

# **ZEN Graphene's Dr Francis Dube on the ZENGuard™ enhanced surgical masks and the development of a new fuel additive**

In a recent InvestorIntel interview, Tracy Weslosky speaks with Dr. Francis Dube, Executive Chairman of ZEN Graphene Solutions Ltd. (TSXV: ZEN) about ZEN's recent milestones including the successful inhalation safety testing of the ZENGuard™ enhanced surgical masks and the development of a new fuel additive.

In this InvestorIntel interview, which may also be viewed on YouTube (click here to subscribe to the InvestorIntel Channel), Dr. Dube starts by explaining the impact of the ZENGuard™ enhanced surgical masks and submission to Health Canada news release. He discusses how their market is with the medical industry and how this demand will only grow.

Equally as interesting to host Tracy was the potential to attract ESG funds with the new fuel additive announcement. Francis explains that ZEN has developed a stable diesel fuel additive, which increased the performance of diesel fuel by up to 10% in initial testing. He states that "If we can make diesel fuel 10-20% better we are going to have a significant impact on the amount of emissions...we think we can make a difference from an environmental standpoint."

To watch the full interview, click here

**About ZEN Graphene Solutions Ltd.**

ZEN is a next-gen nanomaterials technology company developing and commercializing technologies that help protect people and the environment. ZEN is currently focused on commercializing **ZEN Guard™**, a patent pending graphene-based coating with 99% antimicrobial activity, including against COVID-19, and the potential to use similar graphene compounds as pharmaceutical products against infectious diseases. The company has a significant R&D pipeline with an interest in monomers, polymers, metal alloys, corrosion coatings, biosensors along with the production of graphene oxide and graphene quantum dots. Additionally, the company owns the unique Albany Graphite Project which 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.

To learn more about ZEN Graphene Solutions Ltd., [click here](#)

**Disclaimer:** ZEN Graphene Solutions Ltd. is an advertorial member of InvestorIntel Corp.

This interview, which was produced by InvestorIntel Corp. (IIC) does not contain, nor does it purport to contain, a summary of all the material information concerning the "Company" being interviewed. IIC offers no representations or warranties that any of the information contained in this interview is accurate or complete.

This presentation may contain "forward-looking statements" within the meaning of applicable Canadian securities legislation. Forward-looking statements are based on the opinions and assumptions of management of the Company as of the date made. They are inherently susceptible to uncertainty and other factors that could cause actual events/results to

differ materially from these forward-looking statements. Additional risks and uncertainties, including those that the Company does not know about now or that it currently deems immaterial, may also adversely affect the Company's business or any investment therein.

Any projections given are principally intended for use as objectives and are not intended, and should not be taken, as assurances that the projected results will be obtained by the Company. The assumptions used may not prove to be accurate and a potential decline in the Company's financial condition or results of operations may negatively impact the value of its securities. Prospective investors are urged to review the Company's profile on [www.Sedar.com](http://www.Sedar.com) and to carry out independent investigations in order to determine their interest in investing in the Company.

If you have any questions surrounding the content of this interview, please email [info@investorintel.com](mailto:info@investorintel.com).

---

## **ZEN Graphene Solutions moves towards commercialization of virus-killing mask**

**ZEN is collaborating with partners to develop virucidal face masks and PPE**

Back in May 2020 InvestorIntel wrote about the very exciting development of masks and other personal protective equipment (PPE) that not only protect the wearer, **but actually kill viruses on contact**. to help . Since then the development of a "graphene virucidal ink face mask" and PPE has been

progressing nicely in the fight against COVID-19.

In late July 2020 ZEN Graphene Solutions Ltd. (TSXV: ZEN) (“ZEN”) reported that research teams at a number of personal protective equipment (PPE) manufacturers are collaborating with ZEN to incorporate ZEN’s virus-killing graphene ink into commercial products, including masks, gloves, gowns and other clothing. This follows ZEN’s promising testing results from the University of Western Ontario’s ImPaKT Facility, biosafety Level 3 lab.

ZEN has synthesized a ‘silver nanoparticles functionalized graphene oxide ink’ that has been documented by previous researchers to kill earlier versions of coronavirus. Silver is well known to be a potential virucidal agent.



***Photo: iStock***

In July ZEN reported in a news release that the company “continues to optimize its proprietary formulation for dosage and delivery mechanism for highest antiviral impact. **The next phase of testing is currently underway** at the ImPaKT Facility and includes a preferred mask fabric, from one of our collaborators, coated in ZEN’s virucidal ink exposed to and tested against the COVID-19 virus.”

Dr. Francis Dubé, CEO of ZEN, commented that “Based on results so far and our discussions with the team at Western, we are quickly moving to integrate our material into commercial products with partners who wish to increase the level of COVID-19 protection their products currently offer.”

Given the world needs at least 3.5b N95 face masks to fight COVID-19, the potential demand for ZEN’s graphene based virucidal ink face mask could be enormous. If the new virucidal mask captured just 10% market share of the 3.5 billion masks needed that would mean manufacturing and selling

~350 million masks. Or even if just made mandatory for health care workers globally, the market would be very large, as there is an estimated 59 million health care workers worldwide. Each health care worker would need a number of masks per year. The revenue opportunities could be enormous if ZEN's graphene based virucidal ink is licensed on a per unit basis. Added to this would be the potential for use in other PPE. For a small company such as ZEN the potential revenue upside could be highly significant.

Tests are still underway to improve and prove the effectiveness of the virucidal masks, but CEO Dubé's public comments about integrating ZEN's material into commercial products with partners indicates a positive outcome is looking increasingly possible.

Last week ZEN announced that it will "report shortly on significant progress being made in multiple programs, one of which has resulted in the preparation of a patent filing that is central to ZEN's business plan." Zen also announced receiving **significant funding grants**: "two NSERC Alliance COVID-19 project grants, a Mitacs Elevate Postdoctoral Fellowship grant, and two Mitacs Accelerate grants for a total of \$355,000 to its university collaborators," which increased ZEN's total research and development budget for the next 12 months to over \$1.4M.

### **Graphene's potential**

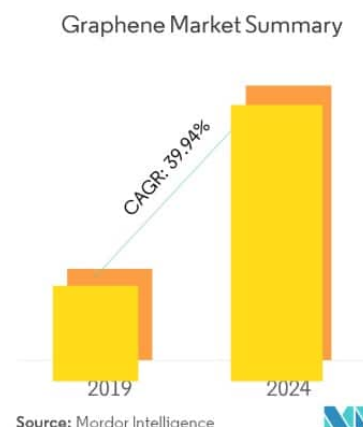
Graphene is a new wonder material with incredible potential to be commercialized in a huge number of products. These are as diverse as graphene coatings that can greatly improve corrosion resistance, increase strength, reduce friction and can be hydrophobic reducing ice formation (aerospace and aircraft industries). As a diesel/jet fuel additive it can improve fuel economy and reduces greenhouse emissions. It is also useful in electromagnetic shielding and electrostatic dissipation, desalinization membranes and low-energy

dehumidification, heavy metal scavenging and removing industrial contamination, photovoltaics, displays & biomedical applications using graphene quantum dots, virucidal inks, as a material enhancement (clothes, tire strengthener, concrete additive), hydrogen storage and production, and advanced batteries. Samsung is developing an advanced graphene phone battery. Graphene is super lightweight and also strengthens aluminum, rubber, plastics and other materials, making its list of applications almost endless.

## The graphene market is forecast to grow at a 39-45% CAGR this decade

### A high value growth industry over the next decade

- The 2019 Canaccord UK\* research report estimates worldwide graphene sales are likely to take off over the next few years reaching \$4.8B USD by 2030
- Graphene's commercial potential lies in its ability to enhance and improve existing materials at a very low load factor making it a viable solution in the cost/benefit calculation for commercial applications
- Markets in which graphene is already competing with other additives amount to more than \$150B in value
- Canaccord's central case implies a Compound Annual Growth Rate (CAGR) of 45% in revenue over a decade 2030E from current levels



Source: Company presentation

### Closing remarks

In addition to its advanced application projects, **ZEN owns a graphite mine** and has commenced small scale graphene production from their facility in Canada, and has numerous other potential uses to commercialize their graphene product. At the current market cap of just C\$31m the stock is not yet pricing in any chance of significant success in the virucidal mask and PPE market, or in the larger graphene market. This is good news for investors looking for underappreciated and early stage stocks. If ZEN is able to successfully commercialize its

viricidal mask/PPE or other graphene products, it would be a game-changer.