



AVALON
ADVANCED MATERIALS INC.

President's Letter 2017

2017 has been a year of steady progress for Avalon Advanced Materials toward our goal of near term development and production at both the Separation Rapids Lithium and East Kemptville Tin-Indium projects. Accordingly, the focus has been primarily on project engineering and permitting and we are now well-positioned to proceed in 2018 with construction on both projects once financing is in place. As lithium prices have continued to strengthen, we are also starting to see improved commodity prices generally, including rare earths. This will stimulate increased investor interest in mineral development companies like Avalon in 2018.

The transition in our **technology metals focus** from rare earths to lithium has been challenging in terms of equity market recognition, despite the fact that maintaining a diversified asset base has been a central part of our strategy over the last 15 years. Long time shareholders are well aware that we held onto our lithium asset knowing that it would prove valuable one day when battery technology created new demand. That day has clearly arrived, and I am confident that the market will soon

recognize the value of our Separation Rapids lithium asset.

Our long experience with technology metals has taught us that timing is important. The key to creating long term shareholder value is being in a position to bring a mineral product to market when new technology creates demand. Once you have a resource, it's all about processing it efficiently to make a high quality product at a competitive cost. With technology metals like lithium, this is where the business risk lies - unlike the traditional metal mining industry, where the metallurgical process is generally known and the risk is more in being able to define a resource of economic size and grade.

In 2016-2017, Avalon focused on metallurgical process development and consulting with consumers in order to define the most cost-effective process to make a high quality lithium product suite from **Separation Rapids**. By adopting a staged development approach beginning with a demonstration scale production facility, we can keep the initial capital requirements low, prove our production process and



Donald Bubar
Avalon President & CEO

manage investment risk, while maintaining flexibility on product specifications to allow us to adapt to still-evolving lithium ion battery technology.

Work on optimizing our process flowsheets continues, with the goal of improving lithium recoveries, increasing concentrate grades, lowering operating costs and reducing both reagent consumption and waste materials requiring disposal. In late 2017, Avalon filed an application for patent protection on our innovative new hydrometallurgical process flowsheet to produce lithium hydroxide from petalite.

Avalon's goal is to **create a sustainable business that will grow over time**. Our diversified project portfolio and extensive experience with rare metals exploration and development puts us in an excellent position to identify new opportunities to supply the increasingly diverse advanced material needs of the rapidly growing cleantech industry.

The global transition to electric vehicles ("EVs") and clean energy generally is accelerating the need for improved energy storage capacity. Lost in all of the excitement around battery technology and EVs is the fact that the traditional uses of lithium (such as in high strength glass products) are also growing, with glass makers now competing with battery makers for increasingly constrained supplies of lithium. Avalon has not lost sight of the high strength glass market as an important business opportunity, and we remain well-positioned to serve it with our high purity petalite lithium mineral product.



Petalite crystal sample from Avalon's
Separation Rapids Lithium Project

Numerous expressions of interest have been received from potential customers for Avalon's lithium products and discussions on off-take commitments are ongoing. Once commitments are secured, Avalon can finalize the design and engineering of the Phase 1 production facility and secure financing to commence construction in 2018.

Lithium battery materials are not the only technology metals for which EV technology is creating new demand. Rare earth magnets are equally important to electric motor technology to reduce weight and increase efficiency. Accordingly, we have kept our Nechalacho Rare Earth Elements Project on hold, but ready to re-activate when interest from capital markets returns.

In addition to the work on permitting and metallurgical process development in 2017, Avalon carried out its first drilling program at Separation Rapids since the resource was originally defined by the Company in 1998-2001 and expanded its landholdings with the acquisition of 1,008 ha of contiguous claims to the west of the mining lease. The 2017 drilling was designed to create an updated block model for the resource and provide better definition of lithium mineralogical zoning in the deposit.

As the resource contains two economically-important lithium minerals, petalite and lepidolite, understanding their distribution was important to designing an appropriate flowsheet for the planned Phase 1 production facility in order to maximize recoveries of both of these minerals. The new block model will assist in planning the 2018 winter drilling program to expand the resource base to depth and along strike and optimize the mine plan. The drilling program will also test several previously undrilled lithium pegmatite targets on the western part of the property.

Avalon continues to monitor the rare earth markets for indications of opportunities to renew project development, although work carried out at **Nechalacho** in 2017 was limited mainly to site maintenance. There has been some encouragement recently with prices for rare earths recovering due to increasing demand for rare earth magnets in EVs. The Company is also monitoring metallurgical research work to develop more efficient and lower cost extraction technology for rare earths, as well as opportunities to take advantage of other

rare metal resources at the site such as zirconium, gallium, beryllium and lithium.

At the **East Kemptville Tin-Indium Project** in Yarmouth County, Nova Scotia, we continue to pursue the opportunity to re-start tin production at a small scale that takes advantage of the presence of a large stockpile of previously-mined tin mineralization. This allows for implementation of a relatively simple, low-cost development model initially involving gravity processing of the stockpiled material at a rate of 800,000 tpa to recover up to 1,500 tpa of tin concentrates for 10-13 years. Tin concentrates originating from non-conflict regions are in short supply and tin prices have remained fairly stable due to steady demand and declining supply from traditional sources. At current tin prices, the present East Kemptville development model has the potential to generate attractive returns on investment.

Recent work at East Kemptville has focused on preparing an application for a mining lease which involves development of a closure plan and related environmental assessment work. Once the lease is secured, the necessary operating permits will be obtained and the full transition in tenure and management of the site will be completed. By constructing a modular tin gravity concentrator and taking advantage of existing site infrastructure, such as tailings facilities, production could be initiated in just 12-18 months after financing is in place.

The stockpiled material is one of the main contributors to acid rock drainage ("ARD") requiring ongoing water treatment at the site. The current development model would remove this and other sources of ARD on the site, dispose of the waste under water in the existing pits and tailings dams and use inert tailings to cover the existing tailings to prevent future ARD - creating a fully remediated "walk-away" site. Consistent with the Company's commitment to responsible resource development, East Kemptville can be an example of how closed mine sites that have been treated as perpetual liabilities can in fact be opportunities for small entrepreneurial companies to apply new technology and extract value out of waste materials while remediating the site.

Avalon maintained its commitment to **sustainability** in 2017 with the release of its sixth annual comprehensive

Sustainability Report entitled *Concentrating on Cleantech Materials Production* in November. Acting sustainably and responsibly gives Avalon a strategic advantage, aligning the Company with its stakeholders' values, including cleantech companies who audit their supply chains to ensure that their raw materials are sourced from environmentally and socially responsible operators. Avalon was recognized several times in 2017 for our commitment to industry-leading best practices in our operations.

It has taken much longer than anticipated for the equity markets to recognize Avalon as an advanced lithium developer, and our share price has yet to reflect the underlying value of our Separation Rapids asset. I am confident that this will change in 2018, as lithium supplies become increasingly constrained and near-term development opportunities such as Separation Rapids attract more attention from downstream consumers with few alternatives to secure new supply.

Finally, I thank you, our shareholders, for your continued support, patience and loyalty through this lengthy transition period in our business. With an experienced management team and talented support staff, we remain well-positioned to achieve our goal of becoming a profitable producer of technology metals. I am looking forward to an exciting 2018!

On behalf of the Board of Directors,



Donald S. Bubar
President and Chief Executive Officer

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CORPORATE INFORMATION

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