

Scandium in Lithium-Ion Batteries? Now it gets interesting...

Scandium International Mining Corp. (TSX: SCY) says that it could have the world's first primary scandium mine at Nyngan, NSW, Australia. The project has received all key approvals, including a development consent and a mining lease necessary to proceed with project construction.

The market should know this, so that's really is not the story here. But let's back up a moment.

As you probably know by now, scandium is a critical material that is used as an additive to aluminum alloys that hardens and strengthens the end product. Not unlike titanium alloys, a scandium alloy allows for lighter weight but equivalent (or better) strength components. The usage is being embraced by specific industries, but notably, two Russian jet fighters (MiG-21 and MiG-29) use scandium alloys in their construction. Other uses for scandium alloys include (but not exclusive to) automobiles, fuel cells, and other defense products.

While the company had an initial 50% interest in 2010, it closed the acquisition to become a 100% owner of the Nyngan Scandium Project in 2014. With an NI 43-101 report on the property in 2014, a Definitive Feasibility Study in 2015 and an updated NI 43-101/Definitive Feasibility Study in 2016, the company conducted process testing as recommended in the 2016 DFS prior to commencing detailed engineering on the project. An initial Mining Lease was granted in 2017 but due to a prior filing of objection by a local landowner, it was not until July 2019 that a revised Mining Lease was received due to local landowner objections.

Here we are in 2021 – that's a long time to work on a mining

project, but it is not uncommon. All the company needs is a product purchaser and capital to fund the mine development.

Now it gets interesting

In the interim, management also commenced work on the processing side of scandium. Like most resource business, the more of the value chain that you can capture, the more return for your shareholders, so that makes sense. The company was successful in its work and successfully demonstrated the ability to manufacture an aluminum-scandium master alloy (Al-Sc2%), from scandium oxide, using a patent-pending melt process involving aluminothermic reactions.

As an offshoot of the process technology work, the company has also developed ion exchange (IX) technology and knowhow to recover scandium, cobalt, and other critical metals from solvent extraction (SX) raffinate and other acidic waste streams in certain acid leach operations of the copper mining process. Copper ore bodies have a number of associated metals that usually wind up in the waste stream. Many of these "waste" metals include nickel, beryllium, scandium, and zinc to name a few which are in low enough concentration to not necessarily be economic to recover. Some might notice that these metals are "critical materials" and can be used in batteries.

As a follow on to their work in metals recovery technology, the company announced in September 2020 that it had filed a provisional patent application with the US Patent Office seeking patent rights on various applications of scandium in lithium-ion batteries. The patent application covers a number of scandium enhancements, including doping potential for both anodes and cathodes and for solid electrolytes.

So you can see that with Scandium International Mining Corp., investors have exposure to a project-ready scandium mine in Australia. But they also have exposure to critical metals

recovery technology and potential usage in lithium-ion batteries as well as solid oxide fuel cells.

It's not just a mining company anymore...and potentially more valuable as a critical materials or battery technology company.

Watch this space!