

Nano One Performs Well in Solid State Battery Tests at the University of Michigan

Nano One Materials Corp. (TSXV: NNO) reported this week that its technology performed well in solid-state battery testing with the University of Michigan (UM).

UM's battery laboratories are exploring various aspects of battery components, designs, interfaces, and assembly of solid-state electrochemical batteries.

Nano One focuses on its patented process for the production of cathode materials used in lithium-ion batteries and is collaborating with the UM on the development of innovative solid-state battery technology.

Richard Laine, Ph.D., Professor of Materials Science and Engineering at the UM commented, "Initial results from our evaluations show that Nano One's HVS materials perform well with our innovative agricultural waste derived electrolytes and we look forward to advancing our collaboration to demonstrate a viable solid-state battery configuration."

Cathode Key for Power and Reducing Costs

The cathode determines the battery's capacity and voltage, and can comprise 20% or more of the costs of a lithium-ion battery. Nano One has developed technology for the low-cost production of high-performance lithium-ion battery cathode materials used in electric vehicles, energy storage devices, and consumer electronics.

Nano One has programs underway with multiple academic research groups, automotive equipment manufacturers, and battery manufacturers to test its lithium-nickel-manganese-cobalt-

oxide (NMC) and high voltage spinel (HVS), also known as lithium-nickel-manganese-oxide (LNMO), cathodes in different solid-state battery systems.

LNMO cathodes have garnered industry attention by providing a low-cost, fast charging, and cobalt-free solution, key in cost-effective, large-scale commercial applications.

In December 2020, Nano One announced that it entered into a cathode evaluation agreement with an undisclosed, American-based, car manufacturer. This agreement is in addition to the deals announced with Volkswagen, Pulead, Saint Gobain, and an undisclosed Asian cathode producer.

Nano One's proprietary "One Pot" furnace process creates a coated single crystal powder that protects the cathode from side reactions while allowing the transfer of lithium ions between electrolyte and cathode.

In addition, the "One Pot" process offers the flexibility to use either lithium carbonate or lithium hydroxide as the reaction with the other metal inputs is indifferent to the type of lithium input and produces a finished cathode powder when thermally processed in a furnace.

It is also an environmentally friendly process using limited water and produces no waste stream as it eliminates intermediate steps and by-products in the process.

The Basics of Battery Technology

Reduced to its basics, a lithium-ion battery consists of 4 components: (1) a Cathode, the source of the lithium ions, (2) an Anode, the storage area of released lithium ions, (3) the Electrolyte, the medium which helps the ions flow, and (4) the Separator that prevents contact between the Cathode and the Anode.

The chemical reaction creates a voltage potential between the

cathode and the anode. The voltage is the electrical force from the power source, the higher the voltage, the more power it can send to the load, such as a motor.

A solid-state battery uses solid electrodes and a solid electrolyte, instead of liquid or gel electrolytes, found in conventional lithium-ion or lithium polymer batteries. As a solid-state battery can handle more charging and discharging cycles before degradation, it promises a longer lifetime.

In November 2020, Nano One reported that its HVS cathode when paired with a conventional electrolyte and a graphite anode achieved over 500 fast charge and discharge cycles at 45°C and also reached 1000 fast charge and discharge cycles at 25°C. These durability test results confirmed that its technology is stable at elevated operating temperatures required for automotive, power tools, and energy storage applications.

Cashed Up to Reach Commercialization

Recently, Nano One announced it received \$4.46 million from the exercise of stock options and warrants since its last financial update dated October 1, 2020, and brings the company's cash balance to approximately C\$28 million, including \$14.37 million the company raised in October 2020.

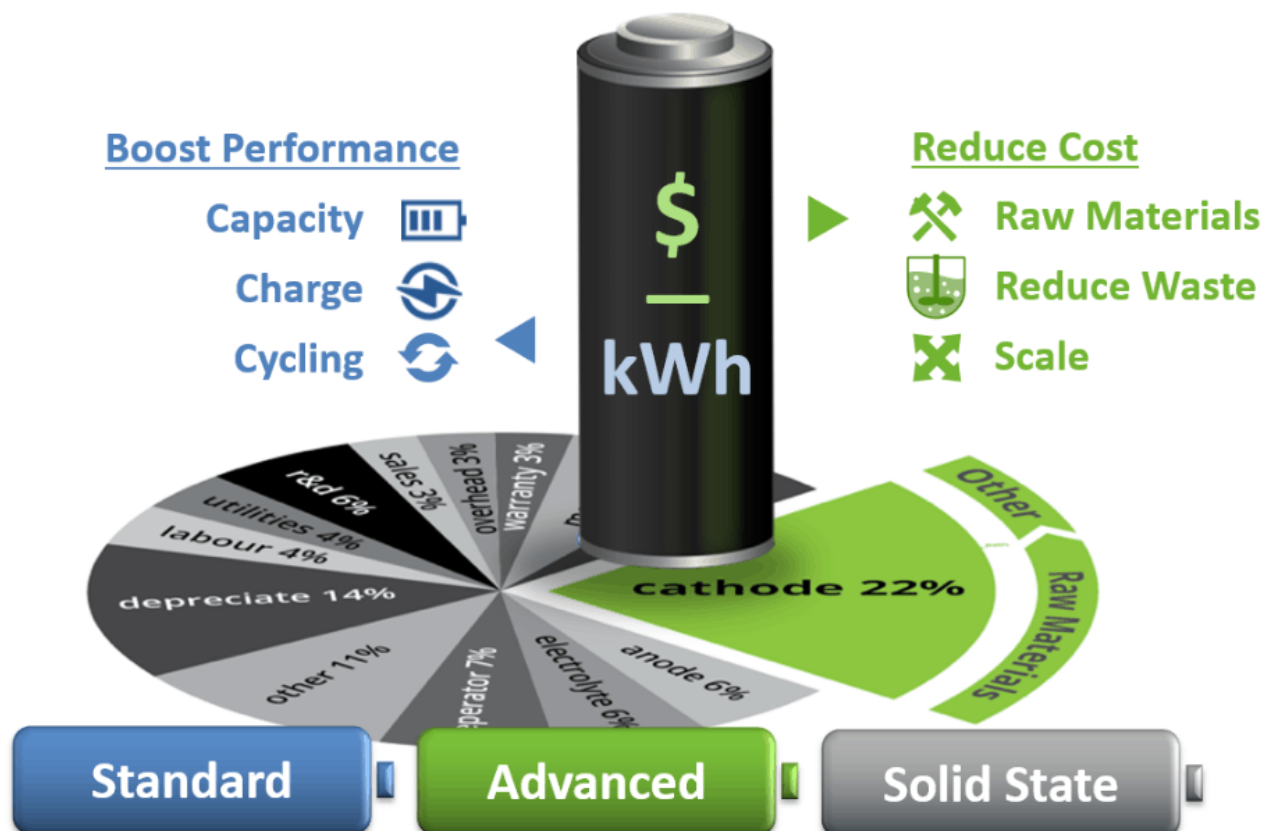
Final Thoughts

Nano One's technology is well-positioned to capitalize on the opportunities in the battery technology industry as economies shift to electrification efforts from solar, wind, and electric vehicles to reduce greenhouse gas emissions from fossil fuels.

This week, the Toronto Stock Exchange (TSX) Venture Exchange's named Nano One to its "2021 Venture 50", an annual ranking of the top-performing companies on the exchange. Companies are selected based on share price appreciation, trading volume, and market capitalization growth. Nano One's stock price is up

almost 300% in the past year.

Even with the recent stock price increase, there is plenty of market opportunity for the company. Nano One estimates the global cathode market could reach US\$27 billion by 2026 and the company is focusing on potential licensing partners for its technology that should mitigate some of the risks.



SOURCE:

Nano One adds another global partner in the race for high

performance lithium ion batteries in the EV market

Electric cars and trains are older than most people think. EVs have been talked about since they were invented in 1834. Postwar 1940's, Japan developed an electric car as a result of fuel shortages. After the oil crisis of the 1970s, that saw massive oil prices hikes, interest in electric cars was rekindled. The US Department of Energy funded efforts to try to make a cost-effective electric car.

Modern day high performance electric cars require affordable high performance lithium-ion batteries

In recent times Tesla has lead the way with high powered and trendy electric cars that are becoming increasingly popular, affordable, and with huge waiting lists. Tesla Model 3 was launched and soon after had a waiting list of ~400,000. More recently Porsche had to double its production capacity to 40,000 units for the initial 2020 model year to meet pre-order demand, after having an initial 20,000 waiting list soon after launch.

Both these examples show huge pent up demand for high performance and (mostly) affordable electric cars. Essential to better electric cars is, of course, the batteries and the components that drive these vehicles. This is where specialty companies can make a huge difference.

Nano One Materials Corp. (TSXV: NNO) is working in the nano-tech space to make the wonders of nano-materials affordable. They do this using a scalable industrial process for producing low cost, high performance, battery materials, as well as other advanced nano-structured composites.

Nano One has extensive partnerships – Pulead, Saint-Gobain, Volkswagen and 20 other strategic interests

Having partners like Pulead Technology (one of China's leading Li-ion battery cathode producers), Saint-Gobain and just recently Volkswagen Group Research, Nano One now has a pipeline of 20 plus strategic interests to address the massive demand for advanced battery nano-technology. Continued support from a growing list of all-star partners will see Nano One weather the coming tsunami that is the EV revolution.

Nano One adds another partner – A global leading OEM to develop high performance lithium ion batteries

Nano One now has recently announced another new project partner that is a global leader in innovation and commercialization of cutting edge technologies. In this latest agreement Nano One will receive a purchase order from a Global OEM, in the amount of C\$ 550,000 to jointly evaluate the processes involved in the innovation of cathode materials in high energy lithium ion batteries. The aim of this agreement is to improve the stability and durability of nickel rich cathode materials for electric vehicle applications. This will align Nano One with a major automotive strategic to identify and commercialize a new generation of lithium ion cathodes and batteries. Project details and commercial terms are confidential.

Materials will be evaluated using Nano One's proprietary processes, under automotive testing conditions. The goal will be to identify promising processes, material formulations and to explore future opportunities advancing these technologies to commercialization.

Nano One CEO, Mr. Dan Blondal said: "Our project partner is a global leader in innovation and commercialization of cutting edge technologies. We are very excited to be working with a company in the forefront of the electric vehicle revolution. Their knowledge in the field and application of innovative battery materials is complementary to our processing technology and scale up expertise."

Nano One also recently received a \$5 million approval from Sustainable Development Technology Canada (SDTC) to support their Scaling Advanced Battery Materials Project.

Nano One continues to make all the right moves by building up powerful partnerships with key EV industry players. Nano One Materials Corp is headquartered in Burnaby, Canada; and has a market cap of C\$ 93.5 million.

Dan Blondal on Nano One's collaboration agreement with Pulead Technology

Recently during PDAC 2019, Dan Blondal, CEO, Director and Founder of Nano One Materials Corp. (TSXV: NNO), shared updates on Nano One's collaboration agreement with Pulead Technology with InvestorIntel's Tracy Weslosky.

Dan Said: "We put a joint development agreement with Pulead in mid-January. They are a very prominent cathode producer in China supplying the lithium iron phosphate market and supplying the lithium cobalt oxide market as well. That's the materials that go into your iPhones. Very exciting company to be working with. Pulead is the world's largest producer of lithium iron phosphate. That's the material that goes into electric buses, lower range electric vehicles..."

Nano One Materials Corp. has developed patented technology for the low-cost production of high performance lithium ion battery cathode materials used in electric vehicles, energy storage and consumer electronics. The processing technology addresses fundamental supply chain constraints by enabling

wider raw materials specifications for use in lithium ion batteries. The process can be configured for the full range of cathode materials and has the flexibility to shift with emerging and future battery market trends.

Nano One has built a pilot plant to demonstrate high volume production and to optimize its technology across a range of materials. The pilot plant is being funded with the assistance and support of the Government of Canada through Sustainable Development Technology Canada (SDTC) and the Automotive Supplier Innovation Program (ASIP) a program of Innovation, Science and Economic Development Canada (ISED).

To access the complete interview, [click here](#)

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