

NANO ONE MATERIALS CORP. (TSXV: NNO)

Reinventing How Cathode Battery Materials are Made

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KEY POINTS

- A unique way to invest in batteries through upstream cathode processing with commercial ready technology according to management.
- Estimated \$20B cathode market by 2025, would create a \$1B annual royalty opportunity.
- Company estimates a 5-10% penetration rate by 2025, generating up to \$100 million in revenue.
- The royalty model could generate an estimated 95% operating contribution margin and up to \$100 million in revenue according to the company.
- Extensive patent portfolio and proprietary process with 16 patents granted globally and 30+ pending.
- Joint Development Partnerships with **Volkswagen on NMC durability**, with **Saint-Gobain on Thermal Processing** and with Chinese cathode producer, **Pulead Technology Industry**, on jointly developing scaled-up LFP production.
- Completed private placement in Feb. 2020 raising gross proceeds of approximately \$11M, unlocking \$5M in non-dilutive SDTC funds previously announced and additional grants of \$3,28M from SDTC and BC Government providing a multi-year runway.

CATALYST MONITOR

- Monetizing opportunities through JVs and joint development agreement.
- Unrelated study from Tesla supports the technology and could have a positive impact on Nano One.
- Recently closed private placement for gross proceeds of approximately \$11 million and additional non-dilutive government funds of approximately \$3.28M.

KEY STATISTICS

<i>Price:</i>	\$2.62
<i>52 Week Range:</i>	\$0.75 - 3.46
<i>Avg. Daily Vol. (30 day)</i>	837,396
<i>Shares Out (MM):</i>	78.7
<i>Market Cap (MM):</i>	\$206.3
<i>Insiders Own %</i>	7.45%
<i>Short Int. (MM) / % of float:</i>	0.4/0.6%
<i>Debt to Equity:</i>	0%
<i>Revenue TTM (MM):</i>	NA

Source: Bloomberg, *As of July 27, 2020

OUR INSIGHT

The Opportunities

Nano operates in the energy storage market, one of the fastest growing sectors in sustainable investing in our view. Nano has shown that its cathode technology can generate a direct ROI when used and that it has a first mover advantage in this type of processing technology. Additionally, the company believes that collaborations with key partners are major steps toward commercialization and management believes it well positioned to capitalize on these partners over the next couple years. Looking at balance sheet, the company has significantly strengthened its capital structure providing a significant runway to further develop JVs as well as invest and expand in new opportunities. Historically the company has burned minimal cash and is pursuing an asset-light model including licensing, minimizing significant capex needs.

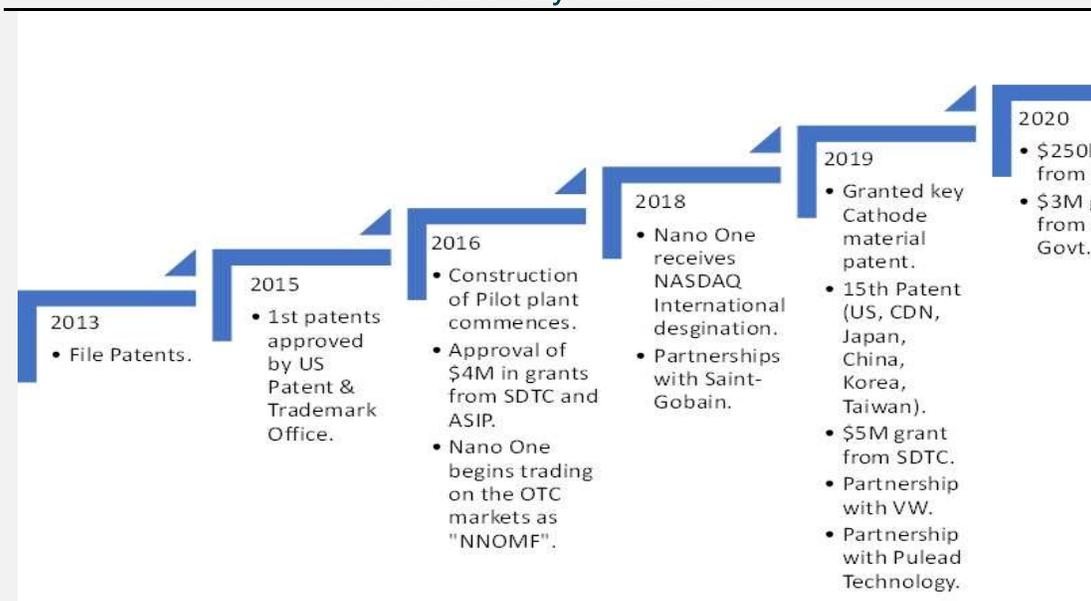
The Obstacles

The company is currently pre revenue and the timeline to meaningful revenue generation is not clear. Much of the success will depend on the adoption cycles of their partners, which the company does not have direct control over. There is also a continuous pipeline of technology advancements in energy storage technology and the company will need to move quickly to position itself and entrench its technology. Furthermore, as a small company working with large partners, it will need to show continuity in operations and demonstrate that it can develop and maintain long-term relationships.

COMPANY OVERVIEW

Nano One Materials Corp. (TSX-V: NNO, OTC-Nasdaq Intl Designation: NNOMF, Frankfurt: LBMB) is a Canada-based technology company engaged in the development of processing technology to produce battery materials and other advanced nano-structured materials. The Company was incorporated in 2011 and is headquartered in Burnaby, Canada. The company carried out an RTO in 2015 with a shell dating back to 1987. As of September 30, 2019, the Company had not yet reported any revenues but plans to license its technology to cathode producers and automotive suppliers to earn royalty revenues. In addition, a purchase order for CAD\$550,000 of joint development activities was announced in June 2019 and is expected to bring in modest revenues over the next few quarters.

FIGURE 1– Key Milestones



Source: The Company & WTR Research

In February 2020, Nano One announced it closed private placement of units for gross proceeds of approximately \$11,000,000. The company issued 9,565,000 Units at a price of \$1.15 per Unit with each Unit comprising of one common share in the capital of the Company and one-half of one common share purchase warrant. The warrants have an exercise price of \$1.60 and expire February 21, 2023. Management expects the proceeds to be used for corporate development, facilities expansion, technology advancement and general working capital.

It is also important to note that the financing also leverages \$5M in non-dilutive and non-repayable contributions from Sustainable Development Technology Canada (SDTC) plus another \$250k announced in April. In May the Government of British Columbia announced an additional

\$3.03M in non-repayable contributions, for a total approximately \$8.28M in new grant funds. In aggregate this provides approximately \$19M and significantly bolsters the balance sheet. Management believes this capital infusion will be a major factor in enabling the company to accelerate business plans and co-development activities with new potential partners as those already underway including Volkswagen, Pulead, Saint-Gobain and other undisclosed global automotive interests.

LEVERAGING ITS PATENTED PROCESS

The first innovation by Nano One in manufacturing the cathode materials technology dates back to 2011 which successfully resulted in the Company's first patent filed in 2013. The patent was later approved in 2015 by the United States Patent and Trademark Organization. The approval marks an important milestone in Nano One's history. Today, Nano One's patent portfolio includes intellectual property protection in China, Taiwan, Japan, Korea, US and Canada with the Company holding 16 patents and 30+ pending globally.

The Company is focused on leveraging its low-cost, patented process platform to enable high volume production of cathode active materials and its patented technology can cater to several different markets, including energy storage, specialty ceramics, pharmaceuticals, semiconductors, aerospace, dental, catalysts and communications.

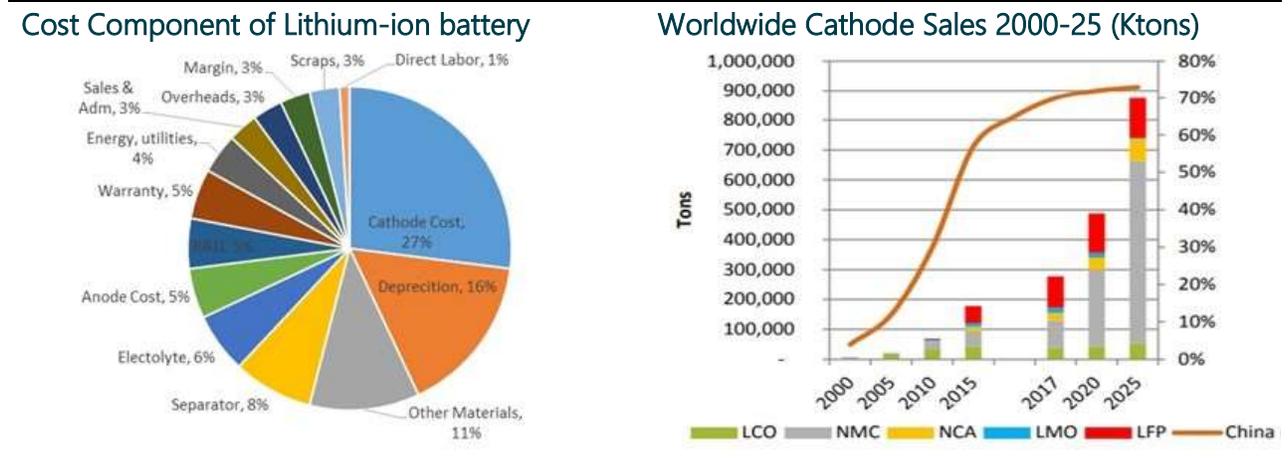
One of the Company's recently filed patents relates to lithium nickel manganese oxide (LNMO) cathode material, also known as high voltage spinel (HVS). In addition to increased durability, Nano One's LNMO also eliminates cobalt from the battery, thereby addressing the ethical and supply chain issues related to artisanal cobalt mining in Africa for use in lithium ion batteries. Another recent patent, issued in Korea and the US, describes a nanocrystalline NMC cathode material that carves out distinct territory and gives Nano One valuable leverage in a crowded space alongside key patent holders 3M, Umicore and BASF. The value of this most recent intellectual property has not yet been established but could offer leverage to the Company as it explores licensing and other business opportunities.

Lithium-ion Battery Cathode Market to Grow at 48% CAGR

According to the latest research conducted by [Avicenne](#), the worldwide lithium-ion battery cathode active materials market is likely to grow at a CAGR of 14% to reach 1.67M tons by 2030 compared with 350K tons in 2018 and many cathode manufacturers are monetizing the rapidly growing demand for better batteries worldwide.

The cathode powders, which makes up approximately 27% of the battery cost (as shown in the pie chart below) have the potential to boost battery performance by improving energy density. While several manufacturers are working to reduce the cost of production and to enhance performance, the demand for Lithium-ion battery cathode materials will be driven by Lithium-ion batteries and its numerous applications.

FIGURE 2– Worldwide Lithium-Ion Cathode Market



Source: *Avicenne Energy 2018*

Lithium-ion Battery Market to Expand at 16% CAGR till 2025 (In GWh)

The Lithium-ion battery is the key player in the future as battery demand is expected to grow from 70 GWh in 2015 to approximately 300 GWh in 2025. Furthermore, there has been a remarkable fall in Lithium-ion battery prices in recent years due to the economies of scale and technological improvements. Since 2010, the volume weighted average battery pack prices fell almost 85%, reaching \$176/kWh in 2018. We expect that this cost curve will continue in the future as the technology road maps expand and volumes grow.

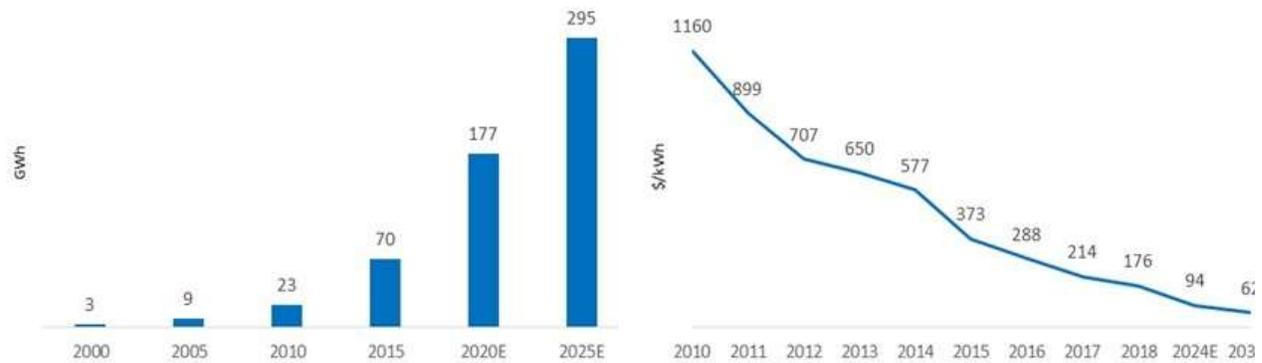
Components of Lithium-ion Batteries

A Lithium-ion battery consists of three major components, anode, electrolyte and cathode. Since the commercialization of Lithium-ion batteries in 1991, anodes and electrolytes have not seen significant innovation though cathodes have undergone significant changes since the early days.

FIGURE 3 – Global Outlook of Lithium-Ion Battery Market

Worldwide LiB Sales, 2000-2025

Lithium ion Battery Prices



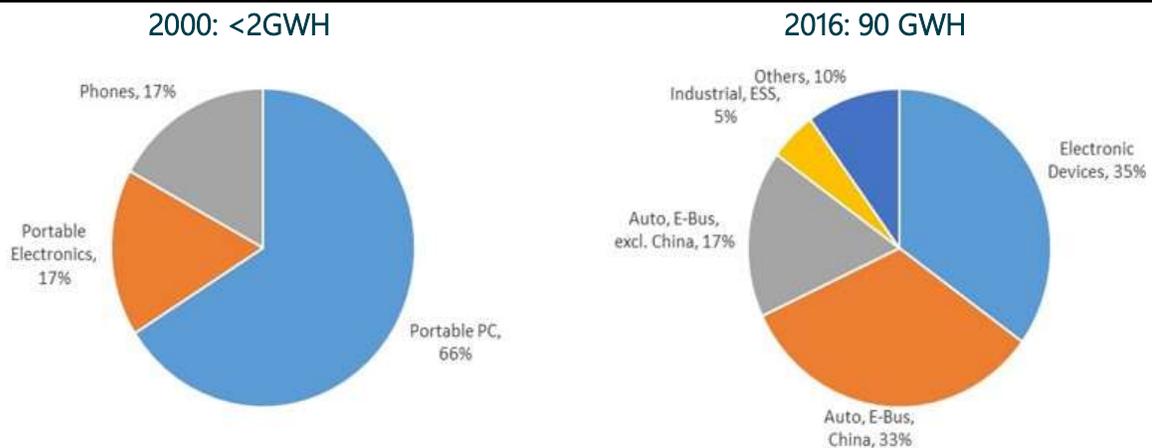
Source: *Avicenne Energy 2018*

The global lithium-ion battery demand will primarily be driven by consumer electronics, energy storage and the electric vehicles sector.

Changing Dynamics for the Lithium-ion Battery Market

During the last decade, there has been a significant change in the application of lithium-ion batteries. In 2000, consumer electronics such as phones, laptops and portable electronics constituted 100% of the demand but currently accounts for approximately only 35% of the total use. Today the electric vehicles (EV) industry constitutes 50% of the entire battery market.

FIGURE 4 – Three Main Applications of Lithium-Ion Batteries



Source: *Avicenne Energy 2018*

The Electric Vehicles Market is the Biggest Market for Lithium-ion Batteries

The market for electric vehicles (EV) is still in its embryonic stage and has ample room to grow in the coming years. According to [Carsalesbase](https://www.carsalesbase.com), global electric vehicle sales, which soared 73% y/y in 2018 to 1.26 million units, are projected to reach 65 million units by 2040, growing at 19% CAGR. China is by far the largest market representing 61% (2018: 0.77 million) of the total EV sales, followed by US

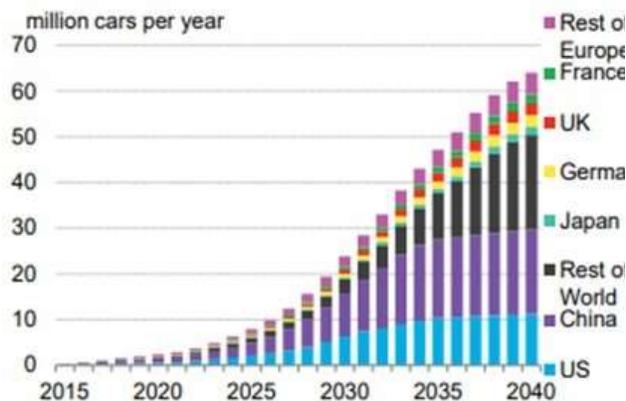
Initiation Report

(16.6%) and Norway (3.6%). By 2040, China, US and Europe are projected to make up for around 60% of the global electric vehicles market. We believe Nano One is especially well positioned to leverage this growth in China beginning with its joint development partnership on LFP with Pulead Technology Industry.

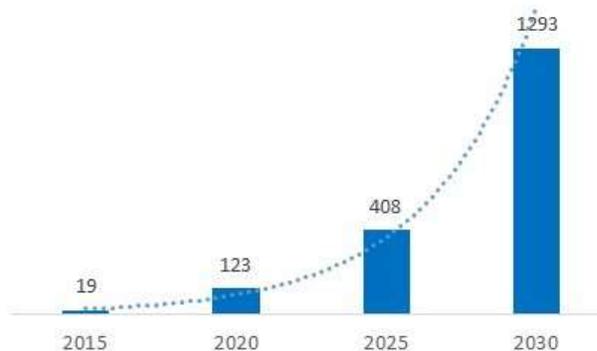
The shift towards electric vehicles will boost the demand for Lithium-ion batteries which will grow from 19 GWh in 2015 to approximately 1,293 GWh in 2030.

FIGURE 5 – Global Electric Vehicles Market and Demand for Lithium-Ion Batteries

Annual Global EV Sales by Region



Forecasted Demand for Lithium-ion batteries from EV's (GWh)



Source: *BloomergNEF*

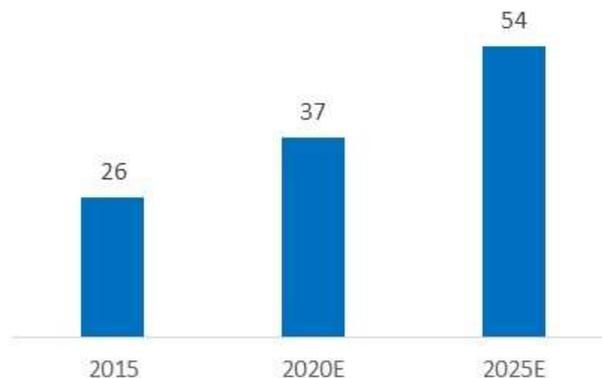
Growing demand for electric vehicle batteries (as shown in the chart above) will accelerate the consumption of cathode materials, mainly lithium nickel manganese cobalt oxide (NMC) and lithium iron phosphate (LFP). The sales volume of NMC is projected to rise above 250K tons, growing at 20% CAGR between 2015-2025, whereas the demand for LFP will grow at 8% CAGR during the same period to reach 100K tons, according to Avicenne Energy. Nano One and LFP interests in China believe that LFP will reach 200k tons in 2025.

Demand for Consumer Electronics

The battery demand for consumer electronics is projected to grow from 26 GWh in 2015 to 54 GWh in 2025. The growth will increase the consumption of cathode material primarily for cobalt based lithium-ion (LCO) and LFP. The demand for LCO cathodes is projected to grow at 4% CAGR from 2015 to 2025 to reach above 60K tons in 2025.

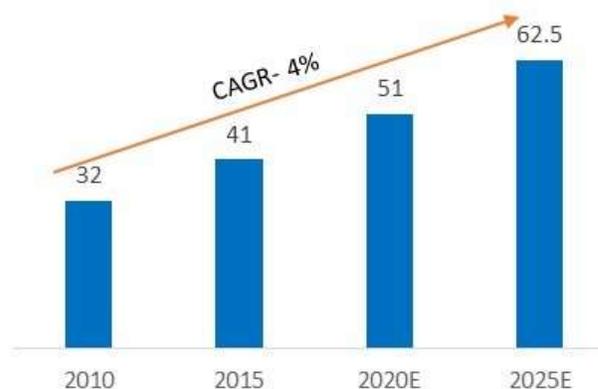
FIGURE 6 – Demand for Consumer Electronics

Forecasted Demand for Lithium-ion Batteries from Consumer Electronics (GWh)



Source: *Macropolo*

Demand for LCO (in '000Tons)



Source: *Avicenne Energy 2018*

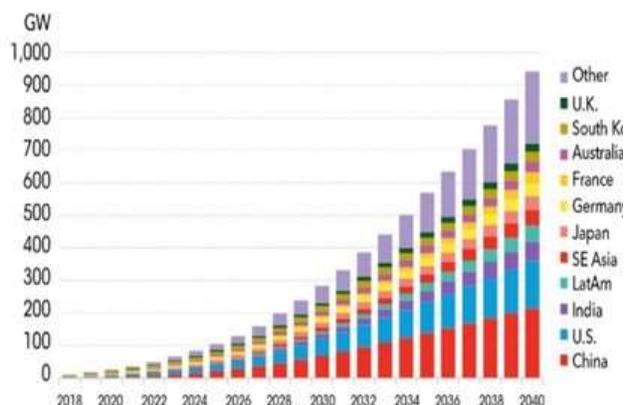
Energy Storage – New and Emerging Market for Lithium-ion Battery

The global energy storage market is set to see rapid growth in the next 20 years to 942GWh in 2040. As a result, the demand for lithium-ion batteries for energy storage is expected to grow from 1 GWh in 2016 to 200 GWh in 2030.

Apart from the rising demand for portable appliances and tools, EV and stationary energy storage systems, the rapid decline in lithium-ion battery costs has added even more momentum in the energy storage market. Cheaper batteries will lower the cost of storing renewable energy like wind and solar energy and also improve efficiency.

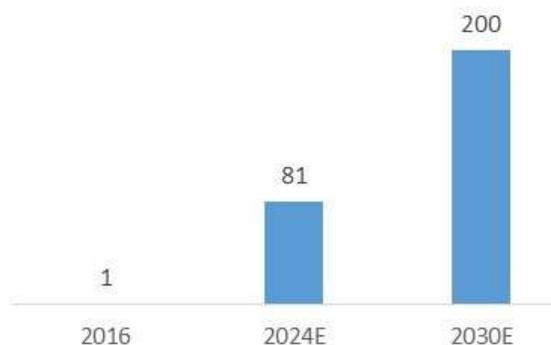
FIGURE 7 – Energy Storage as a Potential Driver

Global Cumulative Storage Deployments (In GW)



Source: *BloombergNEF*

Forecasted Demand for Lithium-ion Batteries from Energy Storage (GWh)



Initiation Report

We believe the economic significance of lithium-ion batteries will continue to grow exponentially. While consumer electronics have been pivotal in the growing demand historically, rapid adoption of EVs will largely determine the growth of the battery market, in our view.

Key Challenges Faced by the Cathode Industry

Though the market potential for lithium-ion battery cathodes is tremendous, there are several challenges that need to be addressed.

Conventionally, precursor powders are prepared in a high alkaline chemical process with a sulphate waste-stream in order to form mixed metal powders of nickel, cobalt and manganese or iron and phosphate. These powders are then ground and milled with powders of lithium salt before being thermally processed in a high temperature kiln where clusters of lithium and the other metals slowly migrate into crystalline formations to produce the desired composite ceramic cathode powder.

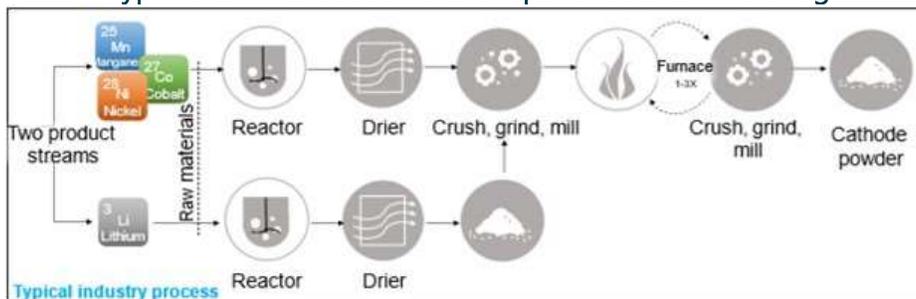
Adding protective coatings to these powders requires additional stages of grinding, mixing and heating. The entire process can take up to many days and generates significant waste streams during the production cycle.

The Proprietary Process of Nano One Improves Efficiency

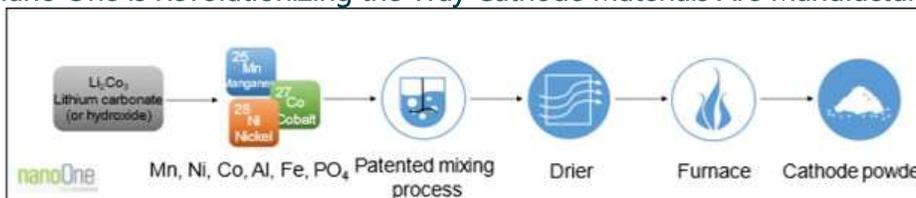
The Company uses an innovative chemical process that combines all ingredients in a single water-based reaction before drying and firing the material in a kiln. By using this technology and process, Nano One manages to streamline various steps during the process, cut time in the furnace and eliminate waste streams.

FIGURE 8 – REGULAR INDUSTRY PROCESS VS. NANO ONE PROCESS

Typical Industrial Process is Complex & Time Consuming



Nano One is Revolutionizing the Way Cathode Materials Are Manufactured



Source: *The Next Frontier for Lithium-Ion Batteries, BloombergNEF*

Reducing the Overall Manufacturing Cost by up to 30%

The proprietary technology of Nano One successfully eliminates (i) the premixing stage of non-lithium metals, (ii) the milling and crushing steps, as well as (iii) the post coating steps. All of these processes are streamlined into one aqueous process, completing the production cycle in less than a day with drying and thermal processing included. Furthermore, Nano One's process pushes waste streams such as sulfates, upstream to the refiners of nickel, manganese, cobalt and iron, where costs are more efficiently managed and where uncertainties of cathode formulations (NMC 111, 622, 811) can be better managed with greater flexibility. The Company's process also uses the lithium carbonate as feedstock which differentiates it from all other cathode producers, who must use the costlier and harder-to-handle lithium hydroxide. These are important aspects of Nano One's technology that are often overlooked.

Using NanoOne's technology may result in less handling, lower cost capital equipment, no waste solvents, fewer failure points, higher yield, higher safety and flexibility to run different material formulations in a controlled and sealed environment.

Competitive Advantages Drive Growth Opportunity

Lithium Australia, through its subsidiary, VSPC Ltd. (VSPC), closely competes with Nano One on its technology. VSPC uses a solution-based process where modifying chemicals known as surfactants are added in required concentration to the solution containing metals and other materials. The solution is put through a process of evaporation, and later milling and other thermal processes are performed to form the final cathode materials. Unlike VSPC, Nano One uses only water in its mixing process and eliminates the milling and crushing process. We believe this should enable the Company to significantly optimize its resources and lower CAPEX requirements, compared to VSPC.

VSPC produces high value LFP cathode materials only, whereas the technology of Nano One can be configured for the full range of cathode materials like LFP, NMC, LCO, etc. and cathodes for solid state lithium-ion batteries. This enables Nano One to quickly monetize the shift in demand for the cathode materials and offer a potential advantage over its peers in the rapidly changing cathode materials market.

Monetizing Opportunities Through Joint Development

Under the umbrella of support from Sustainable Development Technology Canada (SDTC), Nano One has partnered with Volkswagen to co-develop high energy density cathode materials (presumably NMC811 or something similar) and has also partnered with Saint-Gobain on thermal processing of these materials. Nano One's NMC materials are unique enough to warrant recent Korean and US patents and are reportedly the basis for their joint development agreements with VW, Saint-Gobain and others. Nano One's ability to eliminate the transition metal precursor process

and to incorporate coatings is key to cost reduction, but also forms the coated NMC single crystal morphology that is needed for performance metrics such as durability and stability that enable longer EV range. Project work here is preliminary but with allegedly promising results.

In addition, Nano One is successfully collaborating with a significant Chinese cathode producer, Pulead Technology Industry (Pulead), to develop a sustainable supply chain and to design a low-cost LFP plant that uses its patented cathode manufacturing process. This collaboration aims at providing the parties with increased margins and a scalable manufacturing platform to address the anticipated market growth.

Chinese Cathode Giant Driving Interest

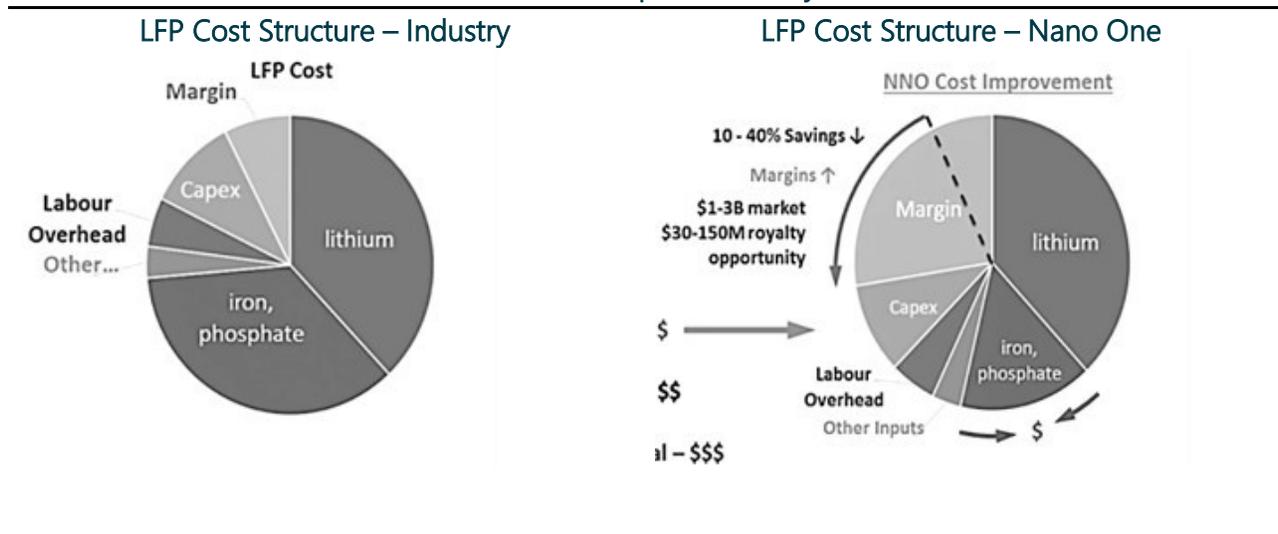
Headquartered in Beijing with production facilities in Xining, Pulead operates at the leading edge of technology innovation in the development and manufacture of three kinds of electrochemical cathode active materials namely, LCO, LFP and NMC, which are all utilized in high performance lithium-ion batteries. Currently, it accounts for about 15% of the total market share in LFP cathodes, with a 30% year-over-year growth in the last 3-4 years.

Apart from selling its product to some of the well-recognized Chinese companies such as BAIC, BYD, Prayon and Umicore, and BASF, Pulead also supplies LCO cathode materials to Amperex Technology Ltd. (ATL), the world’s leading producer and innovator of lithium-ion batteries. For example, Amperex supplies battery for most of Apple’s product line.

What Nano One Offers Pulead in LFP Cathode Manufacturing

In traditional LFP cost models, raw materials alone constitute 75% of the total cost of cathode materials. Nano One’s unique process technology lowers the raw material cost to approximately 50% (as shown in the chart below). We expect the technology could double the margins of LFP producers like Pulead, moving from somewhere in the range of 10-15% up to 20-30%.

FIGURE 9 – LFP Cost Improvement by Nano One



Source: Company & WTR Research

Nano One attributes this cost reduction to an alternative iron feedstock that drives down cost and eliminates the intermediate iron phosphate precursor and goes directly to carbon coated lithium iron phosphate without a waste stream. Nano One plans to license its processing technology to Pulead and other LFP producers to generate royalty revenues of up to 5%. Nano One is projecting total LFP market to be approximately 200,000 tons in 2025 (\$2B) making the total royalty opportunity for LFP as high as \$100,000,000 per year.

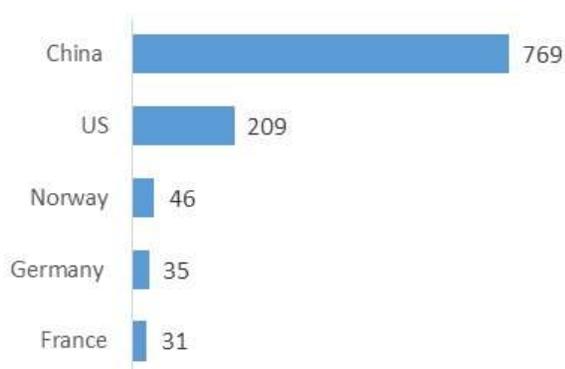
The China Market Opportunity

The Chinese market was by far the largest market for electric vehicles in 2018 with 769k (~61%) of the worldwide sales registered, as per [CarSalesBase](#). The major factor driving the need for electric vehicles in China is the need to reduce rising air pollution levels from motor vehicle internal combustion emissions. To improve the air quality index, China’s auto industry is taking a step to turn “all-electric”. The Chinese Ministry of Industry and Information Technology said that it expects 61% of passenger vehicles and 94% of buses will use LFP batteries.

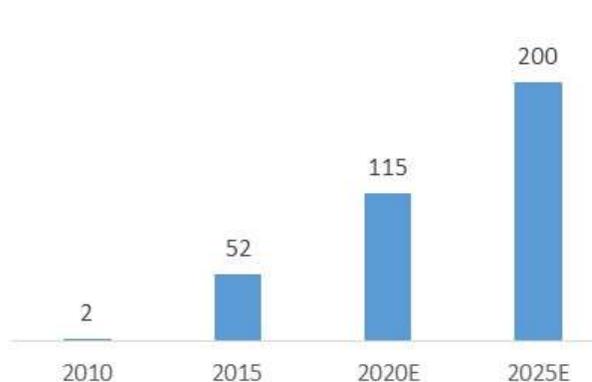
LFP represents a tremendous market opportunity for Nano One in China. Growing at a CAGR of 8%, the market demand for LFP is projected to almost double to 200K tons by 2025, as per [Avicenne Energy’s 2018 report](#).

FIGURE 10 – China is the Largest Market for Electric Vehicles

China was the largest market for EV in 2018
(Units in '000)



Demand for LFP (In Tons) is expected to double by 2025 (In tons '000)



Source: [CarSalesBase](#)

Source: [Avicenne Energy 2018](#)

Collaboration with Saint Gobain is Driving Interest

Apart from the partnership with Pulead, Nano One has made several recent deals, such as its collaborative agreement with Volkswagen and the ceramic giant Saint Gobain. Nano One is reportedly working with another undisclosed major automotive and a tier-1 materials supplier with

others in various stages of business development. Nano One aims to monetize the joint development agreements by converting them into license deals and gaining recognition in the lithium-ion battery market and financial ecosystem. We expect Nano One to add additional collaborative agreements, which should help the company strengthen its position in the global cathode material market.

Pilot Plants to Simulate Full Scale Production

Nano One started the construction phase of its pilot plant project in June 2016 and the construction and commissioning of the plant was successfully completed in June of 2017. With preliminary engineering plans in place, Nano One is ready to ramp up production.

FIGURE 11 – Pilot Plant Facility Model



Source: Company & WTR Research

Nano One, in collaboration with Noram Engineering and its subsidiary BC Research, scaled its reactor from a 6-liter bench scale to an 800-liter pilot reactor.

The pilot plant project was funded by the Government of Canada through \$CDN2.08M of grants from “Sustainable Development Technology Canada” and \$CDN1.9M from the “Automotive Supplier Innovation Program”, a program under Canada's Strategic Innovations Fund.

The current expansion of Nano One's piloting and R&D activities is further bolstered by \$5M and \$250k of additional SDTC funding announced in May 2019 and April 2020, respectively, followed by \$3.03M from the Government of British Columbia, announced in early May 2020. Nano One's R&D activities are also supported by Canada's Industrial Research Assistance Program which has contributed almost \$1M since 2013.

Nano One has preliminary engineering plans in place for 3,300, 5,000 and 10,000 metric ton/year cathode production lines that would produce enough material for 10,000 – 24,000 60kWh (1.4GWh) electric vehicle batteries a year.

RISK ASSESSMENT

Intellectual Property Protection Risks

Nano One’s success is highly dependent on its proprietary rights and, despite several efforts by the Company to protect its intellectual property, risks remain that a third party may assert their technology to circumvent the Company’s patent estate. The Company is also exposed to the uncertainty risks related to the approval of its intellectual property applications. Even after approval, patents, trademarks and other intellectual property registrations may be challenged by others.

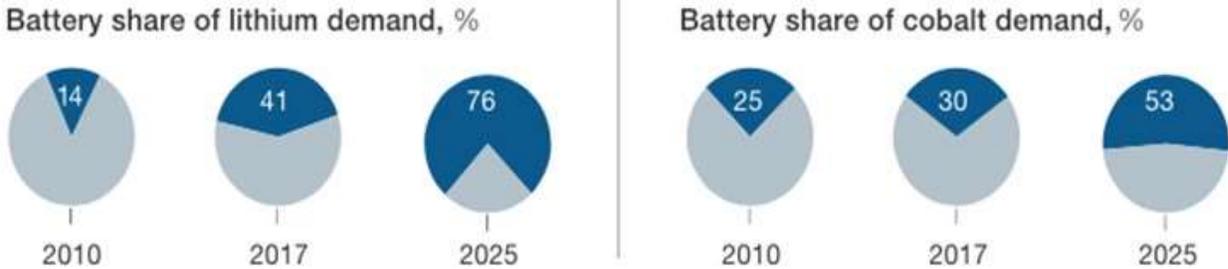
Ability to Maintain Product Quality and Scalability

Nano One is a relatively new player in the industry and its current pilot plant facility is designed for demonstration purposes only and is not intended for production. As a company with a licensing based business model the Company will have to successfully validate its materials and design of plant, in order to license and/or sell its technology for use in a manufacturing setting. Materials must be validated in laboratory, pilot and full scale prototypes and engineering plans to manufacture these materials must be thoroughly vetted with detailed examination of raw materials supply chain, capital and operating costs. Delays in validating the technology and its performance adversely affect the Company’s operations and financial performance.

Commodity Pricing Risks

A key factor determining the final costs of cathode materials is the cost of the constituent raw materials, which often make up for more than 75% of the total cost. The industry currently lacks long-term, fixed-pricing contracts with suppliers of critical metals. Cobalt, as an example, tends to fluctuate in price, which ultimately results in corresponding fluctuations in the prices of the cathode raw materials. As a defence against this trend, Nano One is pursuing a licensing business model where the burden of raw material costs is borne by their potential customer and as such, Nano One is protected from market price fluctuations and availability in raw materials. In fact, Nano One’s process enables species of lithium and transition metal raw materials that could offer a hedge against traditional battery material price fluctuations.

FIGURE 12 – Demand for Lithium & Cobalt will Continue to Evolve



Source: McKinsey Basic Materials Institute

COMPARABLES

Although there are not many direct public or private company comparables for Nano One Materials, due to the unique aspects of the Company, below are a couple of different early stage companies within the same sector.

Sila Nanotechnologies

Sila Nanotechnologies, based in Alameda, California develops and manufactures energy-dense lithium-silicon battery materials used in lithium-ion batteries instead of the most common material, graphite. The Company recently moved into commercial production after successfully completed capital raises. Sila expects its battery material to be available in consumer devices before the end of 2020, with the main benefits being improving energy density of batteries by up to 20%. The Company's initial focus is on consumer devices such as watches, ear buds and health trackers. <https://silanano.com/>

Using the most recent publicly available data, Sila has a valuation of over \$1B based on the latest investment round of \$170M.

Forge Nano

Forge Nano is a US based startup focusing on battery research. The Company is investigating processes for scaling atomic layer deposition (ALD) to create new core-shell materials, especially for battery applications in order to further improve battery materials performance. According to Forge Nano, the Company will be able to increase the battery lifetime by as much as 200%, provide up to 20% higher battery capacity in large format pouch cells, reduce gas generation in cathode material with up to 60% and lower the lower the cost of high-voltage cathode power. The Volkswagen Group recently invested \$10M in Forge Nano, in line with its 2025-year outlook of offering more than 50-battery electric models. <https://www.forgenano.com/>

MANAGEMENT OVERVIEW

Paul Matysek, M.Sc&P.Geo

Chairman and Director

Mr. Matysek has over 30 years' experience as a corporate entrepreneur, professional geochemist and geologist leading over \$2B in capital growth. Previously the President and CEO of Goldrock Mines Corp., President and CEO of Lithium One Inc., and President and CEO of Potash One Inc. he grew each company to a successful exit or sale combining to over \$750M. Mr. Matysek was the founder, President and CEO of Energy Metals Corporation ("EMC"), a premier uranium company traded on the New York and Toronto Stock Exchanges. Mr. Matysek led EMC increasing its market

capitalization from \$10 million in 2004 to approximately \$1.8 billion when acquired by a larger uranium producer in 2007.

Dan Blondal

CEO, Director & Founder

Mr. Blondal has 26 years of experience as a professional engineer, managing high growth technology in a career that has spanned materials handling, medical devices, industrial printing, nuclear fusion and materials science. Mr. Blondal brings significant experience in systems engineering, physics and business. As Product and Technology Manager at Creo and Kodak, he led strategically vital initiatives valued at \$20M annually to leverage software, laser and chemical systems for high-quality printing.

John Lando

CFO, President, Director & Founder

Mr. Lando has 26 years of experience in venture capital management, equity markets and the financing of public companies. After trading equities at RBC Dominion Securities, he transitioned to senior management roles at early stage venture companies, including New World Resource Corp. and Northern Lion Gold.

Dr. Stephen Campbell, PhD, CSci, CChem, MRSC

Chief Technology Officer

Dr. Campbell has 25+ years of experience leading industrial automotive research in electrochemical systems. Dr. Campbell served 7 years as Principal Scientist at Automotive Fuel Cell Cooperation Corp. and, he held key roles at Ballard Power Systems as Principal Scientist and Senior Scientist between 1994 and 2008. Dr. Campbell has 20+ patents to his name and adds 20 years of hands-on experience in industrial research developing new technologies through to series production for the automotive sector. Dr. Campbell received his Ph.D. in Semiconductor Electrochemistry from the University of Southampton in 1987 and completed his BSc (Hons.) 1st class in Physical Sciences at Coventry Polytechnic in 1984.

ABOUT THE ANALYST

Shawn Severson, Co-Founder, Water Tower Research

Head of ClimateTech & Sustainable Investing and Emerging Growth Research



Prior to co-founding Water Tower Research and previously founding predecessor firm alphaDIRECT Advisors, Shawn spent over 20 years as a senior equity research analyst covering the Technology and ClimateTech sectors, including senior positions at JMP Securities, ThinkEquity, Robert W. Baird (London) and Raymond James, and he started his career as an equity research associate at Kemper Securities.

Shawn was frequently ranked as a top research analyst including one of the Wall Street Journal's "Best on the Street" stock pickers and a StarMine Analyst Awards Top 3 stock picker. Shawn's extensive professional experience also includes his former role as Managing Director of the Energy, Environmental and Industrial Technologies Practice at The Blueshirt Group, a leading investor relations and IPO advisory firm. Shawn holds a BA in Finance and Economics from Augustana College.

Mr. Severson heads the ClimateTech & Sustainable Investing as well as Emerging Growth Research practices at Water Tower Research. Our ClimateTech & Sustainable Investing research focus is guided by two key principals: Sustainability and Resiliency. We define sustainability by the ability of a product or service to lower the overall carbon footprint and/or reduce resource consumption. This can be driven by a variety of factors including renewable power generation, renewable fuels and chemicals, energy efficiency, resource management, emissions control, and the broader bioeconomy. We measure resiliency by the ability of the company's business model and product to sustain long-term growth; is it flexible enough to adjust and navigate through a variety of external events; and will demand for the company's product or service likely perform above average though economic cycles, regulatory shifts, geopolitical volatility, and pandemics. The Emerging Growth research platform is focused on companies and industries that are on the leading edge of technology and innovation but have not yet reached commercial scale. This spans across numerous sectors but carries the common theme that the company is bringing a "disrupter" technology to market. We also include research on highly differentiated specialty companies that do not necessarily fit within a specific industry sector definition, however, their technology promises to be transformative to one or more end markets.

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Shawn Severson, who is the writer of this report. Mr. Severson covers 9 different companies for us in the ClimateTech & Sustainable Investing and Emerging Growth sectors.

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