

Scaling up graphene production to meet forecast demand, ZEN Graphene shares double since April

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In recent years we have heard that graphene can be the next super material due to its immense strength and electrical conduction properties. The next step is for large scale, low cost, graphene production to occur so as to supply the market demand. It looks like graphene's time has now come.

A 2019 Canaccord UK research report estimated worldwide graphene sales were likely to take off over the next few years reaching US\$4.8 billion by 2030, growing at a [CAGR of 45%](#). That is a huge forecast demand increase, effectively forecasting in the next 2 years graphene demand will double, then double again, and so on.

Graphene – Properties, Facts, and Applications



[Source](#)

One company is currently scaling up their graphene production from their new facility in Canada to meet what should be extremely strong demand this decade. That company is [ZEN Graphene Solutions Ltd.](#) (TSXV: ZEN) ("ZEN").

ZEN is an emerging graphene technology solutions company with a focus on the development of graphene-based nanomaterial products and applications. ZEN sources its graphite to make graphene from its 'unique' Albany Graphite Project. I say unique because

independent labs in Japan, UK, Israel, USA and Canada have independently demonstrated that ZEN's Albany Pure™ Graphite is an ideal precursor material which easily converts (exfoliates) to graphene using a variety of methods.

Some of the numerous applications for ZEN's graphene include:

- **Aerospace and aircraft** – Graphene coatings that can greatly improve corrosion resistance, reduce friction and can be hydrophobic reducing ice formation. Graphene composites also help to increase strength and flexibility while potentially reducing overall weight.
- **Fuel Additive** – Graphene oxide in diesel/jet fuel improves fuel economy and reduces greenhouse emissions.
- **Electromagnetic shielding** and electrostatic dissipation.
- **Desalinization membranes** and low-energy dehumidification.
- **Heavy metal scavenging** –Graphene quantum dot/nanocellulose membranes are a recyclable material capable of removing industrial contamination.
- **Photovoltaics, displays, biomedical applications** using graphene quantum dots. [Graphene based virucidal inks](#) embedded in protective clothing to fight COVID-19 are another useful application right now.
- **Material enhancement** using graphene. Graphene is also useful to boost tires strength and performance as well as a concrete additive to boost performance. Graphene can also be used to strengthen clothing for military applications. Graphene also strengthens aluminum, rubber, plastics and other materials.
- **Hydrogen storage and production** – Graphene is an ideal catalyst for water splitting (10x more efficient than platinum catalysts) and can store hydrogen in a solid state.
- **Advanced batteries** –Anode energy densities are 1500mAh/g

in graphene-enhanced aerogels and 840mAh/g with reduced graphene oxide. Graphene has greater conductivity and improves cold weather performance. Samsung is developing an [advanced graphene phone battery](#).

ZEN Graphene Solutions Guelph, Ontario facility is scaling up graphene production in 2020

The Guelph graphene facility opened in March 2020 and is now scaling up graphene production to sell to the many potential buyers as discussed above.



[Source](#)

In addition to ZEN's Guelph facility ramping up production, ZEN [announced](#) in July 2020 a new partnership with Evercloak and NGen for a 'Graphene in Cleantech Manufacturing Project'. The announcement states:

"The project entitled "Advancing Large-Scale Graphene and Thin-Film Membrane Manufacturing" will support the scale up of graphene oxide (GO) production by ZEN to supply GO to Evercloak for their scale up and optimizing activities."

For ZEN this is another significant endorsement and step forward along the pathway of commercializing their graphene. Evercloak is commercializing a manufacturing platform for producing continuous, large-area, monolayers of exfoliated 2D nanomaterials, including graphene, graphene oxide, molybdenum disulfide, and carbon nanotubes. These films are increasingly used for a wide range of applications such as energy storage, smart packaging, electronic devices, corrosion inhibitors, and membranes. Evercloak's initial focus is on manufacturing graphene-based membranes for dehumidification to significantly

reduce the energy use and associated greenhouse gas related with building cooling.

ZEN's CEO Francis Dubé [commented](#): "ZEN is pleased to support Canadian graphene-based innovations and Evercloak is a wonderful example of what can be achieved with nanomaterials and Canadian entrepreneurship. NGen supports the accelerated development of high potential technologies such as our graphene collaboration. We look forward to helping Evercloak bring breakthrough technology to everyday life."

Closing remarks

Success in the manufacturing sector is about collaboration with your supply chain. ZEN continues to win interest in their graphene products and continues to develop a supply chain, on this latest occasion with Evercloak.

A recent [C\\$2 million capital raise](#) means ZEN has cash to accelerate their near term expansion activities, which will include funds for the Albany Graphite Project, further graphene research, graphene production scale up, COVID-19 initiatives, and other graphene applications development. Also the recent [engagement of Hybrid Financial](#) to help market ZEN should boost the number of eyes on the stock.

Combine the above with continuing commercial success selling graphene products and 2020 should see a successful year for ZEN. Late 2020 and 2021 should start to see revenues coming in and a lot more interest in both graphene and ZEN Graphene Solutions. Despite the stock price more than doubling since April 2020, the stock still looks reasonably priced trading on a market cap of C\$57 million.



ZEN Graphene's Dr. Dube on making graphene, the 'new wonder material' on an industrial scale

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In an InvestorIntel interview during [PDAC](#) last week, Tracy Weslosky secures an interview update with Chairman, CEO and Director Dr. Francis Dube on [ZEN Graphene Solutions Ltd.](#) (TSXV: ZEN), an emerging graphene technology solutions company with a focus on the development of graphene-based nanomaterial products and applications.

Dr. Dube started, "Graphene is a new wonder material. It is 200 times stronger than steel, conducts heat 10 times more than copper. Conducts electricity 1000 times better than copper." He continued by saying that graphene can be produced by breaking graphite in layers or by a process called Carbon Vapor Deposition (CVD). The CVD process is very costly. With the graphite deposit at the Albany project, ZEN Graphene can make graphene on an industrial scale with industrial pricing. ZEN Graphene has also launched a webstore, first in Canada, to sell its Albany Pure™ graphene products. He also provided an update on the grand opening of a facility at Guelph University. The facility was opened on March 3, 2020, and will be used for graphene materials production and development.

To access the complete interview, [click here](#)

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Don Bubar on the Zenyatta graphene advantage

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“That is the unique property. Usually graphite forms through metamorphism and forms very large crystals or flakes. This formed very fine crystals. These fine crystals are now proving to be very advantageous for making the very high-end monolayer type of graphene product.” States Don Bubar, CEO and Director of [Zenyatta Ventures Ltd.](#) (TSXV: ZEN), in an interview with InvestorIntel Corp. CEO Tracy Weslosky.

Tracy Weslosky: Don I noticed this morning that our story, They Are Back, about Zenyatta is trending number three for most read on our site. You just recently became the co-CEO after joining the board of directors. Can you tell me what the catalyst was for you joining this team?

Don Bubar: I have been involved with Zenyatta peripherally right from the start when the Albany graphite deposit was first discovered. I recognized then that this was something very special. Indeed that is what has proven to be the case now. I knew Aubrey Eveleigh, the former CEO well and helped him understand what the possibilities with this graphite deposit and acted as an advisor, but also was an investor and a shareholder and still am in the company because of my belief that this unique resource will prove to have great value for the

shareholders in the long-term.

Tracy Weslosky: We have interviewed professionals over the years. Your background is a geo. Can you tell us, our audience, who might not be familiar with Zenyatta Ventures about the uniqueness of Zenyatta's graphite?

Don Bubar: It is a very special deposit. Every geologists that has looked for massive sulfide deposits has drilled graphite and been disappointed because of course it is a conductive mineral and you are looking for metallic minerals with the copper and zinc. This was an example of an exploration program of serendipity where they were looking for copper-nickel massive sulfide deposits by drilling airborne EM conductors and hit graphite. Normally that is like, oh darn, missed it on this one. This one was recognized by Aubrey early on, well, that is not your typical graphite. This is very funny looking graphite. We should find out more about it. For your viewers, this is the material that comes out of the Albany Graphite Deposit. You can see it has got this very unusual brushed texture and the graphite is the matrix to these fragments of the original wall rock. It was formed by an explosive volcanic event where this fluid that was enriched in CO₂ basically crystallized very quickly and essentially flash-frozen. That is the unique property. Usually graphite forms through metamorphism and forms very large crystals or flakes. This formed very fine crystals. These fine crystals are now proving to be very advantageous for making the very high-end monolayer type of graphene product.

Tracy Weslosky: I was just talking to an investor this morning and he was wearing a t-shirt that said, you had me at graphene. For those of you out there who are looking at your cannabis winnings and looking for new sectors to invest your money, you may want to take a look at graphene. If you can just kind of give us a broad stroke on the competitive advantages of

Zenyatta's graphene please.

Don Bubar: Graphene is not that easy make. It is a nano material where you try to make a particle, a layer that is one atom thick. That involves a process called exfoliation of peeling off the other layers so you can get down to ideally that one layer thick particle, nano particle...to access the complete interview, [click here](#)

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