

# Applied Minerals Provides Update on U.S. DOE STTR Award to Develop Halloysite-Derived Silicon for Use in Lithium-Ion Batteries

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EUREKA, March 16, 2022 - [Applied Minerals Inc.](#) (the "Company" or "AMI") (OTC PINK:AMNL), a producer of halloysite clay, under the trade name DRAGONITE, and natural iron oxides under the trade name AMIRON, is pleased to provide an update with respect to the U.S. Department of Energy Phase I, Release 2 Small Business Technology Transfer ("STTR") award it received in June 2021 to develop a nano-structured silicon from its halloysite clay resource for use as a low-cost, high-performance anode material replacement for graphite in lithium-ion battery ("LiB") formulations for electric vehicles.

The STTR award amount granted to AMI was \$200,000. Brigham Young University ("BYU") and Argonne National Laboratory ("ANL") are sub-awardees (partners). BYU is AMI's technology development partner, focused on the development of a low-cost process to synthesize nano-structured silicon from halloysite. ANL is the application-testing partner. ANL is the U.S. Department of Energy's lead laboratory for electrochemical energy storage research and development. AMI's CTO, Sharad Mathur, is the Co-Principal Investigator of the project.

To date the results of the work carried out under the STTR award have been very promising. BYU has developed a scalable, low-cost process through which high-purity nano-structured silicon can be synthesized from AMI's halloysite clay resource. AMI has the exclusive license to the intellectual property developed by BYU related to the conversion of halloysite into nano-structured silicon.

Building upon BYU's work, ANL has recently formulated electrodes comprised of halloysite-derived silicon at 70 wt% that have yielded, over multiple cycles, large specific capacity of 2,000 mAh/g when cycled between 10mV and 1.5V, good rate performance up to a 2C discharge and high Coulombic efficiency. Previous results of ANL's work can be viewed on Slides 12 and 13 of the following presentation link [ANL Presentation](#).

Despite silicon having close to 10x the energy storage capacity of graphite, the loading rate of standard silicon in electrodes has been typically limited to less than 10%. The limitation is due to standard silicon's propensity to swell and eventually pulverize upon the absorption of lithium ions, causing the battery to quickly fail. We believe the nano-porosity of halloysite-derived silicon significantly minimizes the swelling issue experienced by standard silicon and will allow for higher loadings of silicon in the electrode, resulting in significant increases in the range of electric vehicle batteries, a top priority of the industry. Electrodes with higher loadings of silicon will also be required by other battery applications requiring greater energy density.

In April 2022, AMI plans to submit an application for a \$1 million STTR Phase 2 award that would be used to scale-up the technology developed during Phase I. In parallel, AMI will explore additional commercialization options based on the final results of the Phase 1 work, its exclusive license to BYU's intellectual property and its ownership of a large, domestic source of high grade halloysite clay.

Management looks forward to providing additional Company updates when appropriate.

## About Applied Minerals

Applied Minerals is a producer of halloysite clay and advanced natural iron oxides from its wholly-owned Dragon Mine property in Utah. Halloysite is aluminosilicate clay that forms naturally occurring nanotubes. The Company markets its halloysite clay products into application areas such as carriers of active ingredients in paints, coatings and building materials, environmental remediation, ceramics, agricultural applications and high-performance additives and fillers for plastic composites. Applied Minerals markets its

halloysite products under the DRAGONITE®; trade name.

From its Dragon Mine property the Company also mines and processes iron oxide for technical applications. Applied Minerals markets its iron oxide under the AMIRON®; trade name.

#### Safe Harbor Statements

The following are safe harbor statements under the Private Securities Litigation Reform Act of 1995 for [Applied Minerals Inc.](#) Some statements contained or implied in this news release may be considered forward-looking statements, which by their nature are uncertain. Consequently, actual results could materially differ. For more detailed information concerning how risks and uncertainties could affect the Company's revenue pipeline, please refer to Applied Minerals' most recent annual and quarterly reports filed with the SEC. The Company assumes no obligation to update any forward-looking information.

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