Pushing The Step-Change in the Electrical Vehicle Market with Silicon
Cautionary Statements Regarding Forward Looking Information

This presentation contains "forward-looking information" within the meaning of the applicable securities legislation. All information contained herein that is not clearly historical in nature may constitute forward-looking information. Generally, such forward-looking information can be identified notably by the use of forward-looking terminology such as "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". Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking information, including but not limited to: (i) volatile stock prices; (ii) the general global markets and economic conditions; (iii) the possibility of write-downs and impairments; (iv) the risk associated with exploration, development and operations of minerals; (v) the risk associated with establishing title to mineral properties and assets; (vi) the risks associated with entering into joint ventures; (vii) fluctuations in mineral prices; (viii) the risks associated with uninsurable risks arising during the course of exploration, development and production; (ix) competition faced by the resulting issuer in securing experienced personnel and financing; (x) access to adequate infrastructure to support mining, processing, development and exploration activities; (xi) the risks associated with changes in the mining regulatory regime governing the Company; (xii) the risks associated with the various environmental regulations the Company is subject to; (xiii) risks related to regulatory and permitting delays; (xiv) the reliance on key personnel; (xv) liquidity risks; (xvi) the risk of litigation; and (xvii) risk management.

Forward-looking information is based on assumptions management believes to be reasonable at the time such statements are made, including but not limited to, continued exploration activities, no material adverse change in mineral prices, exploration and development plans to proceed in accordance with plans and such plans to achieve their stated expected outcomes, receipt of required regulatory approvals, and such other assumptions and factors as set out herein. Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in the forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such forward-looking information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such forward-looking information. Such forward-looking information has been provided for the purpose of assisting investors in understanding the Company's business, operations and exploration plans and may not be appropriate for other purposes. Accordingly, readers should not place undue reliance on forward-looking information. Forward-looking information is made as of the date of this presentation, and the Company does not undertake to update such forward-looking information except in accordance with applicable securities laws.
### Recent Key Developments in 2021

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<td><strong>LG Chem</strong></td>
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<td>Signs MOU with Korean Silicon Metal Group</td>
<td>Appoints Dr. Sang Young Lee to Scientific Advisory Board</td>
<td>NEON Initiates Pilot Plant Conceptual Design</td>
<td>Scalability and mass-producibility of NEO's silicon anodes are enabled through a lean one-pot, single-step process in which economies of scale can be realized. NEO’s process does not require complex and expensive environments such as high temperature, high pressure or a vacuum.</td>
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<td>- Entered into a MOU to pursue strategic opportunities for the advancement of low-cost, scalable silicon anodes</td>
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<td>- Any potential IP rights resulting from the Collaboration will be wholly owned by NEO Battery Materials Ltd.</td>
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<td>- Collaborative Development Agreement with Yonsei University-Industry Foundation (YUIF) regarding silicon nanocoating technology for battery anode materials</td>
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<td>- Professor of Materials Engineering at McGill University</td>
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<td>- PhD from MIT</td>
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<td>- Published on Science, Nature Journals</td>
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<td></td>
<td></td>
<td>- Known as inventor of disordered-rock salt cathodes</td>
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<td><strong>NEO Initiates Pilot Plant Conceptual Design</strong></td>
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<td>- Selected “Top 100 National R&amp;D Achievements in Energy” by NRF and “Top 10 Nanotechnology 2020” by South Korean Government</td>
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<td>- L&amp;F is a global top-tier company in the cathode material business (Mkt. Cap: CAD $3.4bn)</td>
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<td>- Mr. Suk Joong Hwang has over 20 years of experience in process engineering in the chemical and polymer industry</td>
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Recent Key Developments in 2021

11 NDA Signed with Solid-State Developer, Battery Metals, Cell & Material Developer and Manufacturers

Successful Integration of NEO’s Silicon into Graphite Anode
- Improved Longevity, Stability, and Capacity Retention
- More Uniform SEI Formation with Minimal Volume Expansion ➔ More than Two Times Capacity Retention
  - Positive Signal for Commercialization
  - South Korean Third-Party Laboratory Validation

Initiative to Use NEO’s Silicon with Sulfide-Based Solid-State Electrolytes to Enable Compatibility

Performance Effectiveness on Low-Cost, Metallurgical-Grade Silicon Microparticles
- 6 minute (10 C-Rate) charge/discharge level achieved with metallurgical-grade silicon particles of micron-size (D50: 2.9 microns)
- Silicon microparticles are 8 to 10 times cheaper than silicon nanoparticles on average
Lithium-Ion Batteries

Anatomy and Market Demands
Anatomy of Lithium Ion Batteries

Lithium-ions move from the **negative electrode to the positive electrode during discharge and back when charging**.
Current Market Demands for Next-Generation Batteries

The optimal high performance battery will require low cost, long life span and reliable safety

- Decrease Material and Manufacturing Cost ($): Cheap
- Increase Energy Density (kilowatt-hours, kWh): Lighter, Smaller, Portable
- More Flexibility: Flexible and Stretchable Devices
- Increase Cycle Life: Minimize Battery Performance Degradation
- Ensure battery operates within safe working range: Safety
- Form Factor-free battery system: On-demand Shape
Technology: Silicon Anode

Increasing Energy Density, Improving Life Span, Cost-Effective One-Pot
“We’re shifting the cell chemistry for the upgraded pack to partially use silicon in the anode … We’re still primarily using synthetic graphite, but over time we’ll be using increasing amounts of silicon in the anode.” – Elon Musk (2015)

“What we’re proposing is a step-change in capability and a step-change in cost and to go to the raw metallurgical silicon itself” – Drew Baglino, SVP of Tesla Powertrain and Energy Engineering (2020)

“When we take that anode cost production, we’re looking at a 5% dollar-per-kilowatt reduction at the battery pack level.”

“[Silicon] innovation alone could increase the range of Tesla vehicles by 20%” – Shieber & Korosec (2020)

Source: Tesla Battery Day 2020 Presentation, TechCrunch, Energy Storage News
Why Silicon Anodes?

Silicon Anode to Increase Energy Density of Electric Vehicle

Energy Density of Lithium-Ion Battery is **Highly Dependent** on the **Anode Material**

### Conventional Graphite Anodes

- Graphite anodes are the most widely used anode material in lithium-ion batteries, but **limited in energy density**

  372 \( \frac{mAh}{g} \) Theoretical Specific Capacity

### Disadvantages of Conventional Graphite Anodes

1. Insufficient Capacity for Larger Applications
2. Decrease in Specific Capacity and Shortened Life after Long Charging and Discharging
3. High Cost in Treatment and Production Process

### Silicon Anodes

- Silicon is recognized as the **next-generation anode material** for LiB
  - Abundance \( \rightarrow \) Low Cost
  - Stores **10 times more** lithium-ions than graphite
  - Dramatic **increase in battery life** through improved energy density

  \[ > 3,580 \frac{mAh}{g} \] Theoretical Specific Capacity

**Using Silicon**

Silicon effectively **increases** the energy capacity of LiB \( \rightarrow \) Allows **wider** application and use in electrical vehicles (EV) at **low costs**
Challenges with Silicon Anodes

NEO’s Solution of Overcoming Volumetric Expansion

Challenges: Conventional Si Anode

- A higher specific capacity to store more energy per unit volume, but volume expansion (>200%) of the Si anode materials results in structural degradation when charging (lithiation)
  - Si Particle Pulverization
  - Thick Solid-Electrolyte Interface (SEI) Growth
  - Cracking Anode

Poor Life & Slow Charge/Discharge

NEO BM Magic
Nanocoating Si Anode
Performance & Process Advantage

Nanometer-thick Coating Technology
Boosting Li storage – Commercial Level Life & Ultra-fast Charge/Discharge
NEO BM Silicon Anode: Performance Advantage I
Boosting Energy Density & Significantly Increasing Battery Life Cycle

Long Lasting pure Si Anodes > 1000 Cycles – Minimal Volume Expansion during Cycling
NEO BM Silicon Anode: Performance Advantage II

Ultra-Flexibility to Counter Volumetric Expansion

Ultra-Flexible: Structural Stability during Bending Test

Figure showing NEO Battery’s Silicon Anode compared to a conventional silicon anode after undergoing a bending test of 30,000 cycles in a 3.5 x 9.5 square-centimeter sized pouch flexible battery cell, presenting excellent structural durability in flexible battery applications.
5-Minute (12 C-Rate) Ultra-Fast Charging through Greater Li-ion Movement

Figure showing NEO Battery's Silicon Anode on a half-cell coin battery test achieving 5-minute charging capability. NEO's Si Anode allows for better wettability of the electrolyte to the surface of Si nanoparticles, which can bring about a larger contact surface area to increase the lithium-ion current or movement to the anode.
NEO BM Silicon Anode: Process Advantage

Cost-Effective and Efficient Single-Step Nanocoating Process

NEO BM Magic Nanocoating Si Anode

1) One-Pot, Single-Step Solution Coating Process

2) No High Temperature, High Pressure, or Vacuum

3) Low-Cost Coating Materials

Material Cost
Simplicity
Processing Cost
Safe Synthesis
Innovation with Silicon Micro and Nanoparticles

NEO’s Two-Track R&D Directions

NEO is developing a two-track polymer coating technology using both silicon micro and nanoparticles.

**Silicon Microparticle**

**Advantages**
- Cheaper cost compared to Si nanoparticles due to shorter processing.

**Drawbacks**
- Weaker performance relative to Si nanoparticles due to cracking issue and thick SEI build-up.

**Silicon Nanoparticle**

**Advantages**
- Partially resolve the cracking issue when charging.

**Drawbacks**
- 8-10 times more expensive compared to micro.
- Particle dispersion leads to clumping, resulting in higher costs.

Metallurgical-Grade Silicon Microparticles
Performance Effectiveness with NEO’s Silicon Nanocoating Technology

NEO is enhancing the performance issue for Si microparticles with the one-pot → Cost Reduction

Metallurgical Grade Si MP Cycling Test

Potency of Application for NEO’s Si Nanocoating Technology on Various Silicon Particle Sizes

- NEO’s unique solution one-pot process integrates micron-sized silicon particles uniformly coated by a nanometer-thick magic coating layer, which substantially outperforms the rate-capability as shown.

- From the data of 10 C-rate, which represents a 6-minute charge/discharge of the cells, NEO can confirm several minute-level ultra-fast charging/discharging without major capacity loss from our technology.
Leadership
Mr. Spencer Sung Bum Huh, BEc.

Mr. Spencer Sung Bum Huh graduated from the Korea University in Seoul with a BEc. He is an experienced and proven financial professional with more than 25 years of financial and operational experience in Canada and Korea, and a track record of supporting ambitious growth plans. His expertise includes financial operations, strategy, performance management, and business planning for Korean and Canadian companies.

Mr. Huh began his career in 1993 as an investment advisor with Hanwha securities in Korea. After immigrating to Canada in 2000, he served for 6 years as an investment advisor with BMO Nesbitt Burns in Toronto and, subsequently, he joined TD Canada Trust in Vancouver. Since 2012, Mr. Huh worked with numerous private and publicly listed companies in Korea and Canada, including mining, medical device, and high-tech companies. He has played an integral role in the establishment, acquisitions, and financing for these companies.

Dr. Jong Hyeok Park
Director, Chair of the Scientific Advisory Board

Dr. Park served as a Senior Researcher for LG Chem. He was among the core researchers for 42 patents at LG Chem and LG Chem’s core innovative technology of the Safety-Reinforced Separator (SRS). Dr. Park owns an additional 50 patents, including cathode materials patents – a total of 92 patents.

Dr. Park served on the Board of Directors of L&F Co. Ltd., a global top-tier cathode supplier, for 9 years. In Dec. 2020, L&F signed a 2-yr contract worth $1.66-billion to supply cathode to LG Chem.

Dr. Park has achieved numerous notable awards and honours since 2011, including the Award of Excellence (2017) from the Korean Academy of Science and Technology, where he was selected as one of the Top 100 leading scientists for renewable energy technology innovation for 2025.

Mr. Sung Rock Hwang
Director, Chief Operating Officer and Senior Vice President

Mr. Sung Rock Hwang has over 30 years’ experience working for Samsung SDI, serving as the executive director and chief of purchasing, senior manager, general manager (for the German branch), and advisor until 2018. His responsibilities included managing the supply chain, procurement planning, and advanced business development.

During his time with Samsung SDI, Mr. Hwang accumulated a vast network and information pipeline within the lithium ion battery industry.

He has a deep understanding of business development and trade capabilities, as well a specialized knowledge in raw materials, such as cobalt, nickel, and aluminum.
Dr. Sang Young Lee
Advisor – Scientific Advisory Board

- Dr. Sang Young Lee is a renowned researcher in the field of secondary (rechargeable) batteries. He has worked at LG Chem as a Principal Research Scientist for over 10 years.

- Selected as the recipient of the “Top 100 National R&D Achievements in Energy”, presented by the National Research Foundation of Korea in 2017 and 2019, and was awarded the “Top 10 Nanotechnology of 2020” from the South Korean Government MOTIE

- Co-developed the widely-used world’s first safety-reinforced separator (SRS) along with Dr. Jong Hyeok Park during tenure at LG Chem

- Co-Founder of thin-film battery company and Professor of Chemical and Biomolecular Engineering at Yonsei University

Dr. Jinhyuk Lee
Advisor – Scientific Advisory Board

- Dr. Jinhyuk Lee is currently an Assistant Professor of Materials Engineering at McGill University. He has received his PhD from MIT, being selected as a Samsung Presidential Scholar

- Received the NSERC Discovery Accelerator Supplement Award in 2020 and serves as a journal reviewer on Nature Communications, Joule, Chemistry of Materials, and other journals

- Own 5 patents and 22 publications related to Li-ion batteries

Mr. Jae Hong Hur
Advisor - Scientific Advisory Board

- Mr. Jae Hong Hur is the current Chairman of the Board of Directors and Former CEO of L&F Co., Ltd – A publicly-traded company in South Korea with $2.5 billion market capitalization and a global top-tier company in the cathode material business

- Over 15 years of experience in lithium ion battery material development and commercialization throughout South Korea

- Mr. Hur is also the CEO of JH Chemical, a company that produces precursor materials for L&F’s cathode materials

Mr. Suk Joong Hwang
Advisor - Scientific Advisory Board

- Mr. Suk Joong Hwang has over 20 years of experience in process engineering in the chemical and polymer industry. He has achieved several successes on process design for scaling-up from lab-scale to commercial-scale via pilot plants.

- Experience in converting batch process to continuous process, which has much advantage in mass production

- Received his BA and MS in Chemical Engineering from the Yonsei University of Korea
Current Capital Structure and Shares Outstanding

Historical 1-Year Price Performance

Share Information (as of July 13, 2021)

<table>
<thead>
<tr>
<th>Ticker Symbol</th>
<th>TSXV: NBM</th>
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<tr>
<td>OTC: NBMFF</td>
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<tr>
<td>Current Share Price</td>
<td>$1.00</td>
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<tr>
<td>Shares Outstanding</td>
<td>87.38M</td>
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<tr>
<td>Market Capitalization</td>
<td>$87.38M</td>
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For More Information:

Website: [www.neobatterymaterials.com](http://www.neobatterymaterials.com)
Address: Suite 520, 800 West Pender Street, Vancouver, B.C. V6C 2V6
Email: shuh@neobatterymaterials.com