

Neo Performance Materials and Uranium Sector Leads this Week-in-Review...

written by Tracy Weslosky | August 29, 2022

“US Futures are down across the board, with no new economic data or major earnings expected. Investors are looking to the August jobs report, scheduled for Friday, as they weigh up how big a rate hike could be coming from the Fed in September.

Last week saw equity markets close the last week on a down note, as all three major U.S. indexes sold off sharply for their worst closes in months after Federal Reserve Chairman Jerome Powell said the central bank would continue fighting inflation with rate increases. Don't expect much in the way of a reprieve in early trading as we get the day under way.” – Kevin Thomsen, Morning Chatter for August 29, 2022

Friday was an intense day of speculation and discussion in the rare earths sector. With breaking news early AM with [Agreement to acquire strategic shareholding in Neo Performance Materials and cornerstone investment in Hastings by Wyloo Metals](#), Christopher Ecclestone put out a piece on InvestorIntel titled [Neo Performance and Hastings – Will Wonders Never Cease?](#) – that was followed later that day, with a second announcement [Neo Performance Materials Announces \\$67.5 Million Bought Deal Treasury Offering of Common Shares.](#)

Allow me to remind you that Constantine Karayannopoulos will be the luncheon speaker at the [Critical Minerals Institute](#)'s summit scheduled for Wednesday, November 9, 2022.

This morning, we see indicators that the uranium sector has

interest, we coincidentally have a headline story written by Jack Lifton titled [Are we slaves to Russian uranium processing?](#) It seems we are in the right place at the right time as we start out the InvestorTalk.com schedule this week with 2 uranium companies... followed by an antimony story on Thursday.

[InvestorTalk.com](#) line-up for this week:

- 9-9:20 AM EST, Tuesday, August 30, 2022 – InvestorTalk.com with John Cash from **Ur-Energy Inc.** (NYSE American: URG | TSX: URE), [click here to register](#)
- 9-9:20 AM EST, Wednesday, August 31, 2022 – InvestorTalk.com with Dev Randhawa from **Fission 3.0 Corp.** (TSXV: FUU | OTCQB: FISOF), [click here to register](#)
- 9-9:20 AM EST, Thursday, September 1, 2022 – InvestorTalk.com with Christopher Ecclestone from **Molten Metals Corp.** (CSE: MOLT), [click here to register](#)

Now for some highlights from the Week-in-Review for the week of August 22-26, 2022 –

The Top 10 Trending Columns on InvestorIntel.com for the last 30-days include:

1. [Nano One's cathode materials are inventing the zero-emission battery future](#)
2. [Announcing the Launch of the Critical Minerals Institute for Companies and Experts Focused on Electric Vehicles, Green Energy and Secure Supply Chains](#)
3. [The King of Tin is Alphamin](#)
4. [Rare earths expert Alastair Neill on Vital Metals](#)
5. [Lynas Bets \\$500 Million on Rare Earths Market Expansion](#)
6. [Zentek sets its sights on treating skin conditions as it expands potential uses for its ZenGUARD graphene coating](#)

7. [Eye on the price of uranium, Cameco brings crown jewel back into production and Ur-Energy is set to go.](#)
8. [Molybdenum – securing a domestic supply of the vital but underappreciated mineral](#)
9. [A titan of titanium – with a big HAMR](#)
10. [Valeo Pharma's Steve Saviuk talks about the US\\$40M non-dilutive financing from Sagard Healthcare Partners](#)

InvestorIntel Columns to REVIEW:

- August 26, 2022 – [Neo Performance and Hastings – Will Wonders Never Cease?](#)
- August 25, 2022 – [The Dean's List – Part 6: What cobalt companies could benefit from Canada's commitment to critical minerals?](#)
- August 24, 2022 – [dynaCERT puts its carbon emission reduction technology to the test](#)
- August 23, 2022 – [Mining our way to the Green Revolution](#)
- August 22, 2022 – [Musk Twitter Deal, Predatory Short Selling Takes a Hit and Rethinking Greenland Rare Earths in this Week-in-Review....](#)
- August 22, 2022 – [Greenwashing – It's not easy pretending to be green](#)

ii8 System News Releases for the Week in Review for August 22-26, 2022:

- August 26, 2022 – [West Red Lake Gold Closes \\$4,100,000 Flow Through Financing](#)
- August 26, 2022 – [Neo Performance Materials Announces \\$67.5 Million Bought Deal Treasury Offering of Common Shares](#)
- August 26, 2022 – [Agreement to acquire strategic](#)

[shareholding in Neo Performance Materials and cornerstone investment in Hastings by Wyloo Metals](#)

- [August 25, 2022 – Awakn Life Sciences Signs Agreement with a Leading Drug Development Company to Deepen IP Moat for Its Lead Program](#)
- [August 25, 2022 – Rackla Metals focuses on Tombstone intrusive related gold](#)
- [August 25, 2022 – dynaCERT Advances its Verified Carbon Standard Application with Verra](#)
- [August 25, 2022 – Completion of Institutional Placement](#)
- [August 24, 2022 – Westward Gold Completes Turquoise Canyon Anniversary Payment](#)
- [August 24, 2022 – Molten Metals Corp. Announces Formation of Strategic Advisory Board](#)
- [August 24, 2022 – Bald Eagle Announces Exchange Approval for Name Change to Hercules Silver Corp. and Provides Exploration Update](#)
- [August 23, 2022 – Molten Metals Samples 39.4% Antimony \(Sb\) and 9.69g/t Au, at Tienesgrund, Slovakia](#)
- [August 23, 2022 – TrustBIX Inc. Announces June 30, 2022 Third Quarter Financial Results](#)
- [August 23, 2022 – Auxico Signs Offtake Agreement for Tin Concentrate from the Massangana Tin Tailings Project in Brazil](#)
- [August 23, 2022 – DOE Funds Next-Generation Rare Earths Processing Research Collaboration](#)
- [August 23, 2022 – Silver Bullet Mines Corp. Updates on Washington Mine in Idaho](#)
- [August 23, 2022 – Nano One Receives C\\$1.8M towards SDTC Milestone 4 and Granted 2 Patents](#)
- [August 22, 2022 – Hemostemix Announces Closing of UNIT Private Placement](#)
- [August 22, 2022 – Hudson Resources And Neo Performance Materials Sign Agreement On The Sarfartog Rare Earth](#)

- August 22, 2022 – [dynaCERT to Equip the City of Timmins with Winterized Carbon Emission Reduction Technology](#)
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The Dean's List – Part 2: What nickel company will benefit from Canada's commitment to critical minerals?

written by InvestorNews | August 29, 2022

Part 2: Canada Nickel Company Inc.

Last week we started a series to look at [Canadian companies](#) in the mining sector that could be impacted by Federal and Provincial government announcements with respect to critical materials, supply chain, EV battery manufacturing, etc. As a reminder, the province of Ontario first announced in March its [strategy for 'critical minerals'](#) followed shortly by a [C\\$4.9 billion electric vehicle battery plant](#) in Windsor, Ontario. This was followed in April by the Federal Government's [Budget 2022 proposing up to C\\$3.8 billion in support](#) over eight years to implement Canada's first [Critical Minerals Strategy](#). The Fed's followed this up in late June with a House of Commons Standing Committee on Industry and Technology report entitled: [Positioning Canada as a Leader in the Supply and Processing of Critical Minerals](#).

I'll start by saying I'm a little skeptical of how effective the Canadian Federal Government will be in doing anything useful to advance the cause of critical materials. But as long as it is a topic that appears to be at the forefront and politically in vogue, my simple hope is that they will at least stay out of the way and let smart, innovative people get on with doing what's best for Canada and its allies.

With that in mind, I'm going to stick with Ontario companies for now as I feel there is a slightly better plan and path to success with the focus on all aspects of the value chain, from mining, to processing to end use (like the Windsor battery plant). Perhaps as this series progresses I'll find it in my heart to cut the Federal government a little slack and explore some of our country's non-Ontario companies... maybe. In the meantime, today we're going to talk about another major ingredient in EV batteries – nickel.

As noted above, Ontario has already announced a C\$4.9 billion EV battery plant, and the Provincial Government has stated their strategy is the encouragement of domestic processing and creating resilient local supply chains. In recent years, automakers have discovered that adding more nickel to the cathode can boost a battery's energy density, which translates into more range per pound of batteries. Automakers have increased the percentage of nickel in cathodes to boost the batteries' energy density and increase vehicle range with most now using cathodes that contain at least 60% nickel. Some use even more, in part to reduce or eliminate cobalt, and in part to increase density for premium applications. And to quote the infamous Elon Musk from a July 2020 Tesla earnings call: "Please mine more nickel... Tesla will give you a giant contract for a long period of time if you mine nickel efficiently and in an environmentally sensitive way." Hopefully Stellantis and LG Energy Solution feel the same way.

And if they do happen to share Elon's attitude towards nickel, one company that could be the beneficiary of all this is [Canada Nickel Company Inc.](#) (TSXV: CNC | OTCQX: CNIKF) which is advancing the Crawford nickel-cobalt sulphide discovery with large scale potential located in the established Timmins mining camp. Not only has the company recently announced an updated mineral resource estimate more than doubling the project's Measured & Indicated (M&I) mineral resources but it is pursuing the development of processes to allow the production of net zero carbon nickel, cobalt, and iron products. I've got to think politicians around the world would be trying to make a company like this the poster child of the 'green revolution'. And with the Ontario government's commitment to exploring how to support R&D and access to and/or development of intellectual property related to critical minerals processing, perhaps Canada Nickel can tap into some government funding for its net zero initiatives.



Source: Canada Nickel Company [Corporate Presentation](#)

Based on PEA results, the company also boasts that once the mine reaches Phase III (approximately year 8), its peak production will among the top 5 nickel sulphide operations globally, with #1 being Norilsk in Russia and #2 Jinchuan in China. Additionally, Crawford is expected to be one of the largest base metal mines in Canada, surpassing Teck's Highland Valley mine, Glencore's Raglan operation in Quebec and Vale's Voisey's Bay operation. Once again, numbers like this should put Canada Nickel on the radar of any politician trying to ride the coattails of the critical minerals trend.

In April, the Company raised C\$51.5 million, of which 37% was via flow-through shares. However, the deal closed 2 days before the effective date of the Federal Budget announcement of the

Critical Mineral Exploration Tax Credit. Given the expenses haven't been undertaken yet, I don't know if Canada Nickel shareholders are in for an unexpected bonus of renounced flow-through expenses but I suspect it would sure be a welcome surprise. Regardless, this new, expanded tax credit is still a tool available to Canada Nickel and all Canadian critical mineral explorers for raising capital on or before March 31, 2027.

To repeat what I said at the end of [Part 1](#), as long as governments don't get in the way of their good intentions, we could be on the verge of a golden era for critical mineral explorers, miners and processors in Canada. To that end, we will continue to look at companies that find themselves positioned to take advantage of this renewed focus on the security of supply to exploit Canada's abundance of valuable critical minerals in a responsible, ESG-friendly manner.

Nano One Strives For Sustainability and a Total Domestic North American Lithium Ion Battery Supply Chain

written by InvestorNews | August 29, 2022

My biggest takeaway from COP26 is not so much climate action and emission reduction, but the message of sustainability. Without

focusing on the importance of sustainability one risks thundering down a path of unintended consequences. What do I mean by this? Several years ago I read that if we could convert all coal fired power generation to natural gas it would achieve the Kyoto emission target. I can't confirm if this is completely accurate or not, regardless it would have been a large step in the right direction (despite still being a fossil fuel based solution). At the time it would also have been achievable with existing, available resources and bought the world some time to continue building out renewable resources, which is the ultimate end game. However in 2021, with the lack of energy investment over the last several years due to a combination of factors, that isn't the case today, and we are starting to see parts of the world where renewables haven't developed enough by themselves to even keep people warm this winter. Meanwhile, the fossil fuel alternatives aren't any longer as readily available as backup and may still not even provide enough for home heating. I understand the urgency of eliminating coal fired power, but if there aren't enough alternative power options to keep people warm then who knows what happens next.

That's why I think in order to successfully green our economy and reduce our global carbon footprint, the focus has to be on how to do it sustainably. One company that has to be at or near the top of the list in the transition to clean energy in a sustainable way is [Nano One Materials Corp.](#) (TSX: NANO). Nano One is a clean technology company with a patented, scalable and low carbon intensity industrial process for the low-cost production of high-performance lithium-ion battery cathode materials. The technology is applicable to electric vehicle, energy storage, consumer electronic, and next generation batteries in the global push for a zero-emission future. Nano One's One-Pot process, its coated nanocrystal materials, and its Metal to Cathode Active Material (M2CAM) technologies address

fundamental performance needs and supply chain constraints while reducing costs and carbon footprint.

Another facet of sustainability that is very applicable today is the supply chain. Currently, the cathode supply chain is long and complex. Nano One manufactures its cathode materials directly from nickel, manganese, and cobalt metal powder feedstocks rather than metal sulfates or other chemical salts. The metal powders used are one fifth of the weight of metal sulfates, avoiding the added costs, energy, and environmental impact of first converting to sulfate and then the shipping and handling of waste. The manufacturing process for all of its Cathode Active Material (CAM) uses lithium feedstock in the form of carbonate rather than of (lithium) hydroxide, which is costly, corrosive and harder-to-handle. The process is feedstock flexible which enables improved optionality of sourcing of raw materials. Nano One's technology aligns it with the sustainability objectives of automotive companies, investment communities and governmental infrastructure initiatives.

On Tuesday, November 10, 2021, [Nano One announced](#) the goal of building a fully integrated and resilient battery supply chain in North America, which must include responsible mining of battery metals, onshore refining, environmentally favorable cathode material production, and recycling. The Company believes there is a once-in-a-generation opportunity to create a secure and cost competitive supply chain that is domestically integrated with a low environmental footprint. Accordingly, Nano One is shifting its LFP (lithium-iron-phosphate) cathode material strategic direction to large emerging markets outside of China, starting in North America, and has ceased joint development activities with Pulead Technology Industry.

LFP production is free from the constraints of nickel and cobalt, and although its origins are deeply rooted in Canada,

its growth over the last decade is almost entirely based in China. Recent LFP cell-to-pack innovations have driven costs down and enabled greater EV range, setting the stage for EV pioneers to shift to LFP. The need has never been greater for a sustainable, responsible, and secure supply of LFP materials and batteries, to be established and supported in North America and Europe, proximal to where the EV's are manufactured. Canada has clean energy assets, responsibly sourced critical minerals, and a rich history in LFP technology and manufacturing. By leveraging these opportunities with the Company's simplified low-cost approach to cathode production, Nano One seeks to create a resilient value-added North American LFP supply chain in a collaborative ecosystem with a smaller environmental footprint.

There you have it. A company that sees the bigger picture and embraces sustainability in an effort to advance clean technology while reducing both costs and the overall carbon footprint. If this were a video, at this point I would simply drop the mic and walk away. Since it's an article and I need a conclusion I'll finish off by saying Nano One has the potential to have its technology in every EV built in North America and Europe, and that's going to be a pretty big number in the not too distant future.

What's this about Johnson-Matthey exiting the EV battery

cathode business?

written by Jack Lifton | August 29, 2022

The legacy carmakers and their supply base both face bankruptcy if they make the wrong decisions on entering the “transition to EVs” markets. This is because the OEM automotive industry is, along with semiconductor manufacturing, one of the most capital-intensive industries in the world. Just like with a 200,000 ton DWT ship, inertia being the problem on the one hand and prior deployment of massive amounts of capital being the issue on the other, the OEM automotive industry cannot change course in a short time, and so must be careful to choose the right path (allocation of capital) before starting the voyage.

The battery materials' *processing* markets were surprised yesterday by an unexpected announcement from the UK's most prominent technology metals' processor, Johnson-Matthey Ltd. (JM), that it was [withdrawing from the battery materials' processing market](#) due to its estimation that the return on capital from manufacturing lithium-ion battery cathodes would be too low to justify the allocation of capital required to do so. JM's stated reason for this decision was that the battery materials' business is becoming “commoditized,” so that JM's hoped for competitive advantage based on its specialized cathode manufacturing technology would either not materialize or not be good enough to be competitive.

But, even if so, It is the timing of this announcement that seems puzzling.

Both CATL, China's largest integrated battery manufacturer and Umicore, Europe's largest battery materials *processor* have poor returns on capital in their respective battery business sectors, and this has been going on since both entered the battery business, so JM cannot have been surprised by this factor, and,

in fact, should have taken it into account on day one of its foray into the battery materials' business.

So, what's it all about?

Large companies with either diversified products or vertical integration can distribute costs. Legacy OEM automotive EV makers, for example, like Germany's Volkswagen, which had a 5 billion Euro profit last year, can afford to lose some money introducing its EVs to the market at a loss per vehicle, while it tests both market acceptance and the lowering of manufacturing costs due to scaling up production.

Let's set aside my continuing accounting of [battery raw materials](#)' resources as woefully insufficient to support a transition to EVs, and concentrate on the OEM automotive industry's costs of bringing a new vehicle with any type of power train to market.

It is always multi-faceted crap shoot, and the history of government intervention in the car market is not one to inspire confidence.

Designing a new car and preparing to produce it costs billions of dollars and takes 3 to 6 years.

Government intervention in this market is always a compendium of what you can't do, not what you can. The U.S. and EU government's favorite regulatory intervention in the OEM automotive industry is the required "average miles-per-gallon" range for an OEM's output. This "standard" was first introduced to reduce the emissions of hazardous gases and then added the reduction of the emission of particulates to its mandate. The current EV craze was actually the result of California's 1990's experimental legislation requiring the slow phase in of zero-emission vehicles. General Motors brought out a battery electric

vehicle, the EV in the late 1990s, and Toyota introduced its “hybrid” Prius into the US (mainly California) market in 1997 to meet that mandate. The Prius, a hybrid, using, at first, a nickel-metal-hydride (the metal being a mix of rare earths) battery prospered. The EV with its lead-acid batteries and short range, 90 miles before needing a recharge, did not (It helped that GM lobbyists got California to suspend enforcement of the zero emissions mandate). GM had only leased its EVs; they were recalled and scrapped.

BEVs as a type went into hibernation until 2005 when Elon Musk decided that lithium-ion batteries were ready for prime time. Global Cooling became Global Warming and then Climate Change, and Musk’s struggling, capital devouring, OEM automotive venture, Tesla, kickstarted a revival of a serious EV industry, something last seen by the great grandfathers of Detroit’s, Wolfsburg’s, Paris’, and Tokyo’s car industry leaders when they decided that Thomas Edison’s Nickel-iron batteries were not practical for even their then short range motor cars. They knew that Rockefeller’s gasoline and kerosene distribution system in “filling stations” was far more practical than Edison’s expensive and hard to maintain DC generating stations except for trolley cars.

So, what’s this got to do with JM’s decision to pull out of the battery cathode business?

The answer is that JM has (correctly) concluded that the market, though large, is limited, and that very large profitable multi-product and/or vertically integrated or (whisper) state-supported companies are already driving prices down by competition to get market share.

JM has concluded, again correctly, that most of the cars and trucks manufactured for the next generation will use internal

combustion engines and that its core automotive exhaust emission catalytic converter business based on its dominance in the processing and use of platinum group metals is where it has the best competitive advantage and sunk costs.

The reputed costs to JM associated with building a Poland sited cathode plant were twice the industry average.

JM was once also in the rare earth processing business, and it exited that in the 1980s when the first Molycorp was losing its dominance to Chinese low-cost competitors. That was a wise decision then, and getting out of the lithium-ion battery cathode business before getting into massive non-recoverable debt is also a wise decision.

Finally, I would like to repeat my prediction that since the OEM automotive assemblers do not understand or want to understand that the manufacturing of EVs using lithium-ion batteries is limited by the availability of lithium, there will be a cull. The survivors will be those OEMs that can balance the production of their allocation of (raw materials' supply limited) EVs with ICE production profitably. BMW is my choice for the most likely survivor, because it has already announced that it will continue to produce a mix of powertrain choices in its vehicles. The rest, so far, are either going "all-electric" or eliminating ICE production and development. They chose poorly.

Nano One Materials' Dan

Blondal with Chris Thompson on decarbonizing the battery materials supply chain

written by InvestorNews | August 29, 2022

In a recent InvestorIntel interview, Chris Thompson spoke with Dan Blondal, CEO, Director & Founder of [Nano One Materials Corp.](#) (TSX: NANO) about Nano One's place in decarbonizing the battery materials supply chain and about the company's product development collaboration with [Euro Manganese](#) and a [global OEM automotive company](#).

In this InvestorIntel interview, which may also be viewed on YouTube ([click here to subscribe to the InvestorIntel Channel](#)), Dan Blondal said that Nano One's patented technologies are used to make a wide range of the cathode materials used in batteries for electric vehicles, energy storage, and for consumer electronics. Dan also provided an update on Nano One's One-Pot process, which increases the energy density and durability of lithium ion batteries, and how its M2CAM technology addresses supply chain complexities while reducing costs and carbon footprint.

To watch the full interview, [click here](#).

About Nano One Materials Corp.

Nano One Materials Corp (Nano One) is a clean technology company with a patented, scalable and low carbon intensity industrial process for the low-cost production of high-performance lithium-ion battery cathode materials. The technology is applicable to electric vehicle, energy storage, consumer electronic and next generation batteries in the global push for a zero-emission

future. Nano One's One-Pot process, its coated nanocrystal materials, and its Metal to Cathode Active Material (M2CAM) technologies address fundamental performance needs and supply chain constraints while reducing costs and carbon footprint. Nano One has received funding from various government programs and its current "Scaling of Advanced Battery Materials Project" is supported by Sustainable Development Technology Canada (SDTC) and the Innovative Clean Energy (ICE) Fund of the Province of British Columbia.

To learn more about Nano One Inc., [click here](#)

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Any projections given are principally intended for use as objectives and are not intended, and should not be taken, as

assurances that the projected results will be obtained by the Company. The assumptions used may not prove to be accurate and a potential decline in the Company's financial condition or results of operations may negatively impact the value of its securities. Prospective investors are urged to review the Company's profile on [Sedar.com](https://www.sedar.com) and to carry out independent investigations in order to determine their interest in investing in the Company.

If you have any questions surrounding the content of this interview, please email info@investorintel.com.

ESG Investors look to Nano One as a connector in a sustainable future

written by InvestorNews | August 29, 2022

If you follow Jack Lifton on InvestorIntel you'll have a pretty good idea that the dream of replacing all the internal combustion engines on the road today with battery electric vehicles (BEVs) is more of a fantasy than a reality based on today's technology. The demand for raw materials, in particular lithium, just doesn't add up. Jack does a great job of explaining the math in his [Lithium by the numbers](#) article from earlier this month with a follow up to hammer the point home in [Lithium: The Haves and the Have Nots](#) from last week. In summary, the first article suggests that even if lithium production doubles by 2025 (which producers say they can do), that will only get the world to roughly 10% of annual car production being

BEVs. The latter article states “There is not even the remotest possibility that [global lithium \(measured as metal\) production](#) could grow to this week’s prediction, for example, by the child-like prognosticators at Deloitte, that in 2030 32% of all newly manufactured motor vehicles would be battery electric vehicles (BEVs).”

I think it’s safe to say that most reasonable people around the world agree that reducing emissions is a positive step for humanity. But how do we think as a global community that we can achieve these goals in light of some pretty serious shortfalls in the basic building blocks to making this happen? Obviously, technology has to be the answer. We have to be more efficient with the resources we’ve got if we want to have any chance at not only meeting the political goals of carbon reduction but also avoiding the often unwitnessed reality of destroying the earth by mining every possible resource required to achieve those goals.

The good news is that there is already a company out there working on technology to improve lithium-ion batteries. [Nano One Materials Corp.](#) (TSX: NANO) is a technology company with a patented and scalable industrial process for the production of low-cost, high-performance cathode powders used in lithium-ion batteries. These unique materials are being designed to add value to electric vehicles and grid storage batteries in the global push for a zero-emission future. Nano One’s patented manufacturing technology – the “One Pot Process” – streamlines the production process and thereby reduces cost while enabling higher performance cathode materials as compared to the standard manufacturing process. Last year the Company announced the development of a coated, [single crystal cathode material](#) for lithium-ion batteries that provides up to 4 times improvement in longevity. Granted this doesn’t necessarily reduce initial demand for lithium but it certainly helps to put less stress on

the supply chain going forward.

With that said, last month Nano One announced [three new patents](#) issued and allowed in Canada, the US and China. Notably coverage for a novel method for phosphate stabilizing of lithium-ion battery cathodes. An important, low-cost durability improvement to lithium nickel manganese oxide (LNMO) cathode material which delivers energy and power on par with other high-performance cathodes and is more cost-effective because it is cobalt-free, low in nickel and does not require excess lithium. LNMO also has an operating voltage that is 25% higher than commercial high nickel cathodes, enabling fewer cells in applications such as power tools and electric vehicles while providing improved productivity, efficiency, thermal management and power. So no cobalt, less nickel and ultimately less lithium given you don't need as many power cells.

And then there's the other unintended consequence of moving towards a lower carbon future, the supply chain. Currently, the cathode supply chain is long and complex. Nano One technology enables [cathode materials](#) to be manufactured directly from nickel, manganese, and cobalt metal feedstocks in the form of metal powders, metal carbonates and other salts rather than metal sulfates. Metal powders are one-fifth of the weight of metal sulfates, avoiding the added costs, energy, and environmental impact of converting to sulfate and shipping and handling of waste. Nano One's technology aligns it with the sustainability objectives of automotive companies, investment communities and governmental infrastructure initiatives. It also offers an opportunity for metals refiners to provide environmentally, and sustainably mined sources of nickel ore to integrate and manufacture cost-reduced value-added cathode powders for direct supply to battery manufacturers.

In summary, Nano One appears to have the right technology at the

right time. On top of that, the Company does it all with a lower overall carbon footprint than many, if not all, of its peers. In my opinion, the latter concept still isn't valued as high as it should be given as most ESG investors appear to be focused on top line carbon impact, and rightfully so given that policymakers haven't really made it an issue yet. In the meantime, as Jack Lifton educates the world that BEVs in every driveway may be a fallacy in our lifetime utilizing current technology, here's a company that could perhaps help make it more of a reality.

A cleaner greener world is what Nano One Materials is all about

written by InvestorNews | August 29, 2022

The market sure liked the latest news that [Nano One Materials Corp.](#) (TSXV: NN0) received [conditional approval](#) to graduate to the Toronto Stock Exchange under a new trading symbol "NANO" as the share price was up an impressive 13% yesterday. Perhaps this reflects market interest of the exciting potential of this interesting cleantech innovator.

For starters, Nano One is a technology company with a patented process for the low cost production of high performance cathode materials used in lithium ion batteries. You know, the batteries that are going to power virtually every battery electric vehicle and store the power from all the renewable energy sources coming online along with all your portable electronic devices. In other

words, a pretty large addressable market. Nano One is in the process of showing the world that they have a better design for coating the cathode of a lithium ion battery.

All lithium ion batteries have cathode materials and it's estimated that the cathode represents roughly 25% of the cost of the overall battery. This is where Nano One has focused on trying to reduce costs and improve efficiency. The Company's silver bullet (that's an expression, I don't think there's any silver involved) is the patented "One Pot Process" which streamlines the production process and thereby reduces cost while enabling higher performance cathode materials versus the standard manufacturing process.

Cost reduction comes from the process being able to go directly from metals (lithium, nickel, cobalt and manganese) to cathode powder without having to convert it to sulphate or in lithium's case, a hydroxide. This results in reduced costs for raw materials and energy input which in turn makes for a greener, lower carbon footprint overall. Cost savings can be several thousands of dollars per ton for cathode material.

The One Pot Process also helps on the performance side. As a battery charges and discharges, conventional polycrystalline cathode particles start to break apart from the stress of repeated charging. Over time this can fracture the protective coating and expose the inner part of the crystals to side reactions. This has the effect of reducing the range, life and charge of a battery. The Nano One process individually coats nanocrystals which form in one step and resist fracturing thus boosting durability and in turn full life cycle performance.



Source: [Nano One Materials Corporate Presentation](#)

The technology has been proven to work on several occasions including a [joint development program](#) focused on LNMO cathode materials (lithium nickel manganese oxide) that was successfully completed with validation by a multi-billion-dollar Asian cathode material producer and in [collaboration](#) with the University of Michigan on the development of innovative solid-state battery technology, to highlight the most recent updates. As well the Company is involved in strategic partnerships with Volkswagen, an undisclosed large US auto producer, Pulead Technology Industry (a highly respected Chinese cathode producer) and Saint Gobain (a 400-year-old materials company). In February Nano One announced its [M2CAM](#) (metal to cathode active material) initiative to engage in discussions with large integrated miners to reduce environmental footprints and maximize upstream value in the global battery supply chain.

As you can see, this company ticks all the boxes for a greener, cleaner world. And the best part is, they have more than enough cash to continue ongoing research and development, pilot plant expansion, business development and strategic initiatives having [raised \\$29 million at the start of April](#) to go along with the [\\$30 million of working capital](#) they finished Q1/21 with. Nano One appears to have the right solution at the right time and if the new green economy is serious about reducing its carbon footprint we all know who should be at the top of the list.

Follow Dean on Twitter: [@iiDeanB1](#)

Happy Earth Day – Look to these Stock to Support Mother Earth and Boost Your Portfolio Performance

written by InvestorNews | August 29, 2022

Investors are taking a deeper dive into corporations, looking beyond financial metrics and into a company's Environmental, Social, and Governance (ESG) standards as a measure of its commitment to all stakeholders, including a healthier planet.

Last year, Laurence Fink, the Founder and CEO of BlackRock, the world's largest asset manager, sent a letter to the CEOs of its invested companies and a second letter to its clients, addressing a focused mandate on sustainable investing. BlackRock sees climate risk as investment risk and plans to act ahead of the serious impacts of climate change by doubling its number of ESG funds.

Below are four companies where ESG has become a critical part of their business or a core belief in building a more sustainable business environment.

1. [Cielo Waste Solutions Corp.](#) (CSE: CMC | OTCQB: CWSFF | FSE: C36)

Cielo is literally turning garbage into gas; it doesn't get much greener than that!

Cielo, a waste to renewable fuel company, has a patented technology that converts landfill garbage into renewable high-grade diesel used in transport trucks and kerosene used for aviation jet and marine fuel.

After 16 years and C\$75 million in research and development, and now a fully functional plant, Cielo is currently riding the “green wave” of investor interest in environmental tech, and the stock price has responded accordingly, up over 1,000% year-to-date.

Cielo is currently rolling out 10 facilities in North America over the next couple of years but with revenues expected from its first plant this year.

Read the latest story about Cielo [here](#).

2. [mCloud Technologies Corp.](#) (TSXV: MCLD | OTCQB: MCLDF)

mCloud helps businesses reduce energy waste, maximize energy production and get the most out of critical energy infrastructure. It focuses on using Artificial Intelligence (AI) to curb energy waste in buildings, maximize the energy production of wind turbines and extend the lifespan of critical energy infrastructure in a variety of different industries.

mCloud recently rolled out a new service that detects the leakage of gases during oil and gas production that will drive major carbon emission reductions for its customers in Alberta and the Middle East.

And yesterday, mCloud announced a partnership with three North American energy utility providers to offer its energy-saving solutions for HVAC and improved indoor air quality (IAQ) monitoring solutions that could target over one million commercial buildings in the U.S. and Canada.

Read about yesterday’s news release [here](#).

3. [Nano One Materials Corp.](#) (TSXV: NN0)

Nano One Materials is a technology company with a patented and

scalable industrial process for the production of low-cost, high-performance cathode materials used in lithium-ion batteries.

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'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.

And, importantly, the process addresses ESG concerns around energy, waste, and carbon footprint in the lithium-ion battery supply chain. It is an environmentally friendly process using limited water, and as it eliminates intermediate steps, it eliminates expensive and energy-intensive metal conversions and does not have a hazardous waste stream.

See the latest video about Nano One Materials [here](#).

4. [Neo Lithium Corp.](#) (TSXV: NLC | OTCQX: NTTHF)

Neo Lithium is advancing its 100% owned Tres Quebradas (3Q) project, a high-grade lithium brine lake and salar complex in Argentina. The 3Q Project is located in Latin America's "Lithium Triangle" and covers 350 KM2 (~86,500 acres) in the largest lithium-producing area in Argentina.

Last week, Neo Lithium [announced](#) that it engaged Golder Associates and the Argentinean National University of San Martin, to help with the ESG program as part of its Feasibility Study for 3Q project.

Waldo Perez, CEO of Neo Lithium said, "We take very seriously our compromise with all of our stakeholders and future generations, which in large part includes all aspects of ESG."

Neo Lithium wants to be at the low end of the CO₂ emission footprint when compared with other lithium brine projects.

Read the latest story about Neo Lithium [here](#).

Happy Earth Day, Do Something Nice for Mother Earth.

Nano One's Dan Blondal on reducing the carbon footprint in the lithium-ion battery supply chain

written by InvestorNews | August 29, 2022

In a recent InvestorIntel interview, Chris Thompson spoke with Dan Blondal, CEO, Director & Founder of [Nano One Materials Corp.](#) (TSXV: NNO) about Nano One's M2CAM (metal to cathode active material) technology that can reduce cost, waste, and carbon footprint in the lithium-ion battery supply chain.

In this InvestorIntel interview, which may also be viewed on YouTube ([click here to subscribe to the InvestorIntel Channel](#)), Dan went on to explain how Nano One's patented One-Pot process can produce cathode materials directly from metal using nickel, manganese, and cobalt metal powder feedstocks eliminating the need for costly and energy-intensive conversion of nickel, cobalt, and manganese to sulfate, and lithium to hydroxide. He said that the process can "transform the supply chain and make

it much cleaner and greener and cheaper because we eliminate the steps in between.”

Nano One recently achieved TSX Venture 50 recognition as a top-performing company and is focused on improving the performance of the cathode materials and ultimately the durability of lithium-ion batteries. “We have a process of making cathode materials and we can make all the different types of chemistries that are applicable to any type of lithium-ion battery you can think of,” Dan added.

To watch the full interview, [click here](#).

About Nano One Materials Corp.

Nano One is developing patented technology for the low-cost production of high-performance battery materials used in electric vehicles, energy storage, consumer electronics, and next-generation batteries. 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 a range of different nanostructured materials and has the flexibility to shift with emerging and future battery market trends and a diverse range of other growth opportunities. The novel three-stage process uses equipment common to industry and Nano One has built a pilot plant to demonstrate high volume production and to optimize its technology across a range of materials. This pilot plant program 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). Nano One also receives financial support from the National Research Council of Canada Industrial Research Assistance Program (NRC-IRAP). Nano One’s mission is to

establish its patented technology as a leading platform for the global production of a new generation of nanostructured composite materials.

To learn more about Nano One Inc., [click here](#)

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investigations in order to determine their interest in investing in the Company.

If you have any questions surrounding the content of this interview, please email info@investorintel.com.

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

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[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:](#)