NEW YORK, NY--(Marketwired - October 04, 2017) -

- DRAGONITE-based polymer electrolytes developed by the University of Utah expected to accelerate the commercialization of solid-state lithium batteries
- DRAGONITE-based technology is of interest to a number of leading battery manufacturers
- Total potential market opportunity of DRAGONITE for use in polymer electrolytes estimated at $100 million per annum by the University of Utah

Applied Minerals Inc. (the "Company" or "Applied Minerals") (OTCQB: AMNL), a leading global producer of halloysite clay and advanced natural iron oxides, is pleased to announce that the State of Utah has awarded a USTAR/UTAG grant of $191,700 to a research team from the University of Utah to further its development of solid polymer electrolytes ("SPE") that utilize DRAGONITE halloysite clay for use in solid-state lithium ("Li") batteries.

Professor Jan D. Miller and a group of researchers from the University of Utah's College of Mines and Earth Sciences have developed a new DRAGONITE-based SPE, which is expected to accelerate the commercial adoption of solid-state Li battery technology. Solid-state Li batteries have greater storage capacity, longer cycle lives and are less costly to produce than conventional liquid and gel-based Li batteries. Furthermore, solid-state Li batteries also eliminate the flammability risk associated with liquid and gel-based technologies. Professor Miller's research team includes Professor Xuming Wang of University of Utah, Research Assistant Qinyu Zhu of University Utah and Professors Jin Liu and Yue Lin of Central South University (China).

Additional research support is being provided by Applied Minerals and a team from Brigham Young University led by Professor John Harb.

Technological Challenge of the Solid-Sate Li Battery Market
The development of electric vehicles, solar energy systems and portable electronic devices has created a growing demand for enhanced energy storage systems. Up to now this need for energy storage capacity has been served by gel and liquid-based Li battery technology. As the demand for both increased storage capacity and improved safety has grown, electric vehicle manufacturers such as Toyota, Panasonic, Tesla and BMW have announced their intentions to develop all-solid-state Li batteries. Solid-state Li batteries use solid electrolytes rather than liquid or gel-based ones, making them safer than the conventional lithium-ion batteries currently being utilized. However, the performance and rate of commercial adoption of solid-state Li batteries have been hampered by conductivity issues of current solid-state Li battery technology related to the crystallization of solid polymer electrolytes over a wide range of operating temperatures.

Technological Breakthrough - Role of DRAGONITE
Professor Miller's group of researchers has demonstrated how the incorporation of DRAGONITE into a polymer electrolyte prevents crystallization over a range of operating temperatures and, consequently, eliminates the resulting conductivity losses experienced by today's solid-state Li battery technologies. This breakthrough is due primarily to the unique surface properties of DRAGONITE's nano-tubular morphology, which creates multi-dimensional pathways that enhance the conductivity of electrolyte materials.

For more information regarding the development of solid-state Li battery technology using DRAGONITE halloysite clay link to the paper titled *Natural halloysite nano-clay electrolyte for advanced all-solid-state lithium sulphur batteries*

According to Professor Miller, "The discovery of the use of DRAGONITE halloysite clay for the development of advanced Li battery technology, including its use in the design and fabrication of SPEs and special cathodes, has been an exciting opportunity for our research group. We are currently engaged in the optimization of DRAGONITE halloysite nanotube applications for various types of Li batteries with scale-up efforts in progress."

Andre Zeitoun, President & CEO of Applied Minerals, added: "Applied Minerals continuously seeks to establish relationships with thought leaders from the scientific community that are capable of developing novel-based solutions utilizing the unique characteristics of our halloysite-based DRAGONITE products. We are truly excited and honored to be a partner in the USTAR/UTAG research program and look forward to continuing our support of Jan Miller's group in bringing this significant technological breakthrough to market."

Market Opportunity
Electric vehicles, including hybrids, plug-in hybrids, and battery electric vehicles, are becoming an increasingly important part of the global automotive market. The need for improved battery technology is obvious. The solution, however, is nontrivial. The new DRAGONITE halloysite-based nano-composite solid-state electrolyte is a thin, almost transparent, membrane and will make possible the use of high energy all solid-state lithium batteries over a wide range of temperatures. In addition, the use of this membrane electrolyte will make simplified, lower weight, all solid-state cells that are safer for use in vehicles and in a myriad of other applications.

It is important to note that it is expected to be possible to use the new DRAGONITE halloysite nanotube solid polymer

electrolyte with a variety of important lithium battery chemistries to replace the liquid electrolytes and traditional cathodes generally used in such batteries. Not only will this new DRAGONITE halloysite-based electrolyte improve existing battery technologies, but it will also enable new battery technologies and applications that are not yet feasible (e.g., lithium-sulfur batteries). The use of a solid polymer electrolyte instead of the conventional liquid or gel electrolyte will significantly improve the safety aspects of Li batteries, as already stated. It will also increase energy density and reduce the complexity and cost of manufacturing.

The markets in which this new technology is expected to have a particularly significant impact are electric vehicles, solar panel systems and portable electronic devices as increased energy storage capacity and improved safety are critical to the commercial growth of each. Certain patents, focused on the utilization of DRAGONITE halloysite clay within SPE and special cathode design, have been filed by entities associated with the research and development of this novel technology.

Energy storage will be a central component of any initiative meant to increase the amount of renewable energy in Utah's energy mix. In the long term, an efficient and safe large energy storage system could be developed based on the new DRAGONITE halloysite-based electrolyte technology. The home energy storage market for the State of Utah is estimated at $7 billion.

A number of leading companies within the Li battery industry have expressed a strong interest in the technology. As part of its grant application to the State of Utah, Professor Miller and his team calculated that the estimated the total market opportunity for DRAGONITE used in the manufacture of solid polymer electrolytes for solid-state Li batteries has the potential to reach $100 million per annum.

Commercialization Plan
Several avenues for commercialization are being explored including, but not limited to, the sale or licensing of the technology to a third party and the formation of an independent venture to manufacture the DRAGONITE halloysite-based solid polymer electrolyte/electrode for the lithium battery industry.

The Department of Technology & Venture Commercialization (TVC) at the University of Utah has received interest from major battery manufacturers, electrolyte manufacturers and battery end-users to participate in the UTAG project with the intention to license the DRAGONITE halloysite-based SPE technology.

About Applied Minerals
Applied Minerals is the leading producer of halloysite clay and advanced natural iron oxide solutions from its wholly owned Dragon Mine property in Utah. Halloysite is aluminosilicate clay that forms naturally occurring nanotubes. In addition to serving the traditional halloysite markets for use in technical ceramics and catalytic applications, the Company has developed niche applications that benefit from the tubular morphology of its halloysite. These applications include carriers of active ingredients in paints, coatings and building materials, environmental remediation, 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 produces a range of ultra-pure natural iron oxides consisting of hematite and goethite. Combining ultra-high purity and consistent quality, the inherent properties of the iron oxide from the Dragon Mine allow for a wide range of end uses in pigment and technical applications. Applied Minerals markets its comprehensive line of advanced natural iron oxide pigments under the AMIRON „¢ trade name. Additional information on the Company can be found at www.appliedminerals.com and www.AMIRONoxides.com.

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 financial results, please refer to Applied Minerals' most recent filings with the SEC. The Company assumes no obligation to update any forward-looking information.

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