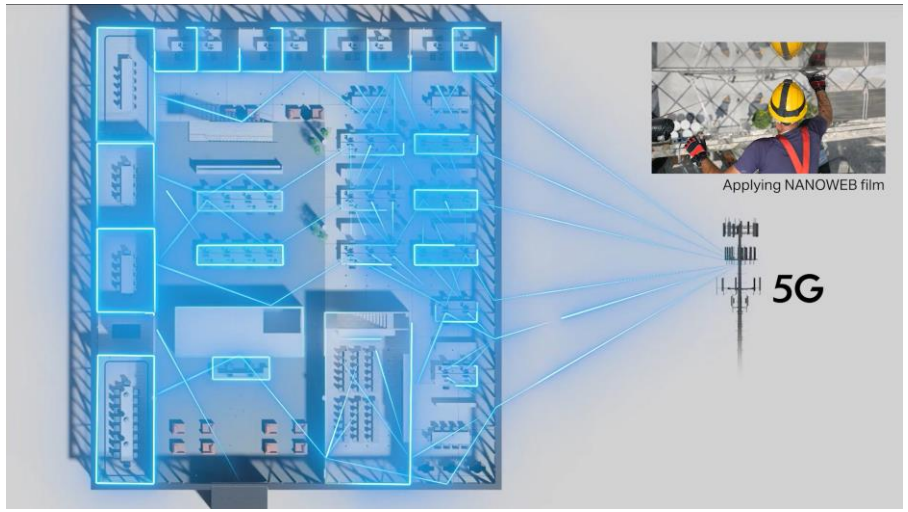
KOS Round 1 Production Run

KolourOptik® is META's distinctive plasmonic nano-optic security technology.

META® Go Beyond.

ESG is in our DNA – Metamaterials do more with less

Safer and more efficient Electric Vehicles



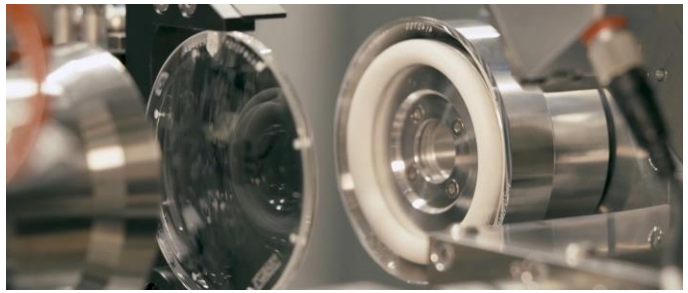
Lux Research 2021 Innovator of the Year
Passive 5G Reflector Uses No Power

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

2019 GLOBAL CLEANTECH 100 COMPANY
Produced by Cleantech Group

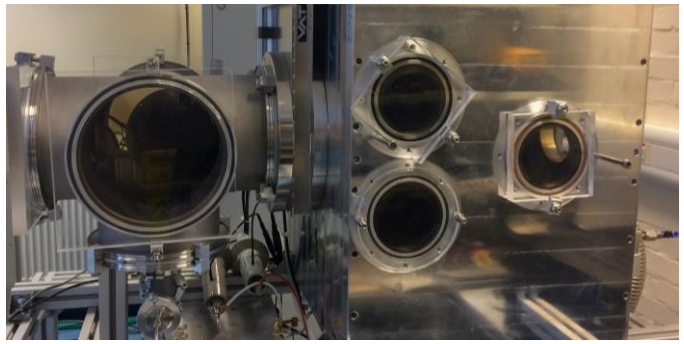
CANADA'S FASTEST-GROWING SUSTAINABLE COMPANIES
FUTURE 500
2022

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



Less energy
(10 sec vs 50 hrs curing time)

Less material usage



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

META® Go Beyond.

Nanostructured materials and devices to dramatically improve safety, performance and connectivity with semiconductor accuracy, more sustainable materials, at the speed of printing newspaper.

Multinational Subject Matter Experts

Broad & Growing IP Estate

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.

META®

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