

Zenyatta Ventures Graphene – Wonder material makes concrete stronger and environmentally friendly

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RESOURCES WIRE | JAY CURRIE | August 21, 2016 10:16 PM ET

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Zenyatta Ventures Ltd Dr. Chahar is holding a sample of Zenyatta graphene in a vial produced in the lab at BGU. Dispersion of graphene is critical for use in material such as concrete.

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By now most investors have heard of the new wonder material called graphene. This single carbon atom super material can be derived from natural graphite. Graphene can truly be called the material of the future as it is 200 times stronger than steel but very

flexible, and it conducts electricity better than any other material. Graphene is so thin that it may be thought of as two-dimensional and can be mixed with all manner of materials to increase strength. Due to these and other properties, it has the potential to literally revolutionize several industries. Thousands of researchers all over the world are working to develop many disruptive and game changing graphene applications. One such revolutionary application is the addition of graphene to cement creating a strong and environmentally “green” concrete.

Zenyatta Ventures Ltd. (TSXV-ZEN) partnership with Ben-Gurion University (‘BGU’) and Larisplast Ltd. is putting the junior mining company on the leading edge of a graphene concrete application because of its purity and crystallinity derived from a rare igneous (or volcanic) style of graphite. The deposit, called Albany, is especially well suited to form graphene from graphite as noted by scientists from BGU and Lakehead University in Thunder Bay.

The timing was perfect for Aubrey Eveleigh, the President and CEO of Zenyatta, who was looking for that leading edge graphene application while Israel’s BGU was looking at the effect of adding graphene to concrete. The main objective of the work is to develop concrete admixtures containing Zenyatta’s natural nano-graphite (graphene) to create improved mechanical properties. Several benefits expected from the development of this enhanced concrete product include the following: allowing a faster curing time; using less concrete during construction but still achieving a superior mechanical performance; inhibiting premature failure; and withstanding large forces, typically produced during earthquakes or explosions.

It also has an important positive environmental impact. The concrete industry produces significant carbon dioxide (CO₂) which is a major greenhouse gas. In 2015, a total of 4.1 billion tonnes of cement was produced globally. Next to water, concrete is the second most widely consumed substance on earth. Recent estimates by the Freedonia Group suggest that “World demand for cement is projected to grow to 5.2 billion metric tons by 2019. In value terms, this means global demand for cement will advance 7 percent per year to \$420 billion by 2019.” Studies have shown that for every tonne of cement that is produced approximately one tonne of CO₂ is released into the atmosphere. Adding graphene will have the potential to reduce the amount of concrete used in construction and consequently cut considerable carbon dioxide emissions.

The test results at BGU using Zenyatta graphene in concrete were extremely encouraging. The development of this new enhanced product could greatly reduce the

amount of concrete used in construction and consequently cut considerable CO₂ emissions.

“It turns out that graphene made from Zenyatta’s Albany graphite deposit disperses exceptionally well. High particle dispersion quality is critical if added to a composite material like concrete” explained Eveleigh.

Eveleigh saw confirmation of the Albany graphite’s suitability for graphene infused concrete when he travelled to Israel as part of the Ontario Trade Mission recently. [Zenyatta has now signed an agreement with Larisplast in Israel to produce graphene infused concrete at a pilot scale with funding from both the Israeli and Ontario governments.](#) Dr. Oren Regev, Professor, Department of Chemical Engineering at BGU, stated “Zenyatta’s purified graphite material was converted to nano-graphite and tested by our R&D team as an additive in construction material. BGU regularly uses various types of commercially available graphite but found Zenyatta’s Albany graphite to separate into layers much easier and with higher yields of graphene nano-particles than any other natural graphite types that we have tried.”

Having just raised three million dollars in June, Zenyatta is continuing its drive towards a pre-feasibility study for a mine in Ontario. With its Israeli graphene concrete venture it is also well on its way to building a customer base for potentially a significant volume and pricing for the mine’s high value graphite production.

As the global movement against pollution intensifies, companies and countries will have to align their supply chains with their environmental philosophies and what the world expects of them. A small Canadian company with ZEN graphene may be part of the solution for a smaller environmental footprint, especially for the construction industry. At the time of writing, Zenyatta was trading at \$0.80 with 61 million shares outstanding for a market cap of approximately \$50 million.