



**zentek**

Corporate Presentation – Spring 2023

**NASDAQ: ZTEK**

**TSXV: ZEN**

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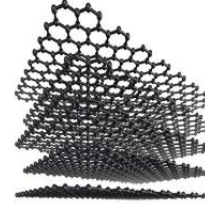
Graphene is simply carbon in its nano form and exhibits spectacular properties

Graphene could play a role in nearly every aspect of human life including:



## We know graphene:

- ✓ How to make it
- ✓ How to put it in products
- ✓ How to protect the technology through patents



Our proprietary innovations seek to give our commercial partners a competitive advantage by making their products better, safer and greener.

**NASDAQ: ZTEK**

**TSXV: ZEN**

- ~US\$147M market capitalization (no debt)
- 100M shares outstanding, 107M fully diluted
- ~\$14M in cash @ Dec 31, 2022

SUSTAINABLE  
DEVELOPMENT  
GOALS



## How Can Graphene Help Solve an Important and Pervasive Problem?



**What Products Can Graphene Enhance and What is the Process?**

**Who Do We Work With to Make Graphene-Enhanced Products a Reality?**

A blurred background of a classroom with several students sitting at desks and raising their hands. A semi-transparent purple horizontal band is overlaid across the middle of the image.

zenGUARD™

**Fact:** Infections occur through the transmission of viruses in wet aerosols and droplets

## The Problem:

- Most HVAC units and filters are not designed to remove small droplets containing virus particles
- Higher rated filters remove more droplets containing virus particles from the air, but they can restrict air flow leading to higher energy consumption, emissions and operating costs
- Many HVAC systems do not have the ability to use higher rated filters

**Indoor air quality is critical, but so is energy efficiency, limiting emissions and reducing capital costs**

How do we strike the right balance?

— “

IAQ impacts people’s health, comfort, well-being, learning outcomes and work performance. [Improved IAQ brings substantial health and economic benefits from a broad public health perspective](#), as well as to individual building owners and occupants.

- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

” —

— “

Achieving and maintaining good IAQ should be included in all decisions that affect the design and operation of buildings and HVAC systems, [including efforts to improve building energy efficiency, sustainability and resiliency](#).

- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

” —



**A systemic problem  
affecting almost everyone...**

**\$168 billion**

Estimated annual economic burden of  
poor indoor air quality in the United States

Costs associated with lost productivity due to absenteeism, when employees come to work despite being sick, as well as the costs of healthcare and other related expenses  
Study conducted by the Harvard T.H. Chan School of Public Health

**Especially children**

**Children are most vulnerable to the effects of poor air quality.**

With every breath, children take in more air per unit of body weight than adults, and by extension, more toxic air per unit of body weight

United Nations Children's Fund (UNICEF)

**Cost**

**>\$10 billion**

Estimated annual cost of absenteeism in  
US schools due to acute respiratory infections

(direct medical expenses and lost productivity).

According to a report by the Centers for Disease Control and Prevention (CDC)

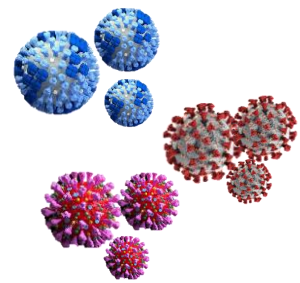
ZenGUARD™ is a **patented** and **highly effective** antimicrobial technology platform.

**ZenGUARD™ seeks to make existing products safer.**



## Pathogens

Transmission through water-borne aerosols



### Graphene-Oxide (GO)

- Hydrophilic (water attracting)
- Efficient carrier of Ag<sup>+</sup> ions
- Natural antimicrobial properties

ZenGUARD™ is applied to material and added into existing products like PPE and HVAC filters

### Complexed Silver (Ag)

- Well-known antimicrobial properties
- Patented silver formulation

- ✓ Hydrophilic graphene oxide attracts pathogen-laden aerosols
- ✓ Combination of complexed silver and graphene-oxide (Ag-GO), creates a **highly effective, synergistic antimicrobial effect**



A challenge to industry to help solve this problem issued by Innovative Solutions Canada (ISC) during the pandemic

**Identify indoor air quality solutions that can:**

1. Achieve a **net reduction in airborne viral load**

***Without:***

2. Requiring modifications to existing HVAC systems (**No Capital Costs**)
3. Reducing air flow rates and increasing energy usage (**Energy Efficient, Reduces Emissions**)
4. Reducing air quality in any way (**Safe**)

**New challenges, require new Testing to identify new solutions**



Testing and validation by the National Research Council of Canada (NRC) and CremCo Laboratories

## Study Details:

Modular room was constructed for testing to **simulate a real-world classroom environment**

To accomplish this:

- The surrogate virus was **aerosolized in water droplets**
- A particle size distribution and concentration representative of **droplets expelled from the human respiratory tract** was used
- Air samples taken at different points in the classroom to **represent real-world conditions**





Testing and validation by the National Research Council of Canada (NRC) and CremCo Laboratories of ZenGUARD™-coated MERV 8 filters vs uncoated MERV 8 filters

## Report Card

REQUIREMENTS	PASS	DETAILS
<b>Reduction in airborne viral load</b>	✓	1 air exchange: ZenGUARD™-coated filter = 34.56% viral filtration efficiency (VFE) vs uncoated filter = 7.24% VFE
<b>No modifications (and additional spend) to existing HVAC system</b>	✓	Results achieved with most commonly used air filter in North America (MERV 8)
<b>No reduction in air flow rates and increasing energy usage</b>	✓	No reduction of air flow rates or increase in energy usage
<b>No reduction in air quality</b>	✓	No reduction in air quality from ZenGUARD-enhanced filters

# ZenGUARD™: Simple, Unique & Effective



Solution	Reduces Viral Load	No Additional Capital Spend	No Additional Energy
ZenGUARD™-Enhanced Air Filters	✓	✓	✓
New Enhanced HVAC System	✓	X	?
Additional Air Exchanges	✓	✓	X
Air Purifiers	✓	X	X
UV-C Lights	✓	X	X

ZenGUARD™ helps strike the right balance using existing HVAC systems and filters

- Facility Grand Opening June 2022
- 26K square foot newly built industrial facility, which is home to ZenGUARD™ antimicrobial coating production, material coating, and slitting capacity
- Annual ZenGUARD™ production capacity of 20+ tonnes per year – making it one of the largest nanomaterial production facilities globally



# Graphene Pipeline: What We're Working On

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zen**GUARD**<sup>™</sup>  
Air Filtration



zen**ARMOR**<sup>™</sup>  
Corrosion Protection



zen**GUARD**<sup>™</sup>  
Personal Protective  
Equipment



Icephobic  
Coatings



Diesel Fuel  
Additive



Graphene-Silicon Anode  
Battery Technology



SUSTAINABLE  
DEVELOPMENT  
**GOALS**



We know graphene: a key building block for a healthier and more sustainable future



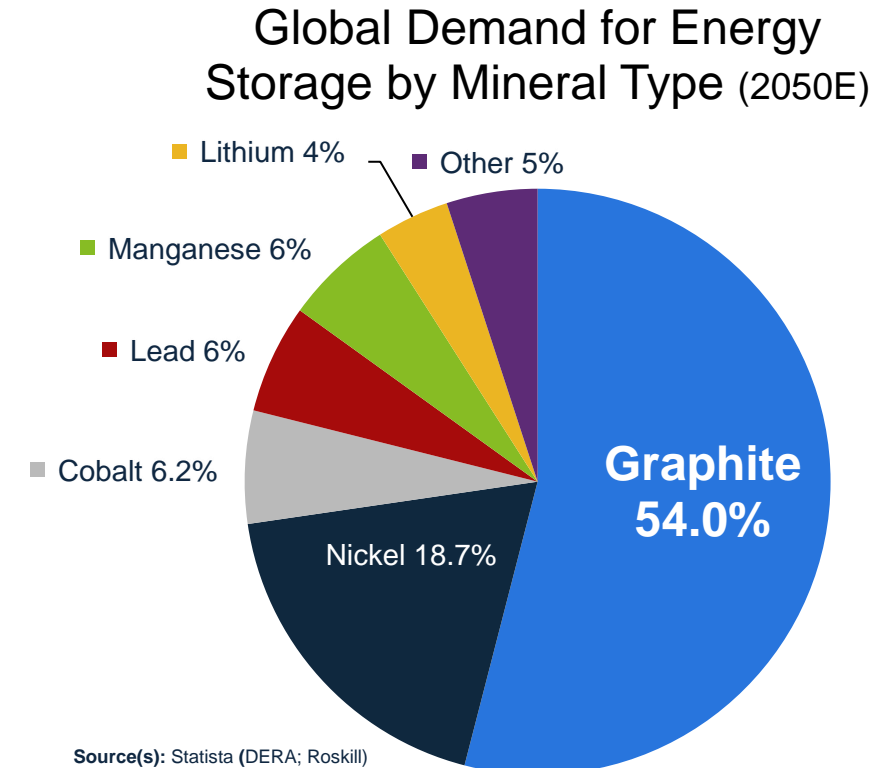
# Albany Graphite Deposit



ALBANY  
PURE™

## Graphite & EV Market Considerations:

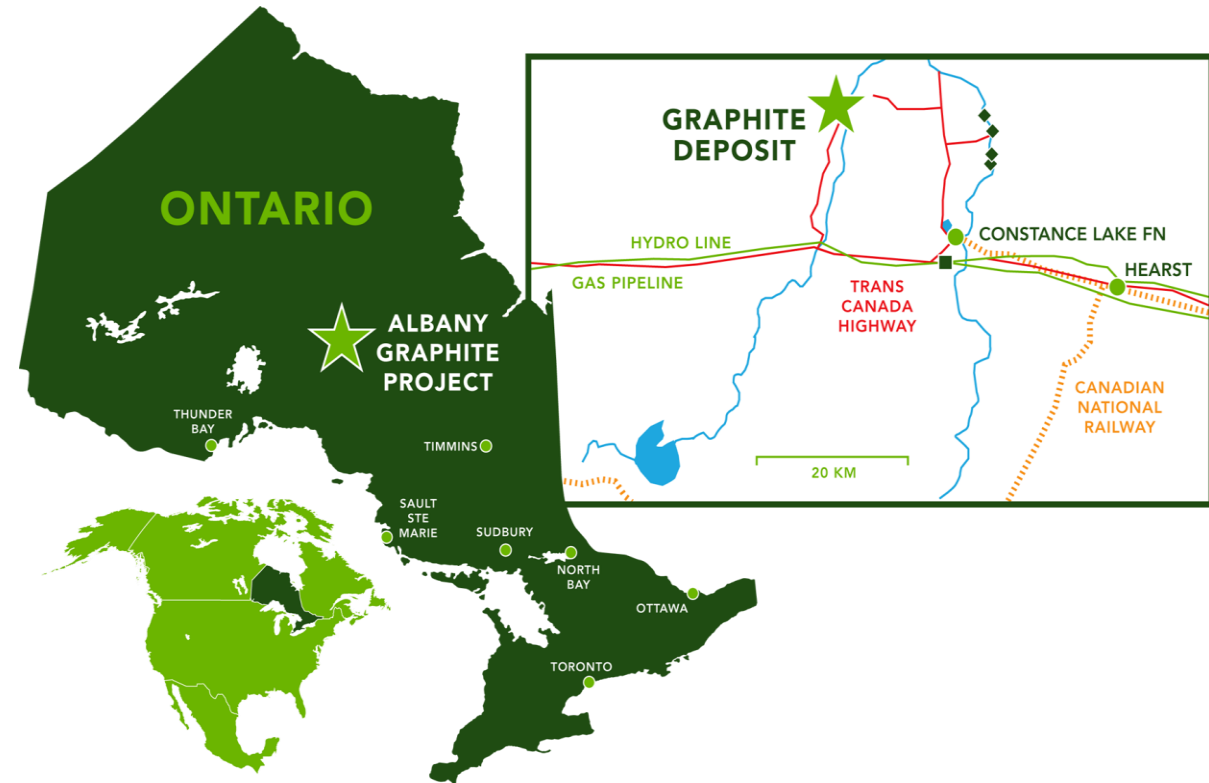
- Graphite is the largest component in lithium-ion batteries
- Significant demand for batteries expected to meet the world's growing EV needs
- Nearly all graphite comes from China
- **EU and US have declared graphite a critical mineral**




Graphite is expected to have the highest demand and require the largest production increase of any battery mineral

## What We Have:

- Igneous hosted deposit, formed from earth's mantle; **characteristics similar to synthetic graphite**
- **Easily accessible and near infrastructure**
- Initial metallurgy indicates purity of 99.9% achievable
- Flake size can be optimized for EV battery market





**zenGUARD™**  
Patented Antimicrobial Technology Platform



Albany Graphite Deposit



ALBANY  
PURE™



**Graphene  
Technology  
Pipeline**



zen**ARMOR**™



**Icephobic  
Coatings**



**Diesel Fuel  
Additive**



**Graphene-Silicon Anode  
Battery Technology**

## NASDAQ: ZTEK

- US\$147M market capitalization
- No debt
- Completed capital raise of ~US\$26M in January 2022
- **Nasdaq trading commenced on March 22, 2022**

	ZTEK	ZEN
<b>Exchange</b>	NASDAQ	TSXV
<b>Recent Price</b>	\$1.48 <i>(a/o 3/24/23)</i>	C\$2.02 <i>(a/o 3/24/23)</i>
<b>52 Wk. Range</b>	\$1.28 - \$3.35	C\$1.72- C\$4.16
<b>Market Cap</b>	~\$147M <i>(a/o 3/24/23)</i>	~C\$200M <i>(a/o 3/24/23)</i>
<b>Avg Daily Vol</b>	~26K	~40K
<b>Shares O/S</b>	99.1M (~106.6M FD)	
<b>Insider Ownership</b>	3.9%	
<b>Institutional Ownership</b>	0.03%	
<b>Debt to Capital</b>	0%	

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