ASX ANNOUNCEMENT

18 August 2022

ChemX Gives Green Light to HPA Pilot Plant After Outstanding PFS Result

Highlights

Pre-feasibility Study

- HiPurA® High Purity Alumina (HPA) Pre-Feasibility Study (PFS) confirms Flow Sheet Design with no fatal flaws identified
- PFS highlights the low Capex intensity of the technology
  - Construction cost A$2.5 million for 50tpa HPA Pilot Plant
- Significantly lower Capital Costs than incumbent HPA technologies
- HiPurA® Vendor Stage 2 Performance Payment to Proceed

HiPurA® HPA Micro-plant

- HPA Micro-plant successfully commissioned
- Initial HPA material from micro-plant production to be analysed for purity
- Initial Mass and Energy Balances completed

ChemX Materials Ltd (**ASX:CMX**) (**ChemX** or **the Company**), a materials technology company focused on the electrification and decarbonisation markets, is pleased to confirm that it will build a High Purity Alumina (HPA) Pilot Plant after a Pre-feasibility Study (PFS) confirmed the viability of the company's proprietary HiPurA® technology.

The PFS, conducted by engineering firm Primero Group, indicates the 50 tonne per annum (tpa) pilot plant requires capital expenditure of A$2.5 million with a contingency of A$0.41 million. Using data obtained from the Company's successful HPA micro-plant commissioning phase and subsequent operation, the PFS incorporated several work streams and equipment modifications which have led to the design of an appropriately sized pilot plant.

<u>The aims of the HiPurA® HPA pilot plant are to:</u>

- Optimise operating conditions to reduce the scale-up risks associated with a commercial plant
- Produce the larger quantities of HPA needed for the final stages of qualification
- Continue with development of additional materials that the HiPurA® technology can produce

Table 1: Cost breakdown - HiPurA® HPA Pilot Plant CAPEX

ChemX HiPurA® HPA Pilot Plant CAPEX		Total (A$M)
Direct Costs	Mechanical Equipment	$ 1.549
	Civil	$ 0.007
	Structural Steel	$ 0.119
	Platework	$ 0.053
	Piping	$ 0.180
	Electrical	$ 0.194
	Instrumentation & Control	$ 0.053
	Freight	$ 0.067
	SUBTOTAL DIRECT COSTS	**$ 2.222**
Indirect Costs	EPCM	$ 0.222
	Contractor Off-Site Management	$ 0.003
	Commissioning	$ 0.009
	First Fills	$ 0.045
	SUBTOTAL INDIRECT COSTS	**$ 0.279**
TOTAL PLANT COST		**$ 2.501**
	Contingency Allowance (14%)	$ 0.409
TOTAL WITH CONTINGENCY		**$ 2.910**

High Purity Alumina (HPA) is a high value critical material used in lithium-ion batteries to manufacture ceramic separators, which provide increased thermal insulation for improved safety and charging. HPA is also an irreplaceable ingredient in the production of synthetic sapphire, which is used in LEDs, semiconductors, and optical lenses.

ChemX completed the commissioning of the individual stages of its HPA micro-plant prior to the conclusion of the 2nd Quarter 2022. The micro-plant shall continue to be utilised, alongside the development of the pilot plant.

<u>The key objectives of the micro-plant are:</u>

- Optimisation of process and controls under continuous operation
- Achieving a 99.99% (4N) Purity HPA on a consistent basis
- Production of HPA samples to be used for customer qualification testing
- Research and development of additional products for assessment including achieving a targeted 99.999% (5N) Purity and aluminium sulphate / aluminium nitrate for lithium battery cathodes.

Following successful production of HPA through the continuous operation of the HiPurA® micro-plant the Company has submitted samples to an accredited laboratory for assaying. Chemical analysis will provide ChemX with the ability to specifically calibrate the final purification step to produce 4N HPA,

capable of being used as a coating on the separator between the cathode and anode of lithium-ion batteries.

Upon receipt of assays, any adjustments to the purification steps that may be required will take place at the Company's recently secured larger facility in Perth, Western Australia. The industrial facility will house both the HiPurA® HPA micro-plant and the HiPurA® HPA pilot plant, providing significant operational synergies. The purified solution from the pilot plant will be used as a feed to the micro-plant which will be repurposed to produce a range of 5N, or higher, products. Samples as produced from the Company's HiPurA® HPA micro-plant are shown below, in Figure 1.

***Figure 1**: Samples from the micro-plant taken at different stages of the process, with final HPA top right*

Achieving production of HPA through the micro-plant represents a significant competitive step forward for ChemX. The Company intends to produce HPA samples for qualification with separator manufactures and sapphire growers, with a view to securing offtake agreements. As a result, the company will now begin its formal marketing campaign with interested parties.

The HiPurA® process is significantly different to the currently used Alkoxide method and other known technologies that produce HPA, including those that remain under development. Importantly, the HiPurA® process is independent of any given mining operation, thus avoiding any mine development timeframes

or associated operational risks. Production facilities can be positioned in multiple locations close to prospective end users, with the HiPurA® process utilising a relatively low cost and globally plentiful feedstock.

The HiPurA® HPA technology is scalable, lower cost, independent of mine production, modular and able to produce several high purity products to meet the requirements of multiple markets. Due to the unique nature of the technology, a Patent Application was lodged on 7th July 2022 to globally protect the IP that is 100% owned by ChemX.

ChemX Materials Chief Operating Officer, Peter Lee, commented: "The successful commissioning and subsequent operation of the HiPurA® HPA micro-plant provided further operational data for input into the pilot plant pre-feasibility study.

The PFS has verified the HiPurA® technology and our approach, with validation of flow sheet design and no fatal flaws identified. The lessons learnt, and those that will be learned, from continued operation of the micro-plant will significantly reduce the scale up risks of developing the pilot and commercial plants."

ChemX Materials Managing Director, David Leavy, commented: "The company has secured a suitable industrial premises, that will accommodate both micro and pilot plants, from September 2022. We look forward to moving into our new facility, and the construction and operation of the HiPurA® HPA pilot plant in Perth, Western Australia. ChemX is committed to the continued development and optimisation of the HiPurA® technology, as well as the production of HPA to allow for customer testing and qualification.."

2nd Stage Milestone Payment

The successful HPA PFS result meets the milestone for the second stage payment of 2,000,000 fully paid securities in the Company to the vendors of the HiPurA® technology. ChemX will issue these securities on 31 August 2022.

This announcement has been authorised for release by the Board.

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About ChemX Materials (ASX: CMX)

ChemX is a materials technology company focused on providing critical materials required for electrification and decarbonisation. The Company's vision is to support the energy transition with materials and technology that provide real solutions to lowering carbon emissions.

Developed in-house, ChemX's HiPurA® Process is a unique technology that is capable of producing high purity alumina (HPA) and high purity aluminium cathode precursor salts for lithium-ion batteries. Initial testwork has indicated that the process is low cost and low in energy consumption, compared to alternative technologies. A key competitive advantage is that the HiPurA® process is not tied to mine production, with the feedstock being a widely available chemical allowing production to be achieved rapidly.

The Company is developing its HiPurA® HPA Project in Perth, Western Australia.

The South Australian Eyre Peninsula projects include the Kimba Kaolin-REE Project and the Jamieson Tank Manganese Project.

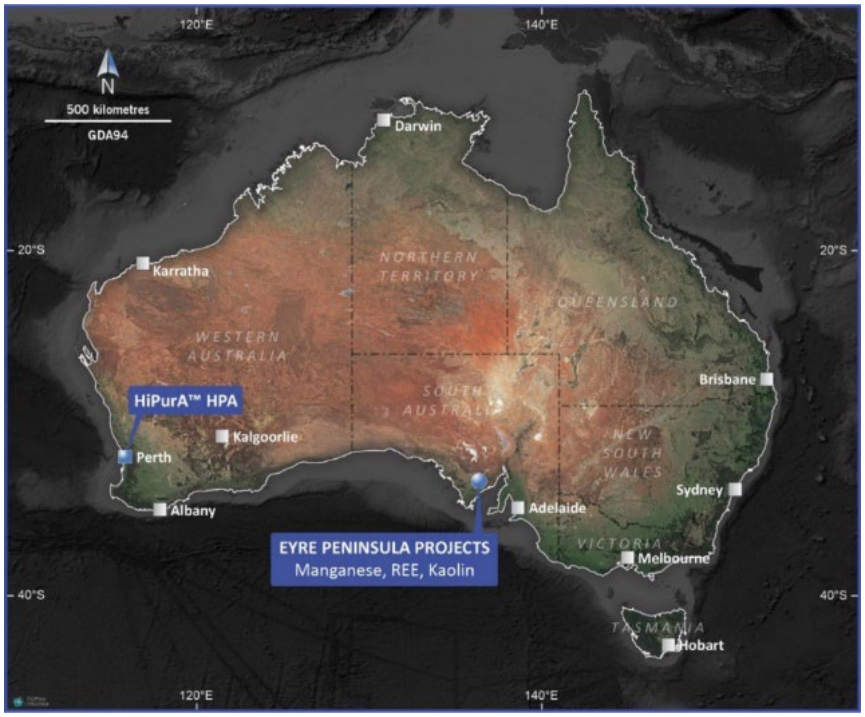

Figure 2 - *ChemX Project Locations*

www.chemxmaterials.com.au

LinkedIn

ChemX Video – What is HPA?

Directors

Kristie Young	**Non-Executive Chair**
David Leavy	**Managing Director**
Stephen Strubel	**Executive Director**
Warrick Hazeldine	**Non-Executive Director**