



PyroGenesis Confirms Third-Party SEM Analysis Supports Pilot-Scale Fumed Silica Morphology Consistent with Commercial-Grade Fumed Silica

July 28, 2025

Optimization continues in advance of planned Phase 2 performance trials set for August 2025

MONTREAL, July 28, 2025 (GLOBE NEWSWIRE) -- PyroGenesis Inc. ("PyroGenesis") (<http://pyrogenesis.com>) (TSX: PYR) (OTCQX: PYRGF) (FRA: 8PY1), a high-tech company that designs, develops, manufactures and commercializes all-electric plasma processes and sustainable solutions to support heavy industry in their energy transition, emission reduction, commodity security, and waste remediation efforts, announces today that further to its [news release dated July 8, 2025](#), and further to a recent press release from the Company's client HPQ Silicon Inc. ("HPQ"), PyroGenesis confirms that third-party Scanning Electron Microscopy (SEM) analysis of Phase 1 Test #5 material from the Fumed Silica Reactor (FSR) further validates recently announced key technical metrics for fumed silica samples generated by the pilot scale plant.

SEM is used to analyze the surface features and morphology microstructure of materials. By employing a focused beam of high-energy electrons, SEM delivers high-resolution images and detailed surface information far beyond the capabilities of optical microscopy, which is limited by visible light and lenses. In the context of fumed silica, where performance and market value are closely linked to specific surface area, particle size distribution, and aggregate morphology, SEM plays a critical role in validating the quality and consistency of the product.

LATEST PROJECT HIGHLIGHTS

- SEM imagery confirms Phase 1 Test #5 material matches lab-scale fumed silica results with improved particle structure.
- SEM images exhibit morphology and structure consistent with commercial-grade fumed silica.
- Data from Brunauer-Emmett-Teller (BET) analysis – used to measure specific surface area – indicates reactor enhancements are successfully closing the gap between pilot-run and lab-scale surface area performance.
- Ongoing reactor optimizations set to maintain lab-scale surface area performance at pilot scale.
- Phase 2 trials are scheduled for August to further validate material quality and prepare for commercial qualification.

"With the SEM imagery validation of Test #5, we have greater confidence that the FSR consistently reproduces lab-scale quality at pilot volumes," said P. Peter Pascali, President and CEO of PyroGenesis. "Remaining engineering efforts will now focus on process stability, yield enhancement, and further surface area refinements – all critical for Phase 2, which is fast approaching."

Image 1:



Packaged fumed silica, produced by the FSR, ready for shipping to client's test facility.



Image 1: Packaged fumed silica, produced by the FSR, ready for shipping to client's test facility.

INDUSTRY AND MARKET CONTEXT

- Fumed silica is one of the most widely used industrial materials, and can be found in thousands of products, including cosmetics, toothpaste, pet litter, powdered food, milkshakes, instant coffee, pharmaceuticals, agriculture, adhesives, paints, inks, photocopy toner, sealants, fiber optic cables, thermal insulation, construction materials, and batteries, to name a few. It is often used in these products as a thickening/anti-caking agent, used to stabilize and improve the texture, consistency, and flow of the end-product.
- Fumed silica is often combined with other materials to enhance performance. For example, in tires, it is blended with carbon-black to improve wear and efficiency; in batteries, it is blended with graphite to enhance slurry uniformity and conductivity.
- PyroGenesis has been engaged to develop and build the FSR pilot plant for HPQ Polvere Inc. ("Polvere"), a subsidiary of HPQ.
- PyroGenesis has: (i) a 50% interest in Polvere, and (ii) an exclusive arrangement to be the sole supplier of equipment relating to any commercialization of this new process.

PyroGenesis' involvement in developing fumed silica from quartz is part of its [three-vertical solution ecosystem](#) that aligns with economic drivers that are key to global heavy industry. Fumed powders are part of PyroGenesis' **Commodity Security & Optimization** vertical, where the development of advanced material production techniques, and the use of technology such as plasma to recover viable metals, chemicals, and minerals from industrial waste, helps to maximize raw materials and improve the availability of critical minerals. The Company's other verticals are **Energy Transition and Emission Reduction** and **Waste Remediation**.

About PyroGenesis Inc.

PyroGenesis, a high-tech company, is a proud leader in the design, development, manufacture and commercialization of advanced plasma processes and sustainable solutions which reduce greenhouse gases (GHG) and are economically attractive alternatives to conventional "dirty" processes. PyroGenesis has created proprietary, patented and advanced plasma technologies that are being vetted and adopted by multiple multibillion dollar industry leaders in four massive markets: iron ore pelletization, aluminum, waste management, and additive manufacturing. With a team of experienced engineers, scientists and technicians working out of its Montreal office, and its 3,800 m² and 2,940 m² manufacturing facilities, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The operations are ISO 9001:2015 and AS9100D certified, having been ISO certified since 1997. PyroGenesis' shares are publicly traded on the TSX in Canada (TSX: PYR), the OTCQX in the US (OTCQX: PYRGF), and the Frankfurt Stock Exchange in Germany (FRA: 8PY1).

Cautionary and Forward-Looking Statements

This press release contains “forward-looking information” and “forward-looking statements” (collectively, “forward-looking statements”) within the meaning of applicable securities laws. In some cases, but not necessarily in all cases, forward-looking statements can be identified by the use of forward-looking terminology such as “plans”, “targets”, “expects” or “does not expect”, “is expected”, “an opportunity exists”, “is positioned”, “estimates”, “intends”, “assumes”, “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”, “will” or “will be taken”, “occur” or “be achieved”. In addition, any statements that refer to expectations, projections or other characterizations of future events or circumstances contain forward-looking statements. Forward-looking statements are not historical facts, nor guarantees or assurances of future performance but instead represent management’s current beliefs, expectations, estimates and projections regarding future events and operating performance.

Forward-looking statements are necessarily based on a number of opinions, assumptions and estimates that, while considered reasonable by PyroGenesis as of the date of this release, are subject to inherent uncertainties, risks and changes in circumstances that may differ materially from those contemplated by the forward-looking statements. Important factors that could cause actual results to differ, possibly materially, from those indicated by the forward-looking statements include, but are not limited to, the risk factors identified under “Risk Factors” in PyroGenesis’ latest annual information form, and in other periodic filings that it has made and may make in the future with the securities commissions or similar regulatory authorities, all of which are available under PyroGenesis’ profile on SEDAR+ at www.sedarplus.ca. These factors are not intended to represent a complete list of the factors that could affect PyroGenesis. However, such risk factors should be considered carefully. There can be no assurance that such estimates and assumptions will prove to be correct. You should not place undue reliance on forward-looking statements, which speak only as of the date of this release. PyroGenesis undertakes no obligation to publicly update or revise any forward-looking statement, except as required by applicable securities laws.

Neither the Toronto Stock Exchange, its Regulation Services Provider (as that term is defined in the policies of the Toronto Stock Exchange) nor the OTCQX Best Market accepts responsibility for the adequacy or accuracy of this press release.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD

E-mail: ir@pyrogenesis.com

<http://www.pyrogenesis.com>

A photo accompanying this announcement is available at <https://www.globenewswire.com/NewsRoom/AttachmentNg/3810e480-e734-4ff5-a7f6-5a50a7d70543>