SYDNEY, Australia. January 18, 2021. Sicona Battery Technologies Pty Ltd (“Sicona”), a Sydney based battery technology company, announced today that it has signed a non-binding Memorandum of Understanding (MOU) with a leading global chemicals group. This company, headquartered outside of China but with global manufacturing centres, wishes to remain unnamed at present.

Within a lithium-ion battery the binder only occupies a small percentage of the anode-electrode (approximately 2-4% by weight), gluing together the active material and conductive agent with the copper current collector.

The huge volumetric change of silicon upon charging & discharging (> 300%) is a major impediment to the deployment of silicon anodes. Current single-function binders used in graphite-based anodes are not good enough to address the challenges posed by silicon containing anodes and better (but still affordable) binder alternatives are required by lithium-ion battery producers as the industry looks towards large scale adoption of next generation silicon containing anodes.

Compared to current single-function polymer binders, Sicona’s multi-functional “LSCR” polymer binder has synergistic advantages. It has a three-dimensional network structure, improved conductivity, good mechanical stretchability, and spontaneous self-healing capabilities. Within a silicon containing anode Sicona’s binder provides good mechanical support but also buffers the strain caused by silicon’s volume change and improves the conductivity of silicon, leading to improved cycle life and cycling efficiency.

Memorandum of Understanding (‘MOU’)
Under the terms of the non-binding MOU the parties have agreed to further developing Sicona’s proprietary multifunctional polymer “LSCR” binder.
Further work to be done will include external validation testwork in full lithium-ion battery cells using commercially available silicon containing anode materials (including SiO-graphite blended anode materials) as well as Sicona’s proprietary silicon-composite anode materials.

Subject to the successful testwork program and supply chain and cost structure feasibility study the parties intend to use commercially reasonable efforts to discuss in good faith the collaborative development of the Sicona LSCR Binder.

Sicona founder and CEO, Christiaan Jordaan commented “We are excited to be able to leverage our partners extensive technical knowledge regarding the production of polymers, polymer precursors, supply chains and large-scale global production of chemicals and associated products as we proceed to develop our anode binder product.

Our lab work to date has clearly shown the ability of our proprietary binder to increase the cycle life of silicon-containing anodes and in conjunction with our partner we will now analyse and evaluate the supply sustainability and cost structure of our binder at full commercial scale.”

About Sicona

Sicona Battery Technologies (Sicona) is a Sydney based battery technology company.

Sicona develops next generation battery technology used in the anodes (negative electrodes) of lithium-ion (“Li-ion”) batteries that enable electric-mobility and storage of renewable energy. Sicona is commercialising innovative silicon-composite battery anode and binder technology, developed and perfected over the last ten years at the Australian Institute for Innovative Materials (AIIM). Sicona's silicon-composite anodes deliver up to 233% higher capacity than conventional “graphite-only” batteries and its anode materials can deliver more than 50% higher cell energy density than current Li-ion batteries.

Sicona uses off the shelf equipment in a highly scalable and efficient manufacturing process to produce its active anode materials and polymer binders.

Sicona intends to licence and/or produce and sell high performance active anode materials into the Li-ion battery market through a focused partnership approach.

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