zenyatta

Graphene … The Disruptive Innovation of the 21st Century

Graphene

A Strategic Material for Clean Technology Industries

Forward Looking Statement

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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 Zenyatta Ventures Ltd. future exploration and development plans, objectives or goals, to the effect that Zenyatta 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 Zenyatta's Albany deposit, the adequacy of Zenyatta's 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.

Forward-looking information	Assumptions	Risk factors
Zenyatta's properties may contain economic deposits of graphite and/or other metals	Financing will be available for future exploration and development of Zenyatta's properties; the actual results of Zenyatta's exploration and development activities will be favourable; operating, exploration and development costs will not exceed Zenyatta's expectations; the Company will be able to retain and attract skilled staff; all requisite regulatory and governmental approvals for exploration projects and other operations will be received on a timely basis upon terms acceptable to Zenyatta, and applicable political and economic conditions are favourable to Zenyatta; the price of graphite and/or other applicable metals and applicable interest and exchange rates will be favourable to Zenyatta; no title disputes exist with respect to its properties	Graphite & graphene price volatility; uncertainties involved in interpreting geological data and confirming title to acquired properties; the possibility that future exploration & processing results will not be consistent with Zenyatta's expectations; availability of financing for and actual results of Zenyatta's exploration and development activities; increases in costs; environmental compliance and changes in environmental and other local legislation and regulation; interest rate and exchange rate fluctuations; changes in economic and political conditions; Zenyatta's ability to retain and attract skilled staff
Zenyatta will be able to carry out anticipated business plans, including costs and timing for future exploration on its property interests	Zenyatta's exploration activities, and the costs associated therewith, will be consistent with Zenyatta's current expectations; debt and equity markets, exchange and interest rates and other applicable economic conditions are favourable to Zenyatta; Financing will be available for Zenyatta's exploration and development activities and the results thereof will be favourable; the Company will be able to retain and attract skilled staff; all applicable regulatory and governmental approvals for exploration projects and other operations will be received on a timely basis upon terms acceptable to Zenyatta; Zenyatta will not be adversely affected by market competition; the price of graphite and/or other applicable metals will be favourable to Zenyatta; no title disputes exist with respect to Zenyatta's properties	Graphite & graphene price volatility, changes in debt and equity markets; timing and availability of external financing on acceptable terms; the uncertainties involved in interpreting geological data and confirming title to acquired properties; the possibility that future exploration & processing results will not be consistent with Zenyatta's expectations; increases in costs; environmental compliance and changes in environmental and other local legislation and regulation; interest rate and exchange rate fluctuations; changes in economic and political conditions; Zenyatta may be unable to retain and attract skilled staff; receipt of applicable permits
Management's outlook regarding future trends	Financing will be available for Zenyatta's exploration and operating activities; global demand for the use and application of graphite will increase; the price of graphite and/or other applicable metals will be favourable to Zenyatta;	Graphite & graphene price volatility; changes in debt and equity markets; interest rate and exchange rate fluctuations; changes in economic and political conditions

Statements relating to "reserves" or "resources" in this Presentation are deemed to be forward-looking statements, as they involve the implied assessment, based on certain estimates and assumptions that the resources and reserves described can be profitably produced in the future. Inherent in forward-looking statements are risks, uncertainties and other factors beyond Zenyatta's ability to predict or control. Readers are cautioned that the above chart does not contain an exhaustive list of the factors or assumptions that may affect the forward-looking statements, and that the assumptions underlying such statements may prove to be incorrect. Actual results and developments are likely to differ, and may differ materially, from those expressed or implied by the forward-looking statements contained in this Presentation. Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause Zenyatta's actual results, performance or achievements to be materially different from any of its future results, performance or achievements expressed or implied by forward-looking statements. All forward-looking statements herein are qualified by this cautionary statement. Zenyatta disclaims any intention or obligation to withdraw, update or revise any forward-looking statements whether as a result of new information, future events or otherwise, except to the extent required by applicable laws. If the Zenyatta does update one or more forward-looking statements, no inference should be drawn that it will make additional updates with respect to those or other forward-looking statements, unless required by law. An additional cautionary note to readers - no part of this Zenyatta presentation is intended to be deemed as an offering of its securities to investors outside of Canada or is to be relied on by residents of the United States of America or other jurisdictions outside of Canada. Certain terms such as "resource", "measured resource", "indicated resource" and "inferred resource" are recognized under Canadian securities laws, however, the United States Securities and Exchange Commission may not recognize such terms. All maps, information, data, diagrams etc. obtained from internet are believed to be reasonably accurate but can not be guaranteed. This information does not represent a statistically large sample size. Furthermore, these positive results do not mean that Zenyatta can extract and process Albany graphite for graphite or graphene applications on an economic basis. Without a formal independent feasibility study, there is no assurance that the operation will be economic.

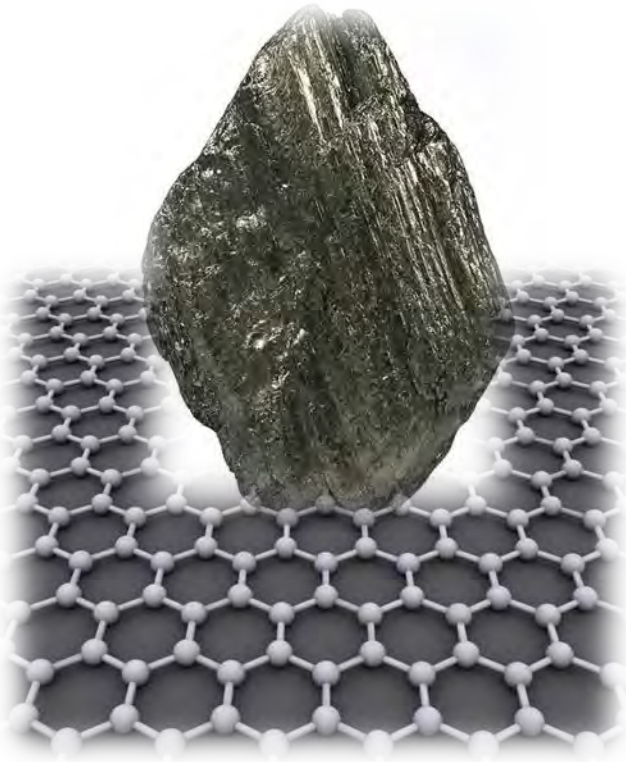
Cautionary Note Regarding Mineral Reserve and Resource Estimates

See "Technical Report on the Albany Graphite Deposit, Northern Ontario, Canada", authored by David Ross, P.Geo., and Katharine M. Masun, P.Geo., of Roscoe Postle Associates Inc., who are independent "qualified persons" as defined by National Instrument 43-101. The Technical Report was issued on January 16, 2014 and may be found under the Company's profile on SEDAR at www.sedar.com and at www.zenyatta.ca. This presentation has been prepared in accordance with the requirements of Canadian securities laws in effect in Canada, which differ from the requirements of United States securities laws. Unless otherwise indicated, all mineral resource and reserve estimates included in this presentation have been prepared in accordance with NI 43-101 and the Canadian Institute of Mining and Metallurgy Classification System. NI 43-101 is a rule developed by the Canadian securities regulatory authorities that establishes standards for all public disclosure an issuer makes of scientific and technical information concerning mineral projects. Canadian standards, including NI 43-101, differ significantly from the requirements of the U.S. Securities and Exchange Commission (the "SEC"), and resource and reserve information contained herein may not be comparable to similar information disclosed by U.S. companies. In particular, and without limiting the generality of the foregoing, the term "resource" does not equate to the term "reserves." Under U.S. standards, mineralization may not be classified as a "reserve" unless the determination has been made that the mineralization could be economically and legally produced or extracted at the time the reserve determination is made. The SEC's disclosure standards normally do not permit the inclusion of information concerning "measured mineral resources," "indicated mineral resources," or "inferred mineral resources" or other descriptions of the amount of mineralization in mineral deposits that do not constitute "reserves" by U.S. standards in documents filed with the SEC. U.S. investors should also understand that "inferred mineral resources" have a great amount of uncertainty as to their existence and great uncertainty as to their economic and legal feasibility. It cannot be assumed that all or any part of an "inferred mineral resource" will ever be upgraded to a higher category. Mr. Peter Wood, P.Geo., VP Exploration for Zenyatta Ventures Ltd., is the "Qualified Person" under National Instrument 43-101 – Standards of Disclosure for Mineral Projects and has reviewed and approved the technical information contained in this presentation.

- Graphene extracted from graphite was discovered in 2004 by Professor Andre Geim and Professor Kostya Novoselov at The University of Manchester.

- The two researchers removed flakes from a lump of bulk graphite with sticky tape and by repeatedly separating the graphite flakes on the tape, they managed to peel the flakes apart and eventually isolate graphene for the first time.

- Graphene is a single layer of carbon atoms arranged in a honeycomb pattern.



- As of 2017, there were 25,787 graphene patent applications. (source: http://patentanalysis.org/graphene-patent-analysis-study/)

Graphene Properties

Most impermeable material ever discovered

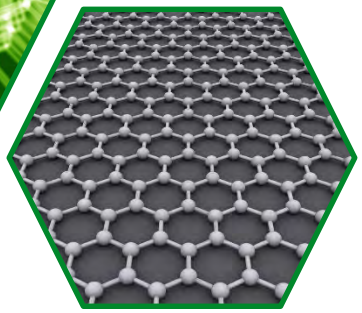
1 carbon atom thick

Almost Invisible

Best conductor of heat & electricity

Stretches like rubber

Strongest, lightest, thinnest



Pricing

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The bulk price for Few Layer Graphene has been forecasted by various sources to be in the range of $100/kg and will be dependent on the quality. Price ranges in the chart below are based on the production and purchase of small quantities.

Types of Graphene	Company Nomenclature	Thickness (nm)	Price Range ($/kg)
Graphene	Pristine Graphene Mono-layer Flakes	0.35	$1,100,000,000
Few-Layer Graphene (FLG)	Single Layer Graphene*	0.35-1.75	$720,000-1,960,000
Graphene Nanoplates	Graphene Nanoplatelets	1-10	$12,000-760,000
Reduced Graphene Oxide	Reduced Graphene Oxide	0.35	$600,000
Graphene Quantum Dots	Graphene Quantum Dots	<6	$3,500,000
Graphene Ox-ide Nanosheets	Single Layer Graphene Oxide	0.35-1.2	$300,000-440,000
Graphite Oxide Nanosheets	Graphite Oxide	1-3	$360,000
Multilayer Graphene (MLG)	Graphene dispersion	7	$5400
Graphite Flakes	Graphite Flakes	4.3	$720

"In this case "Single Layer Graphene" is a misnomer, as the manufacturer's website states that up to five layers is considered to be "single".

Table 1: Graphene-Mass-Normalized Price and Nomenclature Comparison.

Source The Magazine For 2D Materials Graphene, issue #7, April 2017 - Elliot B. Kennel and Taylor M. Cornell, Applied Sciences Inc.
http://www.2dmaterialsmag.com/

Energy / Storage

- Large-scale batteries for grid storage systems
- Bipolar plates for fuel cells
- Faster charging, long range batteries for electric vehicles
- Solar panels

Electronics

- Conductive inks for printed & wearable electronics
- More efficient and longer lasting LED lighting
- Circuit boards, heat sinks and EMI shielding
- Possible replacement for silicon chips with improved speed

Membranes

- Barrier membranes effective in separating organic solvent & gases for clean drinking water
- Desalination of salt water
- Oil/water separation

Supercapacitors

- Assist in acceleration of vehicles while recovering energy when braking
- Provide cranking power
- Deliver peak power and extend the lifespan of batteries

Sensors

- RFID tags for inventory tracking, self checkout, ATM cards & anti-counterfeiting
- Motion sensors (light activation)
- Environmental (gas & contamination)
- Image (surveillance)
- Biosensors for health monitoring

Composites

- Stronger self healing concrete
- Advanced plastics that are light weight and highly chemical resistant for aerospace, automotive and construction
- Rubber bands which act as bar codes, change color for food - time past harvest, and also protect ATM cards against hackers

GRAPHENE POTENTIAL APPLICATIONS

Infrastructure

- Increases the overall strength of concrete with faster curing time using 25% less material (Reducing CO_2 emissions)
- Low-cost embedded stress sensors
- Coatings and paints reducing corrosion and anti-fouling

Automotive/Aerospace

- Lightweight composites for structural and functional components
- Coatings for anti-rust, anti-icing and protection against lightning strikes
- Ultra-high density power supplies for satellites and aircraft

Biomedical

- Health monitoring devices for heart rate, blood pressure and glucose
- Early detection of cancer, hepatitis, and infectious diseases
- Enhanced targeted drug delivery for treatments such as cancer
- Anti-microbial coatings for medical devices

Sports

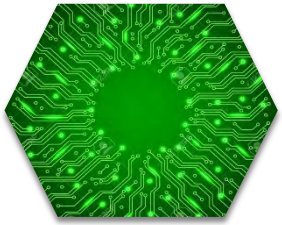
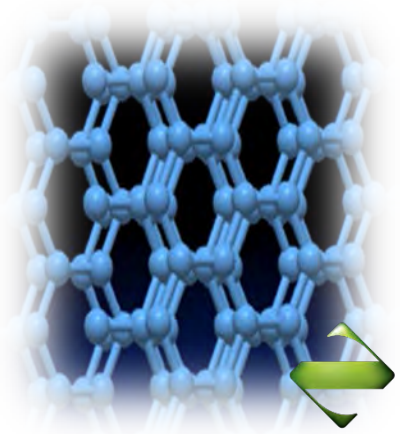
- Lighter, stronger sporting equipment such as bicycles, helmets and rackets
- Puncture resistant and longer lasting bicycle tires with better traction
- Lighter and better fitting smart textiles which could also have built in sensors and electronics

Defence

- Blast-resistant vehicles and ships
- Lightweight clothing and equipment for soldiers
- Thermal imaging devices like night-vision goggles
- Lightweight body-armour

GRAPHENE SECTORS

MARKETS AVAILABLE TO PENETRATE (Forecasted Global Worth of Markets in USD)

Concrete $921 Billion by 2020  Concrete admixtures $18.10 Billion by 2020		Paints and coatings $350 billion by 2020  Anti-corrosion coatings $31.73 Billion by 2022	
 Supercapacitors $0.75 Billion by 2022	 Plastics $654.38 Billion by 2020	 Sensors $154.4 Billion by 2020	 Solar Cells $345.59 Billion by 2020
 Conductive Inks $3.91 Billion by 2021	 Global Tires $319 Billion by 2022	 Lithium Ion Batteries $68.97 Billion by 2022	

IDTechEx Research projects that the graphene market will grow to over $300 million in 2027

According to Global Market Insights

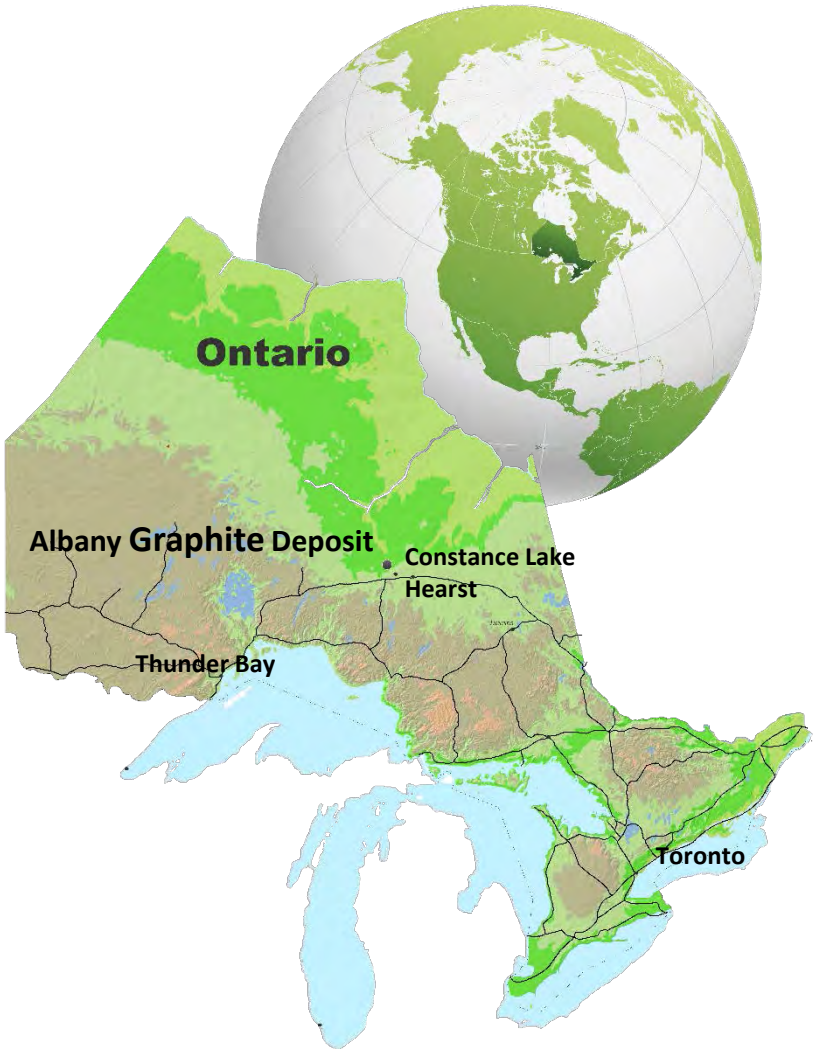
- Graphene oxide is a key product segment in the graphene market which will account for around 40% of the total industry revenue share in 2024
- They also forecast North America is a key region for the graphene market which will occupy more than 40% of the total industry revenue in 2024

The largest sectors in the global graphene market according to IDTechEx Research analysts are:

- Composites – 40% by 2027
- Energy storage – 25% by 2027
- Functional/conductive coatings 21% by 2018

https://www.gminsights.com/pressrelease/graphene-market

https://www.idtechex.com/research/reports/graphene-2d-materials-and-carbon-nanotubes-markets-technologies-and-opportunities-2017-2027-000530.asp



Zenyatta has 100% ownership of the large Albany Graphite Deposit which contains 968,000 Indicated contained tonnes Cg and 445,000 Inferred contained tonnes Cg

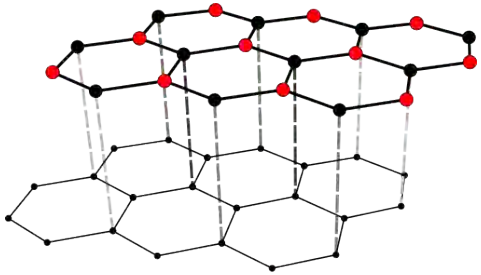
- Rich and abundant graphite is deposited in two well-defined breccia pipes

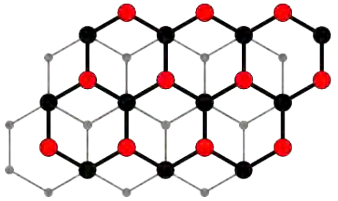
- The only known deposit in the world where the graphite has an igneous origin and the carbon was likely sourced from the mantle

- Unlike flake graphite deposits where the graphite is formed from recrystallized in-situ organic material

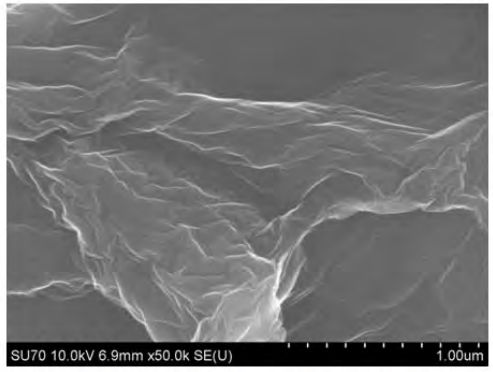
- Deposit is close to excellent infrastructure - 30 km north of the Trans-Canada Highway, 70 km from rail line, close to power line and natural gas pipeline and port access via the Great Lakes

Crystalline Structure and Particle Morphology of ZEN Graphite is the Key Advantage





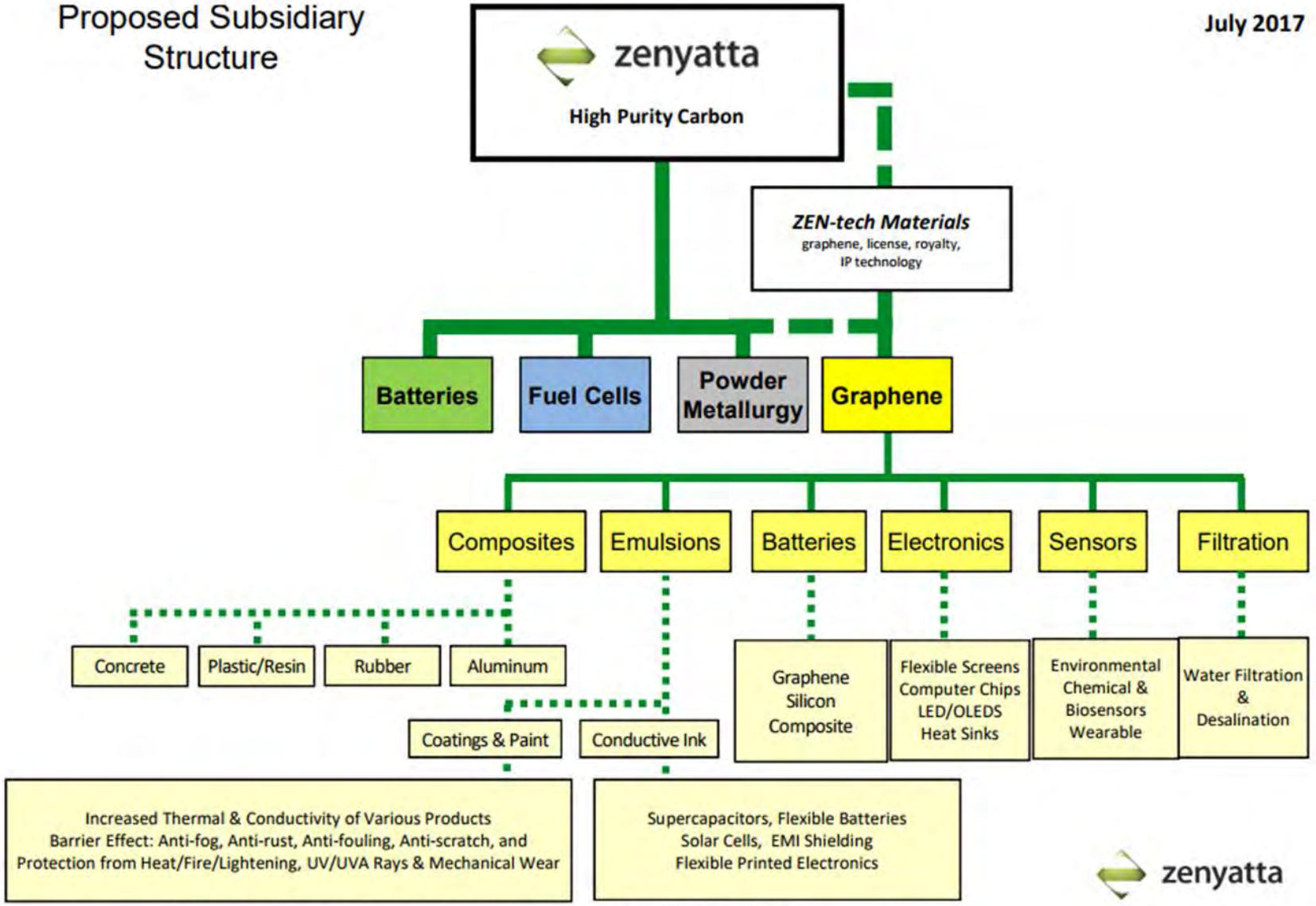
Dr. Yoshihiko Arao and Dr. Masatoshi Kubouchi at the Tokyo Institute of Technology in Japan demonstrated the ease and high-yield conversion of Albany graphite to graphene. "We have tested many types of natural graphite but found Zenyatta's graphite material to have better exfoliation performance and produce better graphene particles than the reference material."



Zenyatta GO micro structure

Proposed Subsidiary Structure

July 2017



This chart is to accompany the Zenyatta Ventures Limited news release dated 25 July 2017 – Please refer to the Cautionary Statement.

Zenyatta's Graphene Production Methods

ZEN Graphite

Mechanical Exfoliation Technique

Graphene (Israel, Japan & UK)
- High Yields
- Easy conversion
- Easily Dispersible

Modified Hummer Method

GO (Canada)
- Excellent Yields
- Good Functionality
- Powder or Dispersion

Dr. Aicheng Chen commented "We found Zenyatta's high-purity Albany graphite to be an ideal material for the production of graphene oxide and subsequent application development. Interestingly, it appears that the distinct particle size and morphology of Albany graphite are important factors in the ease of production of high-quality graphene and GO. These properties are likely the result of the deposit's unique geological genesis first identified by Lakehead's geology professor Dr. Andrew Conly in 2012."

Key Partnerships and Recent Developments

- Graphene infused concrete – Partnership with Ben-Gurion University and Larisplast Ltd. Potential to build a customer base for a significant volume and pricing for potential future graphite production.
- Dr. Aicheng Chen, University of Guelph, is currently scaling up their graphene oxide production process and developing new energy storage and environmental applications
- Dr. Alan Dalton, University of Sussex, is developing a scalable graphene production process using Zenyatta graphite and developing graphene infused rubber composite applications (sensor products for medical and food produce) in collaboration with Alliance Rubber Company
- American advanced materials company has successfully used Zenyatta's graphene oxide to create a silicon-graphene composite for testing as a new anode material in next generation lithium-ion batteries
- Dr. Takashi Kuboki at Western University is developing an advanced plastic (polymer composite) using Zenyatta graphene (or graphene-oxide) derived from Albany high-purity graphite deposit. An enhanced polymer composite material will be attractive to the automotive, aerospace and construction industries that seek lightweight materials with added strength, electrical and thermal properties

Resources & Links

https://www.businesswire.com/news/home/20160412005088/en/Global-Concrete-Cement-Market-Exceed-USD-921
https://www.marketsandmarkets.com/PressReleases/concrete-admixtures.asp
https://www.businesswire.com/news/home/20180214005675/en/Global-Paints-Coatings-Market-2018---350
https://www.prnewswire.com/news-releases/anti-corrosion-coating-market-2017-by-type-technology-end-users---global-forecast-to-2022-300521941.html
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Thank you!

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