

What is graphene?

Graphene is a single-layer of carbon atoms considered a wonder-material for its high strength, conductivity, and ultra-light weight. Discovered in 2004 by University of Manchester researchers who were awarded the 2010 Nobel Prize in Physics.



ONTARIO, Canada

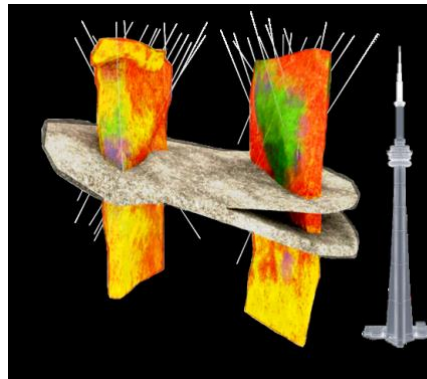
The Albany Advantage

- Fine-grained graphite crystallites require less energy to exfoliate
- Larger d-spacing
- Turbostratic stacking

ZEN is aiming to supply consistent high-quality Albany Pure™ graphene products such as graphene, graphene oxide, reduced graphene oxide, graphene quantum dots, graphene nanoplatelets at a sustainable industrial scale over multiple decades.

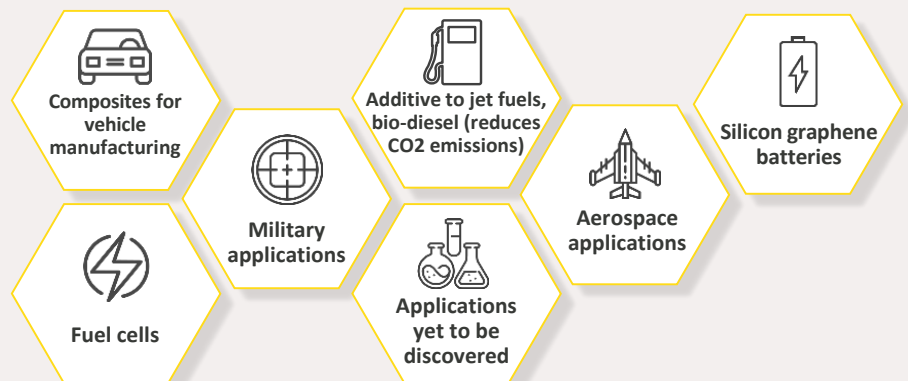
Company Highlights

- An emerging Canadian graphene materials company with a strong competitive advantage
- Solid business plan to rapidly begin graphene production (initially graphene oxide and graphene quantum dots)
- Large supply of graphene precursor material from the globally unique Albany Graphite Deposit in partnership with Constance Lake First Nation
- Albany graphite converts easily to high-value graphene due to its unique characteristics
- Focus on the high-growth graphene market while developing innovative applications



Unlike other graphite deposits, the Albany Graphite Deposit is comprised of two vertical breccia pipes. Both extend to a minimum of 500 metres and are open at depth.

Potential Graphene Markets



Graphene: The future of advanced materials, clean energy & green energy

Graphene Coatings – Graphene surface coatings can greatly improve corrosion resistance, reduce friction and can be hydrophobic reducing ice formation for aerospace applications.

Enhanced Polymers – Potentially reduces overall weight and increases flexibility.

Conductive Polymers – Electromagnetic shielding.

Semi-conductive Polymers - Electrostatic dissipation.

Membranes – Desalinization and low-energy dehumidification.

Fuel Additive – Graphene oxide in diesel/jet fuel improves fuel economy and reduces greenhouse emissions.

Heavy Metal Scavenging – Graphene quantum dot/nanocellulose membranes are a recyclable material capable of removing industrial contamination.

Graphene Quantum Dots – Photovoltaics, displays, biomedical applications and material enhancement.

Enhanced Materials – Graphene in aluminum improves grain refinement without reducing conductivity.

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 than battery grade graphite and improves cold weather performance.

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