A 100% Canadian nanomaterial sciences company focused on graphene production and intellectual property development and acquisition

Graphene sourced from wholly owned, unique microcrystalline Albany graphite deposit located in Ontario, Canada

Well positioned to benefit from the fight against Covid-19, the emerging green economy and to improve existing old-world technologies

Our vertical integration strategy includes utilizing our Albany Pure™ Graphite to produce graphene along with the development of an intellectual property portfolio which put us in a leading position in this industry
MANAGEMENT & BOARD

Strong Management with a focus on business development

Dr. Francis Dubé OD, BSc  CEO & Director
Greg Fenton CFA  CSO & Director
Peter Wood MSc, PEng, PGeo  President
Brian Bosse CFA  CFO, Director
James Jordan BSc, PEng  COO
Dr. Colin van der Kuur BSc, DMin  Head of Research
Monique Manaigre RAc  Sr. Government Relations & Account Manager
Frank Klees  Director
Eric Wallman CPA, CA  Director
Graphene opens the door to the next generation of advanced composite materials that are stronger, ultra-light, more flexible and have higher thermal or electrical conductivity.

Graphene was the first nanomaterial, consisting of a single layer of carbon atoms arranged in a honeycomb lattice.

Graphene can enable new technologies in the fields of Clean Technology, Green Energy, Advanced Materials and Medical – COVID 19
# PROPERTIES OF GRAPHENE

The lightest and thinnest material known

<table>
<thead>
<tr>
<th>PROPERTIES</th>
<th>FACTS</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRENGTH</td>
<td>200x stronger than steel</td>
<td>Composite materials &amp; alloys</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Additive to rubber, plastics, concrete</td>
</tr>
<tr>
<td>FLEXIBILITY</td>
<td>Easily bends and stretches to 120% of its original size</td>
<td>Coatings, additives &amp; wearable technologies</td>
</tr>
<tr>
<td>THERMAL CONDUCTIVITY</td>
<td>10x thermal conductivity of copper</td>
<td>Composite materials, polymers, coatings, concrete, heat sinks/spreaders</td>
</tr>
<tr>
<td>IMPERMEABILITY</td>
<td>Hydrogen atoms cannot penetrate</td>
<td>Filters, water purification, desalination, gas storage, hydrogen generators &amp; storage</td>
</tr>
<tr>
<td>ELECTRICAL CONDUCTIVITY</td>
<td>1000x current capacity of copper</td>
<td>Longer battery life, faster charge times, semiconductors</td>
</tr>
<tr>
<td>ELECTRONIC BEHAVIOUR</td>
<td>Electrons can move at near speed of light</td>
<td>Improved speed / efficiency of computer chips</td>
</tr>
<tr>
<td>OPTICAL PROPERTIES</td>
<td>Monolayer graphene is virtually transparent</td>
<td>Thinner, lighter screens &amp; transparent tensile coatings, energy harvesting</td>
</tr>
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</table>
A BURGEONING INDUSTRY – MASSIVE GROWTH POTENTIAL

The 2019 Canaccord UK research report estimates worldwide graphene sales are likely to take off over the next few years reaching US$4.8B 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 US$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 – Mordor Intelligence
SO, WHY IS ZEN GRAPHENE BETTER?
HERE’S WHAT GLOBAL EXPERTS SAY…

Dr. Yoshihiko Arao, Tokyo Tech

“We have tested many types of natural graphite but found ZEN's graphite material to have better exfoliation performance and produce better graphene particles than the reference material.”

“The optical absorbance of the ZEN graphene dispersion was 2-10 times better than reference samples, which demonstrates concentrated graphene dispersion can be obtained.”

“Albany graphite particles reach a 2 μm particle size while reference flake graphite material could not mill below 3 μm as the graphite tends to agglomerate together.”
MORE EXPERT OPINION…

Dr. Aicheng Chen, Guelph
“Albany graphite meets all the stringent requirements for a high-quality product, encompassing high purity, crystallinity, thermal stability and high surface area.”

Dr. Oren Regev, Ben Gurion
“Albany graphite exfoliated under sonication much easier and with higher yields of graphene nano-particles than any other natural graphite types that we have tried.”

Dr. Alan Dalton, Sussex
“Albany Graphite demonstrated superior homogenous graphene production with high yields thus allowing production of conductive liquid suspensions directly.”
THE SCIENCE IS CLEAR!

Prof. Douglas Adamson and his team at the University of Connecticut published a peer reviewed research article which clearly demonstrates that ZEN’s Albany Graphite exfoliates faster than other commercially available flake graphite test samples. Significantly, this article provides quantitative data that ZEN’s Albany Pure™ Graphite has the highest exfoliation rate constant of the materials tested, confirming an economical advantage in the production of graphene nanomaterials.
**CURRENT COMMERCIAL GRAPHENE PRICING**

Approximate offer prices for various product types (listed in USD per ton)

<table>
<thead>
<tr>
<th>TYPE OF GRAPHENE</th>
<th>PRICE PER TON*</th>
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<tbody>
<tr>
<td>GNP</td>
<td>$30,000</td>
</tr>
<tr>
<td>MLG</td>
<td>$40,000</td>
</tr>
<tr>
<td>FLG</td>
<td>$90,000</td>
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<tr>
<td>vFLG</td>
<td>$750,000</td>
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</table>

*These are base prices for these products. Parameters that could affect prices include flake size (lateral dimensions), degree of functionalization purity and structural (intrinsic) defects - it is not yet clear how the market values these qualities.

Source – The Graphene Council, April 2019
ZEN’S DEPOSIT – DECADES OF PRODUCTION

Total Indicated Cg Resource: 968k tonnes
Total Inferred Cg Resource: 445k tonnes
Total Cg Resource: 1,413k tonnes

ZEN's graphene precursor material is from a unique graphite resource located in Ontario, Canada.

- Albany Graphite Project yields a significant advantage in the production of graphene products
- 100% ownership of the Albany Project
- A very rare, large resource of igneous-hosted, fluid-derived microcrystalline graphite
- Easily accessible and located near infrastructure (railway, road, and ports)
### DATA ON THE DEPOSIT

<table>
<thead>
<tr>
<th></th>
<th>2015 Resource Estimate*</th>
<th>Tonnes (Mt)</th>
<th>Grade (% Cg)</th>
<th>Contained Graphitic Carbon (t)</th>
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<tbody>
<tr>
<td>Above Sill Mineralization</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicated</td>
<td>24.3</td>
<td>3.98</td>
<td>968,000</td>
<td></td>
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<tr>
<td>Inferred</td>
<td>5.4</td>
<td>2.58</td>
<td>138,000</td>
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<tr>
<td>Below Sill Mineralization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicated</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Inferred</td>
<td>11.5</td>
<td>2.67</td>
<td>307,000</td>
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<tr>
<td>Total Indicated</td>
<td>24.3</td>
<td>3.98</td>
<td>968,000</td>
<td></td>
</tr>
<tr>
<td>Total inferred</td>
<td>16.9</td>
<td>2.64</td>
<td>445,000</td>
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*Deposit Open at Depth
Capacity and mining method etc. will be studied further and based on the target market

Future studies will include:

- Market size and pricing based on graphene production
- Increased metallurgical recoveries
- Simplified metallurgical process flowsheet

A MICRO AMOUNT FOR MACRO EFFECT

Nano amounts of graphene are embedded into the production process for enhanced, next level performance

CLEAN TECHNOLOGY
- Membrane technology
- Corrosion Protective Coatings

ADVANCED MATERIALS
- Graphene-enhanced polymers
- Cement-based composites
- Metal composites

GREEN ENERGY
- Batteries – Graphene-enhanced aerogel anodes and graphene-coated silicon anodes

MEDICAL – COVID 19
- Virucidal PPE Protection
- Antibody & Antigen Rapid Detection
CURRENT PROJECTS & COLLABORATIONS

• Polymers – Stronger, conductive, heat dissipation, acoustic improvement
• 3D Additive Manufacturing with continuous fused filaments fabrication
• Aluminum – Corrosion, strength, electrical conductivity
• Elastomers – Rubber (strength, heat resistance)
• Concrete – Graphene-enhanced cement-based composites
• Graphene synthesis:
  o Electrochemical, chemical & mechanical exfoliation
• Batteries:
  o Graphene-enhanced aerogel anodes
  o Graphene-coated silicon anodes
• COVID-19 Virucidal PPE Protection
• COVID-19 Antibody & Antigen Rapid Detection
• Filtration membranes for Dehumidification
• Corrosion Protective Coatings
R&D FACILITY
GUELPH, ONTARIO

- Graphite purification and graphene production
- Scaling up production capacity
- Graphene products available for R&D and commercial use
- Working on a variety of applications including graphene-enhanced composite materials, inks and coatings
OBJECTIVES FOR THE NEXT 12 MONTHS

1. Secure commercial contracts for graphene-based products and continued build out of intellectual property portfolio

2. Scale up production of graphene from lab to pilot scale

3. Research and Development – Functionalized graphene in commercial applications

4. Continue environmental baseline studies and commence permitting process for extraction
CAPITAL STRUCTURE

TSXV: ZEN
OTCQB: ZENYF

<table>
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<th>Shared Issued</th>
<th>84,322,460</th>
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<td>Warrants</td>
<td>647,776</td>
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<tr>
<td>Warrants</td>
<td>655,846</td>
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<tr>
<td>Warrants</td>
<td>1,500,000</td>
<td>$0.50</td>
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<tr>
<td>Warrants</td>
<td>1,708,333</td>
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<tr>
<td>Options</td>
<td>5,125,000</td>
<td>Avg. Weighted price: $0.52</td>
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<tr>
<td>Fully Diluted</td>
<td>93,959,415</td>
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SUMMARY

1. ZEN is focused on Graphene production and intellectual property development and acquisition.

2. World-class deposit of superior graphene precursor material in Ontario, Canada near existing infrastructure.

3. ZEN is positioned at the forefront of this industrial revolution to be a supplier of both graphene-based materials and technologies to Canada and the world.
FORWARD LOOKING STATEMENTS

This presentation contains "forward-looking information" within the meaning of applicable Canadian securities legislation and United States federal securities laws. Forward-looking statements include, but are not limited to, estimates and statements with respect to ZEN Graphene Solution Inc. future exploration and development plans, objectives or goals, to the effect that ZEN Graphene Solution Inc. or management expects a stated condition or result to occur, including the PEA, expected timing for release of sample analyses and a resource estimate, the expected uses for graphite in the future, and the future uses of the graphite from ZEN Graphene Solution Inc. Albany deposit, the adequacy of ZEN Graphene Solution Inc. financial resources, business plans and strategy, and other events or conditions that may occur in the future. Generally, forward-looking information can be identified by the use of forward-looking terminology such as “potential”, “plans”, “expects”, or “does not expect”, “is expected”, “budget”, “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates”, or “does not anticipate”, or “believes” or variations of such words and phrases or state that certain actions, events or results “may”, “could”, “would”, “might”, or “will be taken”, “occur”, or “be achieved”. The following table outlines certain significant forward-looking information contained on this website provides the material assumptions used to develop such forward-looking statements and material risk factors that could cause actual results to differ materially from the forward-looking statements.
COVID-19 APPLICATIONS

PROTECTION
• Graphene ink as a coating for personal protective equipment and surfaces
• Silver doped graphene oxide has virucidal properties
• Applied to the outer layer of PPE (masks), killing significant amount of virus
• Could be utilized as a coating in medical operating rooms, paints, etc.

RAPID DETECTION
• Aptamer-assisted graphene oxide-based technology
• For a rapid virus & antibody/antigen detection test
• Ultrafast technology, 5 – 10 minutes
• Low cost, less than $5.00 per test
• Ultra-sensitive detection (<200 pM IgG/IgM)
DEHUMIDIFICATION MEMBRANES

• Energy-efficient graphene-based membrane cooling systems
• ZEN and Evercloak partnership received NGen award-July 2020
• Evercloak’s advanced manufacturing process makes large area ultra-thin nanomaterial membranes that can easily separate water vapor from air
• Evercloak’s membrane system reduces the energy use of air conditioners by efficiently removing humidity prior to the traditional vapor compression cooling system
CORROSION PROTECTION COATINGS

• Graphene-based corrosion protection coatings are being developed to protect against corrosion in ships’ hulls as well as equipment used in the construction, petrochemical and transport sectors. Testing shows improved wear resistance, extend engine life, increase fuel efficiency, and increased engine power in vehicles.

• Preliminary results on the use of ZEN's Graphene in an epoxy corrosion-inhibiting coating for steel showed minimal corrosion (3% of surface) after 10 days when exposed to highly corrosive saline solution vs other samples.

• ZEN has received a Mitacs Elevate grant to fund a two-year project studying graphene as a corrosion protective coating for steel.
Work at University of Toronto

- Increased Compressive Strength by 39% with a low loading of 0.02% Graphene
- Increased Flexural Strength by 81% with a low loading of 0.02% Graphene Oxide

Work at Ben Gurion

- Faster curing time - from 28 to 8 days
- Use 25% less cement therefore reduce CO₂ by same amount
- Increased compressive strength by 34% and tensile strength by 62%

- Applications work on Albany tailings as a partial cement replacement and filler material for the concrete industry
- Currently seeking industrial partnerships focusing initially on large volume markets for graphene
• Waterloo University - Dr. Pope’s team worked with ZEN’s material to develop a graphene enclosed silicon anode material. The current battery technology uses graphite as an anode which has roughly 370 mAh/g of capacity. Dr. Pope’s team demonstrate 1600-1800mAh/g. The weight includes both the silicon and carbon and has > 90% capacity retention over 300 cycles.

• DLR and UBCO - Collaboration has created a Graphene Aerogel composite anode material using ZEN’s material. Preliminary results were achieved with a 2 wt.% loading of Graphene dispersed in aerogel and resulted in an initial specific discharge capacity of 2800 mAh/g and a discharge capacity of 1300 mAh/g after 50 cycles at a current capacity of 186 mA/g.

• UBCO - The addition of 5% rGO from ZEN to the Carbon Black anode material increased the capacity from 115 mAh/g to 488 mAh/g while a battery consisting of 100% rGO had a capacity of 840 mAh/g.