PsiQuantum and GLOBALFOUNDRIES to Build the World's First Full-scale Quantum Computer

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Partnership Achieves World-first Manufacturing Milestone in Photonic Quantum Computing

PALO ALTO, Calif. and Malta, New York – May 5, 2021 – PsiQuantum™, the leading quantum computing company focused on delivering a 1 million-plus qubit quantum computer, and GLOBALFOUNDRIES® (GF®), the global leader in feature-rich semiconductor manufacturing, today announced a major breakthrough in their partnership to build the world's first full-scale commercial quantum computer. The two companies are now manufacturing the silicon photonic and electronic chips that form the foundation of the Q1 system, the first system milestone in PsiQuantum's roadmap to deliver a commercially viable quantum computer with one million qubits (the basic unit of quantum information) and beyond.

PsiQuantum and GF have now demonstrated a world-first ability to manufacture core quantum components, such as single-photon sources and single-photon detectors, with precision and in volume, using the standard manufacturing processes of GF's world-leading semiconductor fab. The companies have also installed proprietary production and manufacturing equipment in two of GF's 300mm fabs to produce thousands of Q1 silicon photonic chips at its facility in upstate New York, and state-of-the-art electronic control chips at its Fab 1 facility in Dresden, Germany.

Quantum computing is expected to deliver extraordinary advances across a multitude of industries including pharmaceutical development, materials science, renewable energy, climate mitigation, sustainable agriculture, and more. PsiQuantum's Q1 system represents breakthroughs in silicon photonics, which the company believes is the only way to scale to 1 million-plus qubits and beyond and to deliver an error-corrected, fault-tolerant, general-purpose quantum computer.

The Q1 system is the result of five years of development at PsiQuantum by the world's foremost experts in photonic quantum computing. The team made it their mission to bring the world-changing benefits of quantum computing into reality, based on two fundamental understandings: 1) A useful quantum computer capable of performing otherwise impossible calculations requires 1 million-plus physical qubits; and 2) Leveraging the 50-plus years and trillions of dollars invested in the semiconductor industry is the only path to create a commercially viable quantum computer.

"In the past year, we have experienced a decade of technological change. Now, due to the digital transformation and the explosion of data we are faced with problems that require quantum computing to further accelerate the Renaissance of Compute," said Amir Faintuch, senior vice president and general manager of Compute and Wired Infrastructure at GF. "PsiQuantum and GF's partnership is a powerful combination of PsiQuantum's photonic quantum computing expertise and GF's silicon photonics manufacturing capability that will transform industries and technology applications across climate, energy, healthcare, materials science, and government."

GF's leading silicon photonics manufacturing platform enables PsiQuantum to develop quantum chips that can be measured and tested for long-term performance reliability. This is critical to be able to execute quantum algorithms, which require millions or billions of gate operations. PsiQuantum is collaborating with researchers, scientists and developers at leading companies to explore and test quantum use cases across a range of industries, including energy, healthcare, finance, agriculture, transportation and communications.

"This is a major achievement for both the quantum and semiconductor industries, demonstrating that it's possible to build the critical components of a quantum computer on a silicon chip, using the standard manufacturing processes of a world-leading semiconductor fab," said Pete Shadbolt, chief strategy officer and co-founder of PsiQuantum. "When we first envisioned PsiQuantum, we knew that scaling the system would be the existential question. Together with GLOBALFOUNDRIES, we have validated the manufacturing path for silicon photonics and are confident that by the middle of this decade, PsiQuantum will have completely stood up all the manufacturing lines and processes necessary to begin assembling a final machine."

The PsiQuantum and GF partnership is redefining the leading-edge by enabling the move from electrons to photons, while the rest of the world continues to chase traditional node scaling. Moreover, the partnership is playing a critical role in ensuring the United States becomes a global leader in quantum computing, supported by a secure, domestic supply chain. As the only semiconductor manufacturer with a global footprint, GF provides a broad range of platforms with feature-rich solutions enabling customers to develop pervasive products for high-growth market segments.

For more information about GF, visit www.globalfoundries.com.

For more information about the Q1 system and its underlying architecture, read PsiQuantum's blog here. For more information about PsiQuantum, visit www.psiquantum.com.

About GF

GLOBALFOUNDRIES (GF) is one of the world's leading semiconductor manufacturers and the only one with a truly global footprint. GF delivers feature-rich solutions that enable its customers to develop pervasive chips for high-growth market segments. GF provides a broad range of platforms and features with a unique mix of design, development and fabrication services. With an at-scale manufacturing footprint spanning the U.S., Europe and Asia, GF has the flexibility and agility to meet the dynamic needs of its more than 250 customers across the globe. GF is owned by Mubadala Investment Company. For more information, visit www.globalfoundries.com.

About PsiQuantum:

PsiQuantum is on a mission to build the world's first commercially viable quantum computer, powered by breakthroughs in silicon photonics and quantum architecture. PsiQuantum believes silicon photonics is the only way to scale beyond one million qubits and deliver an error-corrected, fault-tolerant, general-purpose quantum computer. With quantum chips now being manufactured in a tier-one semiconductor fab, PsiQuantum is uniquely positioned to deliver quantum capabilities that drive advances with customers and partners across climate, healthcare, finance, energy, agriculture, transportation and communications. To learn more, visit www.psiquantum.com.

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