

# QUANTUM NANO RESOURCES

# INVESTOR PRESENTATION

**AUGUST 2024**

**[WWW.QUANTUMNANORESOURCES.COM](http://WWW.QUANTUMNANORESOURCES.COM)**

## **FORWARD LOOKING STATEMENTS**

This presentation may contain forward-looking statements that are based on our current expectations, forecasts, and assumptions that involve risks and uncertainties. These statements include, but are not limited to, descriptions of our business plans, strategies, future events, financial performance, and potential market opportunities.

Actual results may differ materially from those expressed or implied in these forward-looking statements due to a variety of factors, including but not limited to market conditions, competitive actions, regulatory developments, and the company's ability to maintain and develop customer relationships and other risks described in our filings with relevant regulatory bodies.

We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise, except as required by law.

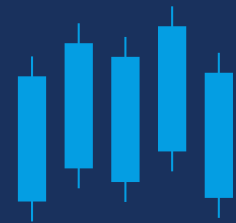


## HIGHLIGHTS

- ▶ Quantum is a material science technology development company
- ▶ Acquired the nano material manufacturing technology for a \$7.5 million convertible note
- ▶ Acquisition consists of a nano-particle manufacturing business, patents, machinery and inventory
- ▶ More than \$35 million has been spent on the prior development of this nano-metal technology
- ▶ Licensed the Nano Sponge™ technology from CSS Nanotech, developed in conjunction with Rice University
- ▶ Licensed self-powered road technology from TBT Group, developed in conjunction with Rowan University



Finalizing raise of \$3mil - \$5mil CAD in additional capital - have raised initial \$600k



Preparing to merge into a publicly traded company listed on the Canadian NEO exchange



Has established key strategic partnerships, sales arrangements and research collaborations



Expects to be profitable within the next 12 months



## TECHNOLOGIES AND USES

### **NANO-PARTICLE MANUFACTURING TECHNOLOGIES** PATENTED FOR MAKING SPHERICALLY SHAPED NANO-METALS

- ▷ Nano-manganese is a significant component in cathode production for the battery industry. It is also used extensively in water desalination processes
- ▷ Nano-iron used as catalyst for the \$200+ billion ammonia production market
- ▷ Nano-iron is the active ingredient within environmental remediation products
- ▷ Nano-iron is a significant component within soil/agricultural enhancement products

### **NANO SPONGE™** PATENTED CARBON ENTANGLED NANOTUBE TECHNOLOGY

- ▷ Provides a scaffolding for the nano-metals to greatly increase efficacy as a catalyst
- ▷ Used as a heat source that converts microwaves to heat making the process of creating nano-metals and ammonia even more energy efficient

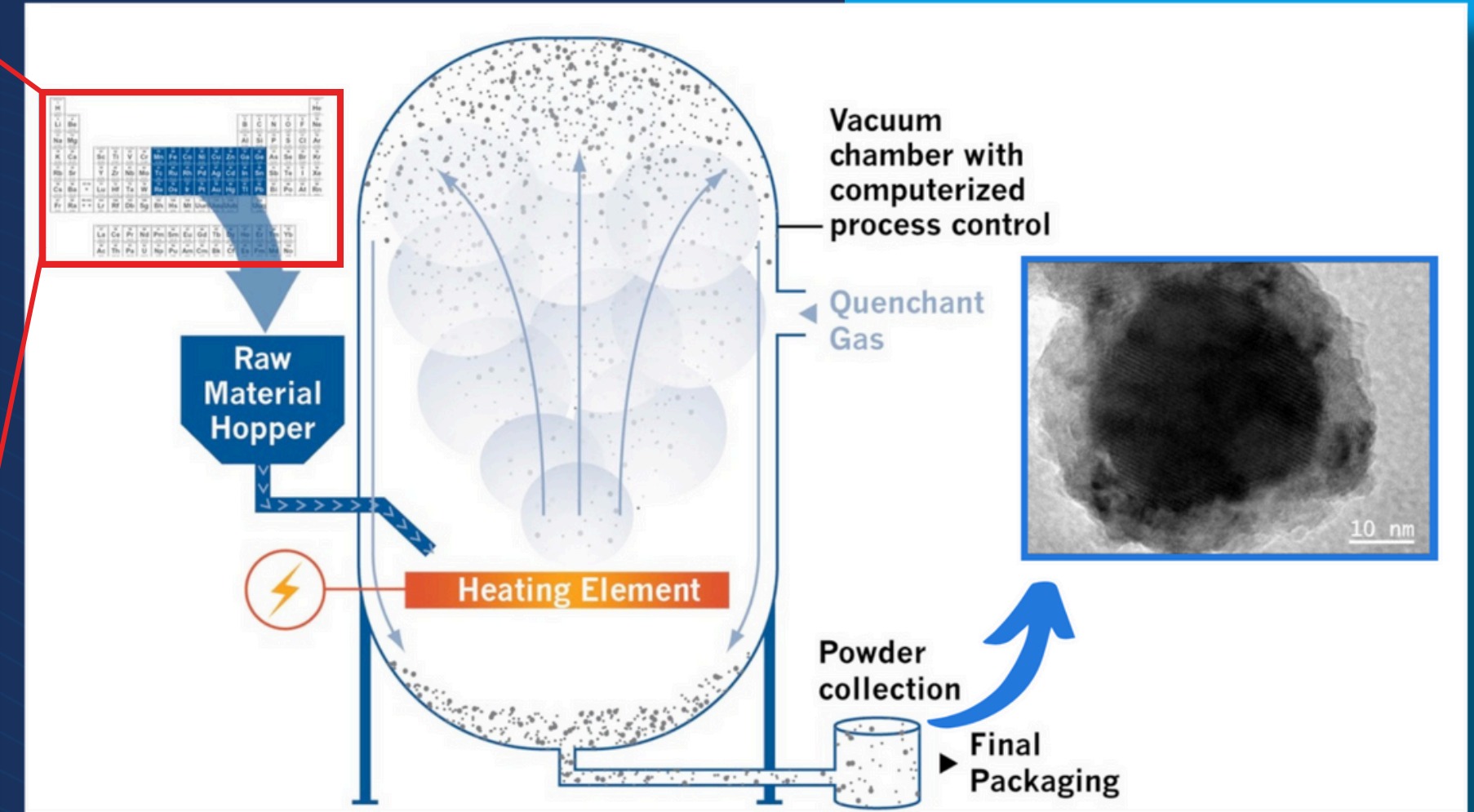
### **PIEZOELECTRIC SENSOR TECHNOLOGY**

- ▷ Exclusive license for the use of this self-powered sensor for creating smart roads



# NANO-METALS PRODUCTION

The periodic table shows elements from Hydrogen (1) to Oganesson (118). A red box highlights the transition metal region, including elements from Scandium (21) to Nickel (28) in the first row, and from Zirconium (40) to Gold (79) in the second row, and from Hafnium (72) to Oganesson (118) in the third row.



**METALS THAT CAN BE CONVERTED INTO NANO-METAL**

**THE CORE OF THE BUSINESS IS A FULLY PATENTED PRODUCTION PROCESS THAT MAKES A VARIETY OF NANO SCALE CATALYSTS**



## NANO-IRON REMEDIATION SERVICES



- ▶ Quantum's nano-Iron is the activating ingredient for FeNix™, a proprietary remediation product for cleaning hydrocarbons from both soil and water. Fennix operates by breaking the carbon-hydrogen bonds of the contaminant.
- ▶ Related products tested and approved for use by Aramco and Chevron
- ▶ Signed MOU for remediation projects in the KERP for Kuwait
  - ▶▶ Initial tests to occur in Q3 with full production beginning shortly thereafter
  - ▶▶ First production remediation to clean approximately 500,000 tons of contaminated soil
  - ▶▶ Anticipate contract extension to 15 million tons of contaminated soil within Kuwait
- ▶ Expansion capabilities for Saudi Arabia and the rest of the Middle East with Quantum's Kuwaiti partners.
- ▶ Quantum will generate \$8 per ton in Gross Revenue and anticipates a 20% margin



## NANO-MANGANESE CATHODE

- ▶ Our nano-manganese has been purchased for use as a component for next generation battery cathodes
- ▶ Manganese-based cathodes are used for alkaline batteries, zinc-air, and lithium-ion batteries for EVs, cell phones and many electronic devices including power tools and e-scooters
- ▶ Our nano-manganese provides 500 times the surface area-to-volume ratio than the current manganese particles used in cathodes allowing for more energy storage and higher power density
- ▶ Our testing has shown 20%-40% improvement in the performance of these batteries





# AMMONIA MARKET SIZE AND PRODUCTION

The global ammonia market size was valued at USD 205.34 billion in 2022 and is anticipated to grow at a compound annual growth rate CAGR of 5.4% from 2023 to 2030. This is attributed to its rising demand for ammonia in fertilizers and refrigerants.

*SOURCE: GRANDVIEW RESEARCH*

## UNITED STATES

In 2022, the production of ammonia in the U.S. amounted to an estimated 13 million metric tons. Ammonia was produced by 16 companies at 35 facilities in the United States that year.

*SOURCE: STATISTA*

## WORLDWIDE

The global production capacity of ammonia is expected to expand from around 239.41 million metric tons in 2022, to nearly 290 million metric tons by 2030.

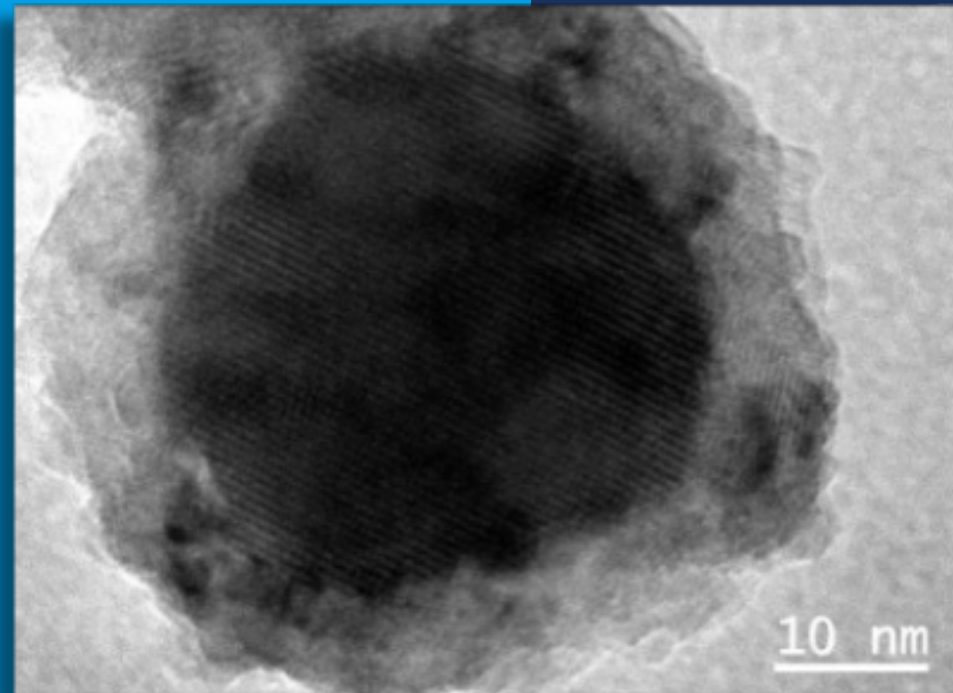
This forecast capacity growth is attributable to approximately 107 planned and announced ammonia plants, primarily located in Asia and the Middle East, expected to go online by 2030.

*SOURCE: STATISTA*





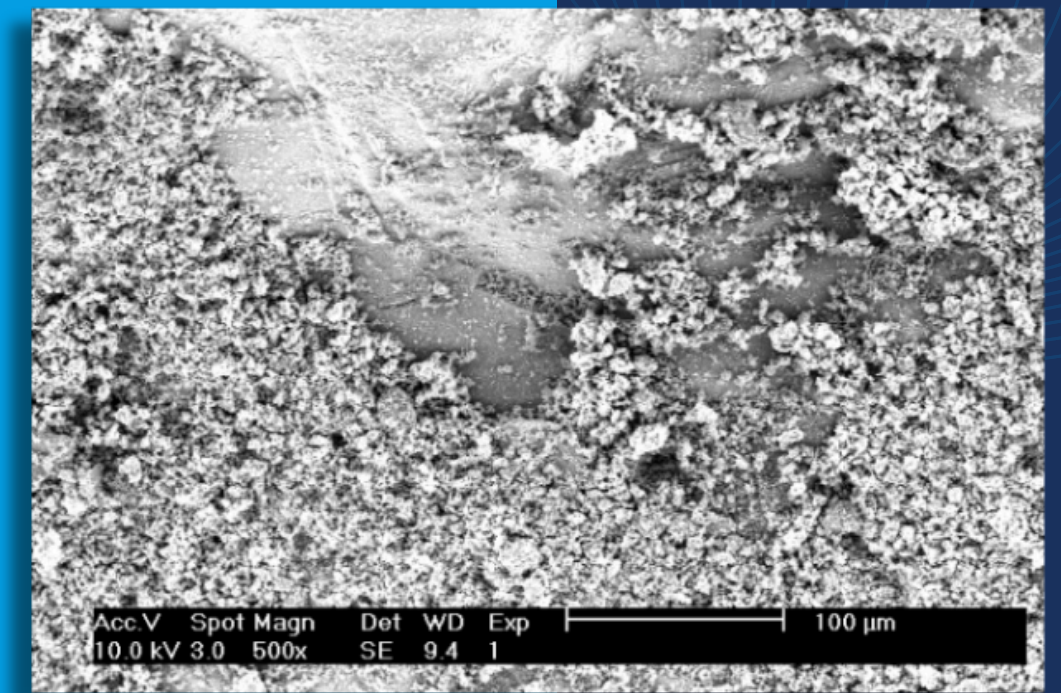
# NANO-IRON CATALYST



**20 NM SPHERICAL  
NANO-IRON PARTICLE**



**UNCOATED IRON PELLETS**



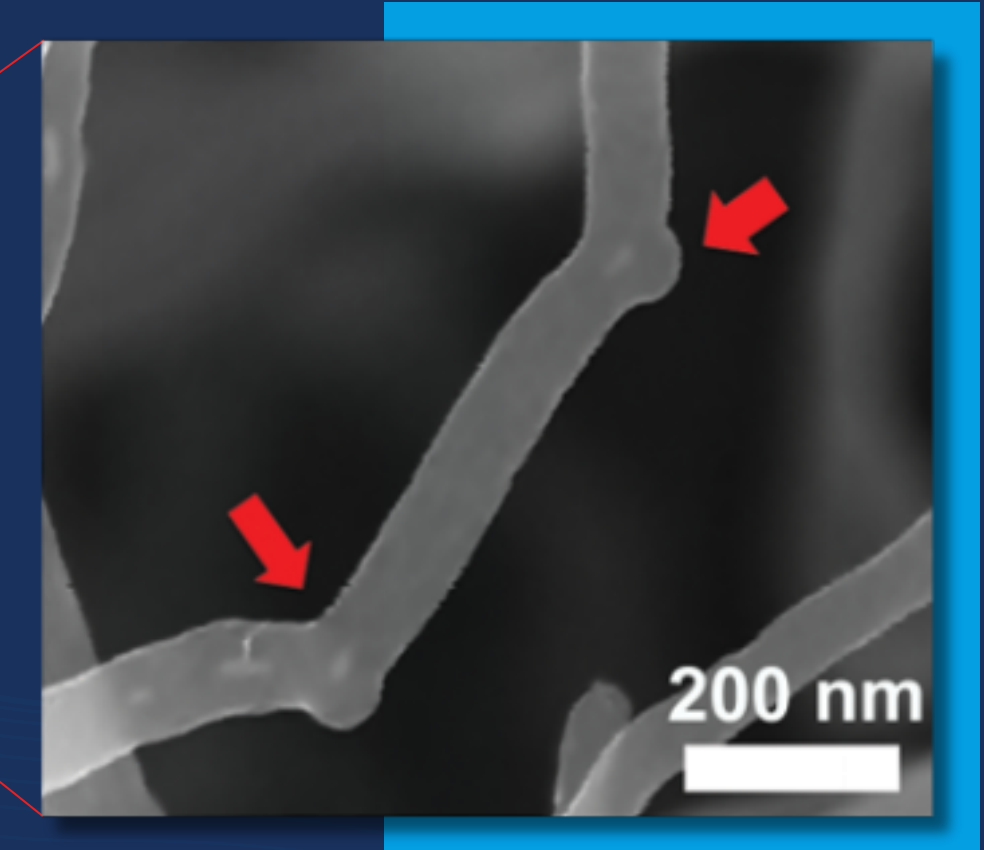
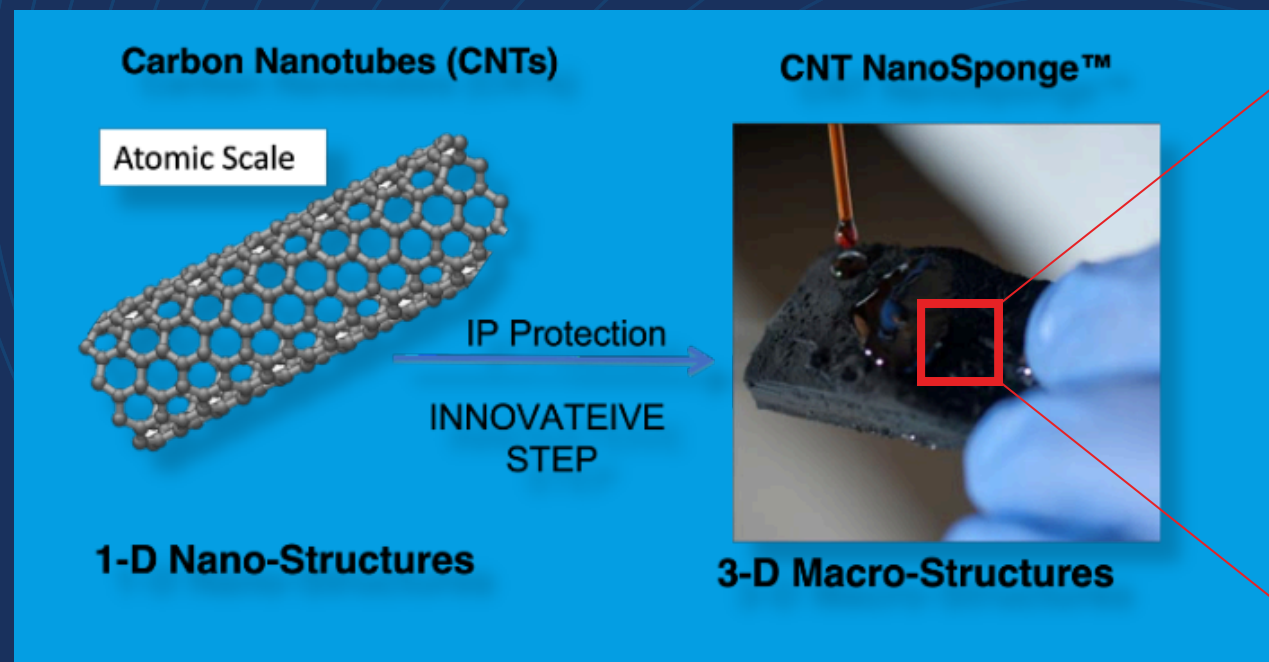
**NANO-IRON COATED  
IRON PELLETS**

(NOTE EXTRA SURFACE AREA FOR REACTIONS)



# NANO SPONGE™ ADVANCED MATERIALS

Unique "elbow" defects allow for open pore structure of CNTs.



## APPLICATION USE

- ▶ Technology complements nano-metals business
- ▶▶ Combination of the nano-iron and Nano Sponge™ is believed to increase ammonia production efficiency by more than 50%
- ▶ Advanced heating technique will lower processing costs for nano-metal and ammonia production
- ▶ Scaffolding for nano-metals and road sensor technology greatly increases catalyst efficiency and output



## PIEZOELECTRIC SENSORS

- ▶ Sensor technology embedded into the pavement making roads smart
- ▶ Device self-powers by harvesting energy from roadway vibrations – no need for batteries or external power sources
- ▶ Enables direct communications from roadway to vehicles and the Department of Transportation or other relevant agencies
- ▶ Provides information including:
  - ▶ Boundaries of roadway directly to the automobiles in difficult driving conditions
  - ▶ Roadway conditions including temperature, traffic speed, and road hazards



Collects significant data that would be useful for many third parties such as traffic, traffic patterns and trends



Under development with TBT Group and Rowan University's Center for Research and Education for Advanced Transportation Systems



Initial installations expected in 2024 for smart road and smart city demonstration/testing sites

## STRATEGIC PARTNERS AND COLLABORATIONS



### **IDCO Gen. Construction Co.**

[www.enmaa.dev/idco.html](http://www.enmaa.dev/idco.html)

Quantum has just executed an MOU Services agreement where it is the exclusive provider of FeNix nano-iron for IDCO's KERP remediation projects in the Middle East. IDCO currently has over 15M tons in contract discussions for remediation projects in Kuwait.



### **Tosoh Japan**

[www.tosoh.com](http://www.tosoh.com)

Quantum has sold its nano-manganese product for advanced battery technology testing.



### **Terrahydrochem**

<https://terrahydrochem.com/agricultur>

Quantum is providing its nano-iron as part of its newly introduced "Fulcrum" product that improves health of the soil, enhances root growth and nutrient absorption, and significantly increases the cationic exchange capacity (CEC) of the soil. Overall, Fulcrum is generating 25% additional crop yield.



### **Department of Energy's Center for Microwave Chemistry**

<https://netl.doe.gov/key-lab-initiatives/cmc>

Quantum has begun joint development of the use of its nano-sponge as a power and heat source for the generation of green ammonia.



# MANAGEMENT/BOARD OF DIRECTORS

## MANAGEMENT TEAM

**Thomas Candelaria – CEO/Chairman:** Former EVP of Corporate Development for QuantumSphere Inc. (the predecessor of the nano-metals technology) and former CEO of SITO Mobile (NASDAQ:SITO), a data analytics ad-tech company.

**Dr. Daniel Hashim – CTO/Director:** Former CTO of Vivakor and primary inventor of the Nano Sponge™ technology.

**Marilu Brassing – CFO:** Former CFO of a several Nasdaq list companies. Banker with Credit Lyonnaise and Audit Manager at Deloitte.

## BOARD OF DIRECTORS

**Andrew Scott –** Former Senior Executive with a number of Investment Banks including Think Equity and Maxim.

**David Firshein –** CFO of Brillouin Energy. Former analyst for several commercial and investment banks.



**CONSOLIDATED BALANCE SHEETS (IN US DOLLARS)**

	(unaudited) March 31, 2024	(audited) September 30, 2023
<b>ASSETS</b>		
<b>Current Assets:</b>		
Cash and cash equivalents	\$ 83,099	\$ 410,562
Accounts receivable	-	8
Right of use asset – operating lease	12,929	27,803
Inventories	367,225	367,225
<b>Total Current Assets</b>	<b>463,253</b>	<b>805,598</b>
Equipment, net	2,582,900	2,582,900
Right of use asset- operating lease	29,203	29,203
Licenses	4,219,500	4,365,000
Intangible assets	7,781,666	8,050,000
Security deposit	6,995	6,995
<b>TOTAL ASSETS</b>	<b>\$ 15,083,517</b>	<b>\$ 15,839,696</b>
<b>LIABILITIES AND STOCKHOLDERS' DEFICIT</b>		
<b>Current Liabilities:</b>		
Accounts payable and accrued liabilities	\$ 90,000	\$ 42,760
Lease obligation – operating lease	20,966	27,782
License obligation	270,000	270,000
Current notes payable, including accrued interest	93,121	120,780
<b>Total Current Liabilities</b>	<b>474,087</b>	<b>461,322</b>
Lease obligation, operating lease	22,301	29,203
Notes payable net of discount and current portion	164,628	158,420
Convertible notes payable, including accrued interest	7,723,730	7,530,822
<b>Total Long - Term Liabilities</b>	<b>7,910,659</b>	<b>7,718,445</b>
<b>Total Liabilities</b>	<b>8,384,746</b>	<b>8,179,767</b>
<b>Commitments and Contingencies</b>		
<b>Stockholders' Equity:</b>		
Common stock to be issued, 7,925,000 and 0 shares at Marc 31, 2024 and September 30, 2023, respectively	793	793
Additional paid-in capital	7,792,235	7,792,235
Accumulated Deficit	(1,094,257)	(133,099)
Total Stockholders' Equity	6,698,771	7,659,929
<b>TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY</b>	<b>\$ 15,083,517</b>	<b>\$ 15,839,696</b>





**CAPITALIZATION**

<b>Common Stock</b>	
Quantum Nano	36,000,000
Canadian Listed Entity (including finders)	4,000,000
<b>Total Shares Post Merger</b>	<hr/> 40,000,000
Concurrent \$5 million CAD Offering (at \$0.65 CAD per share)	7,692,300
<b>Total Shares Outstanding</b>	<hr/> 47,692,300 <hr/>
<b>Convertible Notes</b>	
\$7.5 million held by Vivakor (NASDAQ: VIVK)	15,142,000
<b>TOTAL DILUTED SHARES</b>	<hr/> 62,834,300 <hr/>





## APPENDIX: NANO-METALS



- ▶ Patented technology for creating very small (10 nanometer), spherical nano-metal particles
  - ▶ Catalytic processes such as ammonia creation occur at the surface of the catalyst.
  - ▶ A gram of our nano-iron provides equivalent surface area as an entire football field
    - Providing significant efficiencies from standard catalysts.
- ▶ Nano-metals are added to certain remediation processes to break-up oils and as an attractant for specific contaminants.
  - Signed MOU for providing remediation solution for major clean-up in Kuwait. Potential to clean as much as 15 million tons per year through extensions of this contract.
- ▶ Our nano-manganese has been purchased for testing for the next-generation lithium ion battery by a large multinational chemical firm.
  - ▶ Batteries generate power at the surface of the cathode. Our nano-manganese cathode provides more than 50,000 times more surface area than the manganese cathode currently being utilized.
- ▶ Initial metal is a nano-iron, used as a catalyst for production of ammonia, for various remediation technologies, and as a soil enhancer in agriculture
- ▶ Independent studies show that nano-iron improves efficiency for making ammonia by 18%-21% - increasing output or reducing costs and emissions
- ▶ Nano-iron is also used in a proprietary soil enhancement product that has been shown to improve crop yield by as much as 25%
- ▶ Process will also generate substantial carbon credits