# PyroGenesis Provides Interim Report to HPQ Silicon Resources; GEN2 Attains Significantly Higher Silicon Metal Production Yield

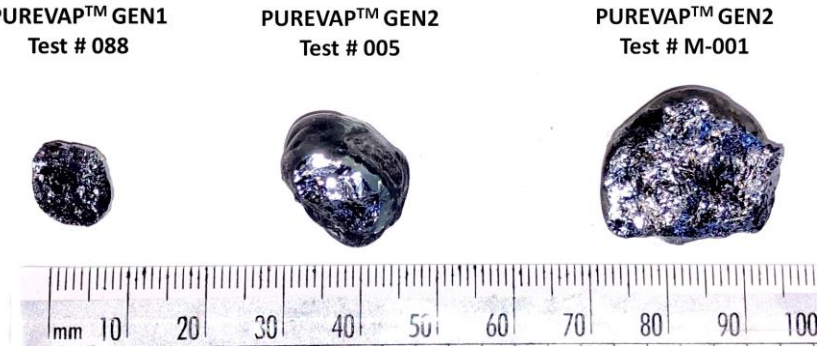
**MONTREAL, QUEBEC (GlobeNewswire – April 25th, 2019)** - PyroGenesis Canada Inc. (http://pyrogenesis.com) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, today announced that it has provided an interim progress report to HPQ Silicon Resources ("HPQ"), highlighting GEN2's significantly higher silicon metal production yield.

PyroGenesis informed HPQ that (i) the technical team identified a new operational parameter that increases the Pure Silicon Metal (Silicon Nugget) Production Yield[1] of the PUREVAP™ Quartz Reduction Reactor and (ii) a test using the GEN2 PUREVAP™ was completed which together provided the following information:

1. The PUREVAP™ reactor can be modified from a stationary reactant[2] mixtures load to a dynamic one, without affecting other key operational parameters of the reactor which, as a result, improves production yield significantly;
2. That changing the reactant mixture load to a dynamic flow positively affects Production Yield;
3. That it is feasible to modify the GEN3 PUREVAP™ Pilot Plant to integrate these advantages into the new design.

## IMPROVING REACTANT FLOW IN THE REACTOR SIGNIFICANTLY IMPROVES PRODUCTION YIELD

The scope of the potential of the new parameter became apparent when the test produced the largest single individual silicon nuggets of all tests to date; weighing ~ 6.5 grams.




Picture 1. Largest Individual Silicon Nuggets per testing stage
on the left with GEN1, in the middle with GEN2 and on the right with GEN2 after modification

1 Production Yield is the conversion efficiency of Quartz into Silicon Metal of the process

2 Quartz (SiO2) and carbon

## REACTOR MODIFICATION MORE THAN DOUBLES SILICON METAL NUGGET (PURE SILICON) PRODUCTION YIELD

Comparing[3] the 3.3% pure silicon nugget production yield of test #14 to the 7.0% pure silicon nugget production yield obtained by test M-001 validated the modification potential. Further tests will be needed to optimize the process and its operation, but the results clearly indicate that pure silicon production yield more than doubled with the modification. Producing 4N+ silicon with the PUREVAP™ assumes a 90%+ production yield at commercial scale. These results are part of our trendline that indicate that we are on the right track to reach that goal with our GEN3 PUREVAP™ Pilot Plant.

"It has always been important to maintain or improve production yield while scaling up to a commercial system," said Mr. Pierre Carabin, Chief Technology Officer and Chief Strategist of PyroGenesis. "Being able to improve it, with results such as today's, and thereby further mitigating the risk of the project, is a significant achievement in itself, and it validates the decision to proceed with the GEN2 middle step. We have ticked off another box in our goal to create both a low cost and green metallurgical approach to producing solar grade silicon metal."

## GEN2 PUREVAP™ QRR CONTINUES TO BE AN INVALUABLE BENCH TEST PLATFORM

These latest results confirm the strategic decision to incorporate the GEN2 as a middle step towards the GEN3 pilot plant. It provides us the ability to immediately test new concepts and design modifications using the GEN2 PUREVAP™ platform while the GEN3 PUREVAP™ pilot plant is being assembled. This unique proposition not only reduces the risk profile of the project, but it also reduces the project commercial validation timeline. It is also extremely cost effective since tests done using the GEN2 R&D platform are substantially less expansive then they would be if the tests were done using the GEN3 PUREVAP™ pilot plant.

## About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 $m^2$ manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com

3 Both tests used for the comparison were done under similar operational conditions

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