

Commercial Scale Lithium Production In Sight For Nano One Materials

The announcements coming out of Nano One Materials Corp. (TSXV: NNO) ("Nano One") just keep getting bigger; not only has the company secured yet more key patents, but their pilot plant processes have been improved to the extent that it is now thought to be capable of output on a commercial scale. The company's patented process is able to chemically manufacture materials at the nanoscale which are suitable for the production of cathode units used in lithium ion batteries, a market poised for massive growth over the next ten years as the world moves ever closer to full adoption of electric vehicles.

Specifically, Nano One have worked with Noram Engineering on a series of process improvements that, in the lab, have prompted anticipation of a 100-fold increase to the material throughput of the reactor. This means that the production rate of the existing pilot reactor could be increased from the planned 10 kg/day to as high as 1,400 kg/day. Current commercial production rates for these materials vary from 1,000 to 10,000 kg/day, and moving into this range represents a massive leap forward for the team as well as a significant reduction to capital expenses.

Demonstration of the new throughput benchmark is expected later this year, and should it be successful, the company can expect commercial adoption of their lithium products to happen very quickly indeed. If nothing else, the recent improvements show that Nano One are more than capable of creating a full-scale plant that can produce 10,000 kg/day of refined product. Crucially, the company's nanoscale production technology eliminates a multitude of steps from the refinement process,

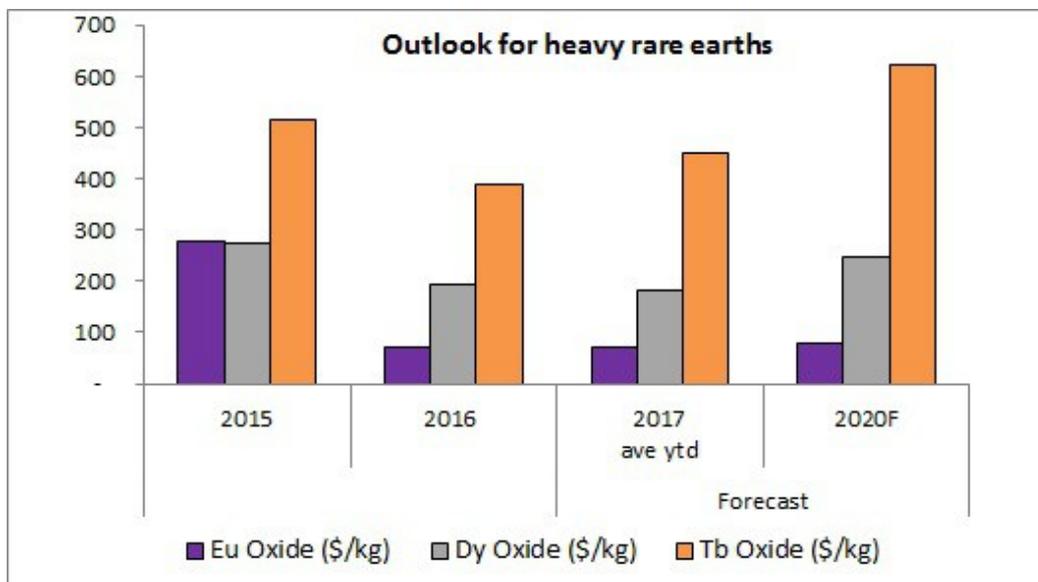
as well as doing away with the tailings that milling and acid leach operations must normally dispose of responsibly and at considerable expense.

According to industry reports, the global market for battery cathode materials is around 500,000 kg/day at present, and this is only going to increase as more and more developing economies adopt technologies that require energy storage solutions. In the developed world, the move away from combustion engines is expected to create such explosive demand for batteries that the mining world has gone completely lithium crazy over the last ten years, and the guys at Nano One promise to disrupt this space entirely by assembling better quality materials cheaper, in less time and with almost no waste products.

At the beginning of July, the company was awarded yet another patent relating to their lithium battery cathode production tech, expanding Nano One's proprietary position to include the improvements in battery performance provided by the lithium ion cathode materials produced. Batteries produced using this process are far more robust than units produced using current methods, lasting 2-3 times longer. Additionally, these new batteries would store more energy and deliver more power as a result of the finer structure achieved in the cathodes produced using this method.

The repeated good news over the past year had caused a few serious jumps in the company's share price, and I really feel that this may be the final opportunity to get in on the action before Nano One goes big-league. The ability to cater to a booming market in a way that nobody else can is too good an opportunity to pass up, and the development of commercial scale processing means that shares won't be trading at only C\$1.10 for very long.

Ucore Wins Department of Energy Award for Molecular Recognition Technology Process



Outlook for Selected Heavy Rare Earths

Source: *Core Consultants' June 2017 Rare Earth Monthly*

The seventeen rare earth elements (REEs) have become an increasing necessity in the manufacture of today's portable devices, and predictably, demand continues to climb year-on-year. Somewhat surprisingly, however, REEs are incredibly common, but they appear in such miniscule quantities that willing diggers must sift through colossal amounts of material to arrive at even small piles of concentrate, and while prices have been in decline for some time now due to massive supplies out of China, the discovery that a considerable proportion of these operations were permitting hazardous waste to enter the

ecosystem has rocked the eastern supply chain and prompted a potential price recovery.

In order to survive until payday, producers must have both high-grade resources and efficient processing technologies to boost yield and reduce costs to an absolute minimum. Ucore Rare Metals Inc. (TSXV: UCU | OTCQX: UURAF) (“Ucore”) is a near-term development-phase company focused on the extraction and processing of rare metals with real potential for production, growth and scalability, and boasts ownership of the highest grade heavy REE deposit in the USA; combine this with a cutting-edge metallurgical process, and you’ve got yourself a winner.

Traditional processing methods involve large volumes of solvents that typically require multiple passes to arrive at a concentrate of sufficient purity, creating vast amounts of waste in the process, which, if not properly disposed of, results in poisoned rivers and some very sick children. The necessary chemicals can actually be disposed of fairly easily, it’s just that the illegally operating miners haven’t been doing it. Still, the costs of maintaining a supply of these materials presents a massive problem for today’s REE producer, and remaining competitive requires a technological edge.

Ucore’s pilot plant utilises molecular recognition technology (MRT), which is based on green chemistry principles and generates minimal waste. No organic solvents are used, and the few necessary chemicals are as benign as can be. Energy requirements are minimal, and crucially, a recovery rate of over 99% can be achieved with a single pass-through. As a result, operating costs are far below what would normally be expected, and the environmental impact is incredibly low.

Additionally, when compared with solvent extraction, an MRT system requires considerably less equipment and floor space, resulting in a significantly cheaper plant construction. Ucore has already built a pilot plant in Utah based around the IBC

SuperLig® technology, an MRT process for which the company owns a controlling interest in the exclusive rights for rare earths and multi-metallic tailings applications in North America and associated world markets, and has even signed a MoU to process further offtake from Commerce Resources.

A discussion with Ucore's VP of Business Development, Mark MacDonald, revealed what he is most excited about the company and its prospects:

"I am excited that Ucore is able to play a key role in securing the supply of critical metals for the North American industrial complex in partnership with the US Department of Energy."

MacDonald was speaking following Ucore award of \$1m by the US Department of Energy, as part of a consortium comprised of IBC, Equinox and PSI to source, beneficiate and separate rare earths using the company's MRT technology process.

Ucore's own high-grade Bokan project is located in the mining-friendly jurisdiction of Alaska, and has the unanimous support of the Alaska State Legislature. Having a world-class deposit in addition to intensely competitive metallurgy makes this company well-poised to ride the REE recovery and enter the supply chain with a responsible product at minimal cost, and as such represents a safe investment for both the short and long-term.