

Outperforming global benchmarks in reducing the cost of lithium batteries.

Lithium ion batteries have two electrodes, the anode and the cathode, that transmit lithium ions through an electrolyte. Cathode powders have great potential to change battery performance and also account for a quarter of the cost of a typical battery cell. For batteries the challenge will be reducing the cost of raw materials and processing, while boosting capacity, charge and cycling.

Nano One Materials Corp. (TSXV: NNO) is a Canadian technology company with a scalable industrial process for producing low cost high performance battery materials. Some of the more promising cathode materials being developed in labs are using processes with 50 to 100 steps and production cycles of 4 to 7 days. Nano One's technology can use lower grade raw materials and complete a production cycle in less than a day using a three stage process with up to 75% fewer steps. Nano One believes that cost-effective production of nano-structured cathode materials can address pent-up global demand for better batteries by reducing costs by up to 50% (\$/kWh); delivering robustly structured cathode materials that last 2-3 times longer, store more energy, and deliver more power. For electric vehicles this could translate into fewer battery cells, less weight, less cost, extended range, longer lifetime, or better warranties. For consumer electronics this could mean greater storage, faster charging or more power.

On September 20, 2018, Dan Blondal, CEO of Nano One announced that their Lithium Iron Phosphate (LFP) cathode material, and the cost of making it, are outperforming global benchmarks and could be a disruptive force in the lithium/iron battery space.

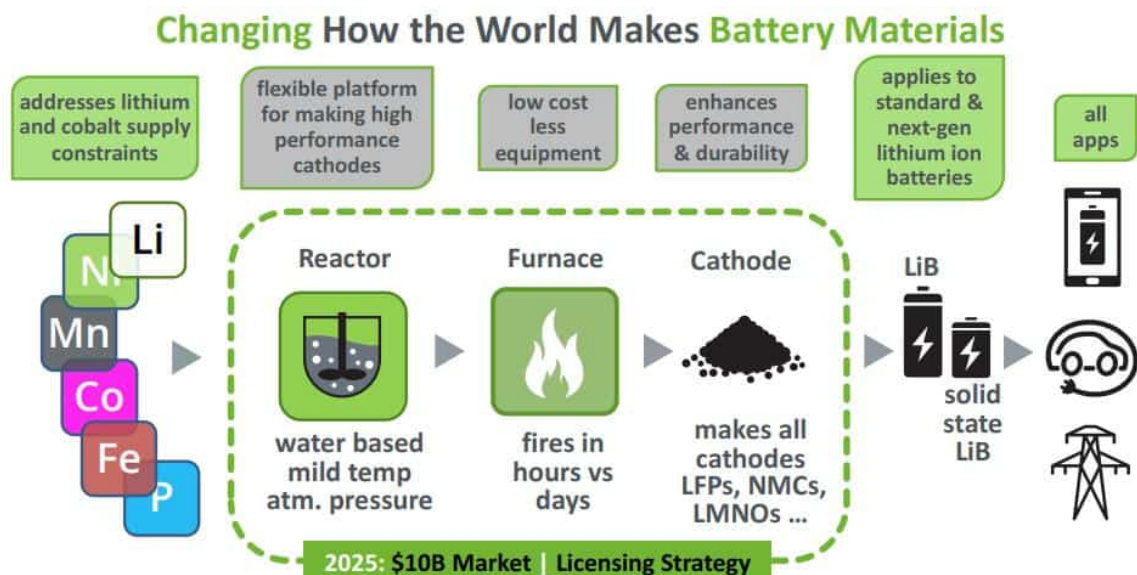
CEO Blondal stated: *“Major cathode producers have begun evaluating our LFP and initial results are consistent with the excellent battery performance we’ve been measuring in our lab. The preliminary economic modeling is also very compelling with LFP production costs conservatively estimated at 10 to 30% below industry standards.”*

By 2025 the global LFP market size is projected to be 130,000 tonnes and worth about \$1.5 billion. To address this opportunity Nano One has developed a proprietary process, using lithium carbonate, which enables lower cost sources of iron and phosphate than those used presently by other LFP producers. Economic modeling of this innovative process delivers capital and operating projections well below current industry costs. This leads to a sizable revenue opportunity that Nano One is evaluating with commercial interests in the lithium ion battery and cathode material space.

LFP is the cobalt-free, high durability, low cost, and safest cathode material of choice for lithium ion batteries. It is used in e-buses, e-bikes, power tools and grid storage systems for renewable energy. As costs come down, LFP may also replace lead acid batteries, further increasing demand.

Nano One Chairman, Paul Matysek added: *“There is a compelling business case with our LFP technology, it is ripe for partnership on full scale production, and this adds to other opportunities Nano One is pursuing to jointly develop solid state batteries and low-cobalt chemistry.”*

Nano One envisions a world where the remarkable properties of nano-materials are no longer impeded by raw material and production costs. The Company’s vision is to establish its patented technology as a leading platform for the global production of a new generation of nano-structured composite materials.



The world is heading into a new evolution in all things electric powered by batteries. E-cars, e-bikes, e-buses e-trains maybe one day even e-planes. Nano One has the technology to lower size and cost of the most important part of this evolution, the battery. One to watch.

Klip on how to be an online media influencer in the resource sector

March 14, 2018 – “Once you say something or you write a tweet you are responsible for that knowledge if you are sharing it, or for the action which you are thinking will be for the best benefit of shareholders of your own company,” states Kirill Klip in an interview with InvestorIntel’s Jeff Wareham.

Jeff Wareham: Kirill is really the number one online media influencer I think in this space today. Kirill you are all over social media. Our industry should probably give you a big

thank you. What drove you to get so involved?

Kirill Klip: Thank you very much for this praise. It is a lot of very hard work. When I started my blog it was very interesting. What I found, of course, English is not my native language. But what was very interesting was, before you can write even a very short article, you have to really study the subject. Twitter is great in the sense that it disciplines your mind because you are communicating with very short messages, so you have to know your subject. You have to be there frequently, otherwise people will not be following you and you have to be interesting, otherwise people will get bored. I love this way of communicating, of explaining this education. It is very easy, but very hard when your investors can always hit you back and ask you questions about the company.

Jeff Wareham: You certainly are out there and accountable for what you have to say, are you not?

Kirill Klip: Exactly. You know what I found? Maybe the first time, 10 years ago, and then it became crystalized for me 5 years ago, why a lot of mining executives or executives are shy of this kind of public stance on a lot of things. Now I know because once you say something or you write a tweet you are responsible for that knowledge if you are sharing it, or for the actions which you are thinking will be for the best benefit of shareholders of your own company. Then shareholders or others can show you the tweet. Kirill you were talking about this, where is it? It is very, very interesting, this fear, when you have an almost immediate response from your core investors or participants in our industry.

Jeff Wareham: I have been on Twitter a long time, but LinkedIn not so long. I am amazed on how much information you get out on LinkedIn.

Kirill Klip: You know what is very interesting? Sometimes I do

not know 100% about a particular subject. For example, I am quite good about lithium, lithium batteries, electric cars. But, for example, I do not have a clue how many electric buses are sold in China. I can just fly one question out and I will receive, like, 10 top experts tweeting me back. Then I can check the source, and within half an hour I know the best knowledge maybe from another person all across the world. It is fascinating how social media really opens us in the sense, that we can not only educate other people with our knowledge, but also we can gain and crystalize the knowledge in the industry very fast...to access the complete interview, click [here](#).

Arafura MD on the rekindling of market interest in the looming rare earth shortage

Gavin Lockyer, Managing Director of Arafura Resources Ltd. (ASX: ARU) ("Arafura") in an interview with InvestorIntel CEO, Tracy Weslosky discuss the global rare earths market and more specifically, the rising demand for magnetic metals neodymium (Nd) and praseodymium (Pr). Discussing increasing demand for more efficient lithium batteries in motor vehicles, Gavin explains how rare earth magnets are required in the motors to make them efficient. Having just completed a \$1.6 million capital raise that is being focused on Arafura's feasibility study, Gavin provides an update on Nolan's NdPr pilot program in Northern Australia.

Tracy Weslosky: It seems like there seems to be a rekindling of interest in the looming rare earth shortage. What do you

think is happening right now?

Gavin Lockyer: I think there is many things going on. We are seeing the effects of the Chinese consolidation of the industry really starting to impact on supply and that has had a flow through impact on the NDPR our price in particular which has been well received by the markets. We are also starting to see that the Chinese are actually using more and more of their own domestic production for Chinese magnet manufacturing. This is going to start putting some real pressure on the rest of the world in the next few years. We are starting to see ourselves a bit of a renewed interest in the whole technology metal space.

Tracy Weslosky: In the last month Gavin we have noticed you have had an onslaught of basically news releases. One news release after another, every other day it is Arafura. Of course, your stock price is really getting the support from the shareholders. Can you talk to us about your recent private placement announcements and what you are planning on utilizing the funds for? ...for the rest of the interview, [click here](#)

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The Argentine Lithium Connection

A junior stock can begin a decent bull run for any number of reasons, but one thing's for sure, it's rarely because a drilling program started. Results? Sure! But explorers exploring is surely no news at all; unless, of course, you're a Grosso Group company. Joseph Grosso and his team have been

so long established in Argentina that confidence in their projects is automatically fairly extreme, and the group's past successes coupled with their current asset acquisition plans may just be enough to create lift-off.

The company in question, Argentina Lithium and Energy Corp. (TSXV: LIT | OTCQB: PNXLF), has the option to earn a 100% interest in the Arizaro Lithium Brine Project, including 20,500 hectares in the central core of the Arizaro Salar, the largest in Argentina and third largest in the "Lithium Triangle". Upon announcing that exploration had commenced, LIT shares climbed by over 40%; presumably in confident anticipation of a positive outcome resulting from two things: the aforementioned belief in management, and an announcement citing the company's intention to acquire an additional deposit in the coming weeks.

All of this amounts to a sort of confidence positive feedback loop, especially as successful dealings in Argentina are currently reserved for the experienced only. Recent regime change is often enough to scare away most investors, but the Grosso lot have been cluttering up the place for decades already. In short, and with certainty, the group are sufficiently connected to move at an intensely competitive pace compared to, say, a newcomer to the region. The company's seemingly uninspiring press release has motivated many to hand over rather a lot of cash; apparently, if Joseph Grosso is both breaking ground and buying more, people want in.

Not surprising, really, since the group already have an envious track record of Argentinian exploration. Although little historic exploration work has been done on the Arizaro Salar, the central area is interpreted to have the geologic conditions to be the most prospective for quality brine resources, and now a relatively small drill program of up to four holes will test conductive and semiconductive zones identified by the vertical electric sounding (VES) survey, which are interpreted as geologic units that are saturated

with high-density, and potentially lithium-bearing, brines.

The geology of Arizaro includes volcanic rock outcrops and structural conditions similar to other salars in the Puna region where lithium and potash have been found in abundance. In addition, the large size of the Arizaro basin makes it possible to find geological and hydrogeological conditions for establishing entirely separate sub-basins within the salar. These factors support exploration for deep layers of lithium-rich brine which are not directly linked to the surface fluids at the site.

Furthermore, the Arizaro Salar benefits from a strategic location for infrastructure, including: a railway that connects to the deep water port of Antofagasta, nearby advanced mining projects that are expected to bring significant development of access routes and power, and the availability of water for development. Arizaro gets less than 30mm of rain each year, so while not quite qualifying as a desert, it is certainly dry enough to make evaporation ponds an economical option. The price of lithium is still climbing, salars remain the cheapest extraction method, and management has seen it all before. Shut up and take my money, Joe.

High Purity, High Grade Manganese Potential for Maxtech

It's official! Today Maxtech Ventures Inc. (CSE: MVT) ("Maxtech") has confirmed that it has signed a strategic co-operation agreement with Brazil's Maringá Ferro-Liga S.A. This agreement brings Maxtech closer to its goal of becoming a

diversified mining company with a bend towards high grade manganese.

90% of manganese is used in the manufacture of steel, the remaining 10% is used in other chemical and agricultural applications. And it is here where Maxtech is expected to focus its energies. The company aspires to build a vertical mining operation, selling its manganese into high growth markets focused on renewable energy and crop fertility.

As regards renewable energy, high grade, high purity manganese is used as a primary cathode material in lithium ion manganese batteries (NCM batteries). The lithium-nickel-cobalt manganese (NCM) formulation batteries is the next generation of battery cathodes after the lithium-nickel-cobalt-aluminum design (NCA) battery, and offers superior efficiencies, high power and low cost.

As such, we note battery and automotive manufacturing giants, developing their own NMC supplies and formulations. Already 3M has patented its own NMC battery which is used by LG Chem in the Chevy Volt and Nissan Leaf. BMW has also selected the NMC battery, while General Electric has selected a lithium-manganese battery. Tesla meanwhile has signed a five year exclusive agreement with prominent NMC battery researcher, Dr. Jeff Dahn to help reduce the costs of its batteries.

If we consider manganese for crop fertility, its importance cannot be underestimated. The micro-nutrient market is poised to grow at 8% CAGR to \$7.7bn by 2020. Importantly, manganese cannot be substituted as it is needed chemically for photosynthesis to occur. In a world characterised by a burgeoning population and a decline of arable land, food scarcity is becoming of increasing concern. Experiments conducted in Brazil shows that the addition of a small amount of manganese can increase crop yield by around 30%, and because of this, high purity, high grade manganese like Maxtech offers, could fetch as much as 25-30% premium in the

market.

Maxtech has secured in excess of 50,000 ha of potential high-grade manganese claims and has an agreement to jointly explore manganese-specific projects with Brazil's Maringá Ferro-Liga S.A. Brazil is expected to increase its demand for high purity manganese by 4.8% CAGR, translating to an additional demand of 227,000 tonnes for use in fertilizers. As a potential local provider, with a local partner, it stands to reason that Maxtech should benefit from this demand.

Analyst on Nemaska Lithium road to production

Warren Buffet and Elon Musk were onto the growth of the lithium market before it happened. We consider lithium as one of the most applicable metals of modern life. Much of our daily lives are driven by this red metal: tablets, smart phones and electric cars, being only a handful of applications for this minor metal.

A company such as Canadian junior miner Nemaska Lithium Inc. (TSX: NMX | OTCQX: NMKEF) ("Nemaska") is well placed to benefit from this burgeoning market.

We think the company is going places. It is well advanced in its construction of its Whabouchi mine, with the latest feasibility study upgrading the company's resource, while the company is well underway with the construction of the mine's infrastructure. Phase I of the lithium hydroxide plant has just been commissioned, and the first tonne of lithium hydroxide has just been scheduled for delivery.

Nemaska Lithium has applied for patents in multiple jurisdictions on its proprietary process of its lithium hydroxide and carbonate converted from its spodumene concentrate, which we think is pretty neat.

The life of the Whabouchi mine, which will be open pit and underground combined, will initially be 26 years, and it promises to be a top notch mine with high grade spodumene on what the company terms as the most important lithium spodumene hard rock deposit in the world in volume and grade.

We like that the company is putting best practices in place to ensure sustainable development of its mine and plant, including: reducing the amount of mine infrastructure to be built; keeping the majority of the infrastructure near the ore deposit; and minimize the ecological footprint of the project. In addition, the company has reviewed the location of its stockpiles, basins and effluents as far as possible away from Mount Lake, and reduce wetland losses, as well as conserving potential archaeological areas.

Nemaska has an exceedingly experienced management team, led by Guy Bourassa who has more than 30 years in the mining industry. It is through his leadership that Nemaska bought the Whabouchi deposit and developed the new innovative process of producing high purity lithium hydroxide and carbonate that could shape Nemaska into a world leader in the lithium salts market.

The rest of Bourassa's team are equally experienced with Michel Baril, the chairman of the board, formerly an executive at Bombardier, and former Rio Tinto engineer, François Godin.

Our verdict on Nemaska Lithium is that the company has a bright future. We expect it to become a lithium player to be taken seriously. It has an excellent resource, managed by a vastly experienced team. Once it starts producing in earnest, we should start seeing some excellent returns on investment.

The company already has supply agreements in place, making Nemaska Lithium a solid investment.

For now, the share price is trading within a rather tight band of \$1.18 and \$1.2, but we see it breaking out of that band as soon as it becomes a fully fledged producer of lithium hydroxide and carbonate. We're watching its progress with interest.

Alset's Rapid Mexican Lithium Salar Shows Progress

Last year, Alset Minerals Corp. (TSXV: ION) ("Alset") doubled down on its Mexican salars project; a collection of three salt flats in central Mexico that reportedly contain exciting quantities of the sought-after battery component lithium. Today, further positive results have attracted considerable additional investment, and prompted the company to acquire 100% interest in the salars. A full drilling project is now underway in order to ascertain the depth at which lithium-rich brines exist, which will prove the area worthy of entering the booming energy-storage supply chain, and newly promote Mexico into the ranks of lithium-producing nations.

Already, the company has demonstrated that lithium metal can be recovered in valuable quantities from the surface soils; recent lab testing proved that a weak acid leach was more than sufficiently capable of extracting upwards of 97% of the precious tech-metal. Three different composite samples were created for the test, one for each salar, and moreover, previous positive results of scientific investigations of these soils were what inspired the company to sell-off their

Canadian lithium play to focus more closely on the promise of the salars-down-south.

Although the project already has considerable merit based on the existing results, the discovery of subsurface brine pools with a high lithium-density would no doubt cause company stocks to skyrocket. Brines are renowned for providing the most economical form of product recovery, in that evaporation of the brine, once pumped to the surface, is all that is required to arrive at a decent composite product that can be refined further on-site. The majority of producing lithium brines are currently found in South-America, as part of the now-famous "lithium triangle" region that holds over half of the world's reserves.

This is precisely the focus of the current drill; Alset has committed to creating two holes in the salar known as La Salada, purportedly the most promising of the three. As testing has yet to explore below five meters, the drill cores will assess the overall depth of La Salada and demonstrate the position of the brine horizon. Metallurgical testing and further analysis can then tell us exactly what may be taken from the area, but expect significant results given that La Salada has returned grades as high as 2000mg/l lithium, 8% potassium, and 60mg/l boron. Perhaps most excitingly, preliminary geophysical surveys have indicated that the ex-lake extends to a possible depth of seventy-meters, which when proven, would create one hell of a lithium mine.

Not to mention the fact that the presence of large quantities of potassium makes for significantly lower operating costs given that the material is in constant demand for the production of fertilizers the world over. Previously Alset Energy Corp, the company more recently decided to change its name to better reflect its goals. The supply of lithium alone will be sufficient to make a company into a market leader, but spreading one's bets is always going to provide more benefits. The focus on delivering high-end mineral products to a variety

of markets is a smart move, and will provide the company with a boost to security for the coming years.

Demand for lithium is still projected to speed uphill for the next ten years, our ever-growing need for newer and better energy systems is not abating anytime soon, and a rudimentary analysis of global production confirms this year-on-year. Lithium is utterly essential to fuel this growth, and anyone who can get their hands on decent quantities will reap the benefits of the curve; expect Mexico to soon join the ranks of global lithium exporters, and within driving distance of the Gigafactory, no less.