ZEN Graphene Solutions Provides Update on Cytotoxicity Testing of Graphene-Based Compound and Effectiveness of Graphene-Based Coating

29.12.2020 | Newsfile

Guelph, December 29, 2020 - ZEN Graphene Solutions Ltd. ("ZEN" or the "Company") (TSXV: ZEN) (OTC: ZENYF) is pleased to announce the following:

- Preliminary cytotoxicity results of its graphene-based antibiotic, antiviral and antifungal compound show no apparent negative impacts in animals dosed with a concentration many thousands of times higher than that found to be effective in testing recently completed at Mount Sinai hospital. Phase 2 testing results expected in late-January
- At 108 days, testing results of polypropylene mask material treated with ZEN's coating demonstrated 98% effectivity against COVID-19
- ZEN's Graphene-based coating achieved greater than 99% efficacy against both gram-positive and gram-negative bacteria at McMaster University
- A new test program at Mount Sinai with Dr. Tony Mazzulli will focus on the efficacy of ZEN's graphene-based compound on multi-drug resistant organisms

Greg Fenton, ZEN CEO, commented: "We continue to receive extremely encouraging results related to our graphene-based biocidal solutions. The most significant of these being that preliminary cytotoxicity results for ZEN's potential antibiotic, antiviral, and antifungal compound suggest that it could be a potential medical breakthrough treatment for human-contracted pathogens. Additionally, the most recent results confirm that our graphene-based coating applied to mask material remains highly effective against COVID-19 after more than three months. Consistent with our recently announced graphene-based compound for treating human-contracted pathogens, we have also confirmed that it is greater than 99% effective against gram-positive and gram-negative bacteria. This demonstrates that our coating on masks and other personal protective equipment has potential broad biocidal properties and applications that we believe will go far beyond protection against COVID-19."

"We continue to make strides that could have far-reaching and extremely positive impacts on society. What started as a breakthrough in our fight against the current global pandemic has quickly evolved into a potential broad-spectrum solution for global infectious disease management. This is an area where society allocates a staggering amount of resources globally, and our solutions have the potential to play a key role."

Graphene-Based Compound Cytotoxicity Results

The company successfully completed Phase 1 of the range finding study where animals were first dosed at 1000 mg/kg of graphene compound with no apparent negative impacts. Based on the initial results, a second set of animals was given a dose of 2000 mg/kg. All animals at both dose levels survived and appeared normal during the post observation period. Additionally, there were no gross findings at necropsy for these animals. For reference, the Minimum Inhibitory Concentration of ZEN's graphene compound that proved to be 99.9% effective against both gram-positive and gram-negative bacteria was many thousand times lower than the doses in this Phase 1 study. The company is extremely pleased with these initial results as they represent a key milestone towards developing a potential medical breakthrough treatment for human-contracted pathogens and the practice of family medicine, among many other areas. Phase 2 cytotoxicity testing will begin in early 2021, with repeat dose testing completed by late-January. Another important step for the company will be to focus on multi-drug resistant (MDR) organisms. These are a challenge for current treatment methods and are expected to become an even more significant problem in the years ahead. As a result, we will be starting a new testing program at Mount Sinai with Dr. Tony Mazzulli focusing on the efficacy of ZEN's biocidal compound on MDR organisms and will provide updates in due course.

Graphene-Based Coating on Mask Material and Viricidal Effectiveness Over Time

The company has received results from the latest round of testing of its proprietary, graphene-based coating formulation at Western University's ImPaKT facility Biosafety Level 3 laboratory in London, Ontario. Testing per the same protocol as earlier testing in accordance with ISO 18184:2019 (Textiles - Determination of Antiviral Activity of Textile Products) demonstrated that polypropylene mask material, treated with ZEN's coating was still 98% effective against COVID-19 at 108 days. While more testing needs to be completed to better understand changes in efficacy over time, the company is extremely encouraged by these results.

Graphene-Based Coating and Antibacterial Effectiveness

The company also received test results for its proprietary, graphene-based coating formulation at McMaster University's Centre for Microbial Chemical Biology in Hamilton, Ontario. Testing was performed in accordance with ISO 20743:2013 (Textiles - Determination of Antibacterial Activity of Textile Products) with typical polypropylene mask material coated with ZEN's viricidal coating and exposed to 20 ml of both Escherichia coli and Staphylococcus aureus (a gram-negative and gram-positive strain of bacteria). Each test had three repeats and three controls to ensure accurate baselines. ZEN's novel coating achieved greater than 99% efficacy against both gram-positive and gram-negative bacteria, confirming its antibacterial properties in addition to previous proven viricidal properties.

Dr. Francis Dube has reviewed and approved the information in this news release.

Disclaimer: The Company is not making any express or implied claims that its product can eliminate, cure, or contain the COVID-19 virus (or SARS-2 Coronavirus) at this time

About ZEN Graphene Solutions Ltd.

ZEN is a graphene technology solutions company with a focus on the development of graphene-based nanomaterial products and applications. The unique Albany Graphite Project provides the company with a potential competitive advantage in the graphene market. Labs in Japan, UK, Israel, USA, and Canada have independently demonstrated that ZEN's Albany Pure™ Graphite is an ideal precursor material that easily converts (exfoliates) to graphene, using a variety of mechanical, chemical, and electrochemical methods. ZEN is focused on commercializing a patent pending graphene-based coating with 99% viricidal activity against COVID-19.

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To find out more about ZEN Graphene Solutions Ltd., please visit our website at www.ZENGraphene.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 www.sedar.ca.

Forward-Looking Statements

This news release contains forward-looking statements. Since forward-looking statements address future events and conditions, by their very nature they involve inherent risks and uncertainties. Although ZEN believes that the assumptions and factors used in preparing the forward-looking information in this news release are reasonable, undue reliance should not be placed on such information, which only applies as of the date of this news release, and no assurance can be given that such events will occur in the disclosed time frames or at all. ZEN disclaims any intention or obligation to update or revise any forward-looking information, whether as a result of new information, future events or otherwise, other than as required by law. Neither the TSX Venture Exchange nor its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release.