Zentek Announces Development of Graphene-Wrapped Silicon Anodes

written by Raj Shah | February 18, 2022

February 18, 2022 (Source) – **Zentek Ltd.** ("**ZEN**" or the "**Company**") (TSXV:ZEN)(OTC PINK:ZENYF), a Canadian IP development and commercialization company focused on next-gen healthcare solutions, announces today that it has filed a provisional patent with the United States Patent and Trademark Office on a novel Graphene-Wrapped Silicon Anode material developed by Prof. Michael Pope, an Associate Professor in the Department of Chemical Engineering at the University of Waterloo along with Dr. Marianna Uceda and Dr. Zimin She. A paper on this technology has been published in ACS Applied Materials & Interfaces on February 17th and can be found here.

Zentek CEO Greg Fenton commented: "We are very pleased to support Dr. Pope and his group at the University of Waterloo. Their innovation has the potential to improve the current lithium-ion battery by upgrading graphite to this graphene-wrapped silicon anode. Not only were the researchers able to demonstrate good performance with laboratory-scale half-cells, the performance was also validated with commercial lithium iron phosphate cathodes suggesting they could be a drop-in solution for enhancing already available battery technologies. We look forward to continuing our support of their research and development to potentially bring this technology to market. The company has begun discussions with a potential industry partner."

Key characteristics of graphene-wrapped silicon anode include:

- At practical mass loading of 2.5mg/cm^2, the electrode achieved 2.04 mAh/cm^2 and retained 79% of this capacity after 200 cycles against a lithium half-cell
- When paired with a commercial lithium iron phosphate cathode, the fully assembled battery retained 93.3% of its initial capacity over 100 cycles
- Works with current lithium-ion batteries as a replacement for graphite
- Requires further development and optimization work before it can be commercialized

Dr. Pope added: “Silicon is poised to replace graphite as the dominant anode material in current Li-ion and future, next-generation batteries. However, silicon expands by over 300% when the battery is charged and discharged, which has limited commercialization efforts. Our lab, through ongoing efforts supported by Zentek and the Natural Sciences and Engineering Research Council of Canada, has developed an improved method to enable high capacity, high cycle-life anodes by encapsulating them in a protective, crumpled graphene shell using a simple spray drying approach often used to generate much of the world’s dry powders. We look forward to our continued collaboration with Zentek which we hope will soon lead to a dominant, commercial anode technology.”

Zentek, along with grants from the Natural Sciences and Engineering Research Council of Canada (NSERC), has been funding the research and development of this novel graphene-wrapped silicon anode.

About Zentek Ltd.

Zentek is a nanotechnology company developing and commercializing next-gen healthcare solutions in the areas of prevention, detection and treatment. Zentek is currently focused

on commercializing **ZEN**Guard™, a patent-pending coating shown to have 99% antimicrobial activity, including against COVID-19, and the potential to use similar compounds as products against infectious diseases. The company also has an exclusive agreement to be the global commercializing partner for a newly developed aptamer-based rapid pathogen detection technology.

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To find out more about Zentek Ltd., please visit our website at www.Zentek.com. A copy of this news release and all material documents in respect of the Company may be obtained on ZEN's SEDAR profile at https://sedar.com

Forward-Looking Statements

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SOURCE: Zentek Ltd.