Zero-Spin Silicon Project Completes Construction of Stage 2 Prototype Demonstration Facility

27 May 2021

Highlights:

- **A key project milestone, the construction of scaled-up prototype equipment for the demonstration of the Zero-Spin Silicon (ZS-Si) laser isotope separation process, has been completed**
- **The ZS-Si Project is continuing to progress efficiently through the second stage of the project which aims to demonstrate commercial production capability using the prototype facility by the end of CY2021**
- **Full Project completion will involve a third stage - the commissioning and operation of a ZS-Si pilot production facility to produce initial commercial quantities by the end of CY2022**
- **ZS-Si is a key enabling material for the next generation of processor chips to power silicon quantum computers**
- **The Project is supported by collaboration partners SQC and UNSW, with funding from the Federal Government's Cooperative Research Centres Projects**

Silex Systems Limited (Silex) (ASX: SLX) (OTCQX: SILXY) is pleased to announce the completion of the construction of a scaled-up prototype processing facility which will be deployed to demonstrate the scalability and efficiency of its laser isotope separation (LIS) technology for potential commercial production of high-purity 'Zero-Spin Silicon' (ZS-Si). The ZS-Si production technology is based on a variant of the SILEX laser isotope separation (LIS) platform technology. The construction of the facility is the third milestone in the ZS-Si project which is being undertaken in conjunction with project partners Silicon Quantum Computing Pty Ltd (SQC) and UNSW Sydney (UNSW).

As part of this milestone, a customised high powered SILEX laser system was specified, constructed and installed. Additionally, a prototype process reactor and associated gas handling system were designed, constructed and installed. The integration of these sub-systems into the prototype facility at the Company's Lucas Heights laboratories represents the first time the technology has been scaled-up outside the original uranium enrichment project.

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Dr Michael Goldsworthy, Silex CEO said: “Since we launched this project in December 2019, we have made rapid progress and successfully met all of the milestones in our Project to develop LIS technology for the production of high-purity ZS-Si for the emerging quantum computing industry.

“The completion of the construction of the prototype facility represents an intense and focused effort by our engineers and scientists, and is a key step towards validating the use of the SILEX LIS technology for the commercial production of ZS-Si. The Project now moves into the next phase of work - undertaking rigorous process measurements with the facility over the coming months and optimising the process and technology for efficient production of high-purity ZS-Si,” he said.

Zero-Spin Silicon for Quantum Computing Processor Chips

Silex’s LIS technology has the near-term potential to efficiently produce ZS-Si in commercial quantities to provide a secure supply of this key enabling material for the emerging silicon quantum computing market with initial sales targeted in 2023.

ZS-Si is a unique form of isotopically enriched silicon required for the fabrication of next-generation processor chips which will power silicon-based quantum computers. Quantum computers are expected to be thousands of times more powerful than the most advanced conventional computers in operation today, creating opportunities in several industries, including medicine, artificial intelligence, cybersecurity, and financial systems. Many governments around the world and key corporates such as Intel, Google, IBM, and Microsoft are vying for leadership in Quantum Computing development.

The three-year, three-stage project is due for completion at the end of CY2022 with the planned production of initial commercial quantities of ZS-Si from a SILEX pilot production facility. The first stage, completed in June 2020, involved a ‘proof-of-concept’ demonstration of the silicon enrichment process using laboratory-scale equipment, and initial optimisation of the process.

The second stage which is currently advancing, involves demonstration and optimisation of the LIS technology with the prototype facility, and involves three additional milestones scheduled for completion by late CY2021. After completion of stage two, the prototype facility will be modified to increase process throughput and incorporate any design improvements for the conduct of stage three work, which will focus on pilot production activities.

The first batches of commercial ZS-Si product will be purchased by SQC under an Offtake Agreement that was executed in December 2019. The Agreement includes SQC making three annual payments of $300,000, two of which have been received to date, as an offset against future purchases of ZS-Si produced by Silex.

Current methods for production of enriched silicon are very limited and costly (even for lower purity material) with only a few kilograms produced annually world-wide, mostly using gas centrifuge technology. Should the ZS-Si project be successful, it would enable Australia to establish itself as a world-leader in ZS-Si production, potentially creating a new value-added export market.

The project remains on track to achieve its objective of utilising the SILEX LIS technology to produce enriched silicon in the form of ZS-Si with sufficiently high purity, and to establish the manufacturing technology and capability to scale-up production as silicon-based quantum computing gains traction globally during the next decade.

Silex will retain ownership of the ZS-Si production technology and related Intellectual Property developed through the project.

Authorised for release by the Silex Board of Directors.

Further information on the Company's activities can be found on the Silex website: www.silex.com.au or by contacting:

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Forward Looking Statements and Risk Factors:

About Silex Systems Limited (ASX: SLX) (OTCQX: SILXY)
Silex Systems Limited ABN 69 003 372 067 (Silex) is a research and development company whose primary asset is the SILEX laser enrichment technology, originally developed at the Company's technology facility in Sydney, Australia.

The SILEX technology has been under development for uranium enrichment jointly with US-based exclusive licensee Global Laser Enrichment LLC (GLE) for a number of years. Success of the SILEX uranium enrichment technology and the proposed Paducah commercial project remain subject to a number of factors including the satisfactory completion of the engineering scale-up program and uranium market conditions and therefore remains subject to associated risks.

Silex is also in the early stages of pursuing additional commercial applications of the SILEX technology, including the production of 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing. The 'Zero-Spin Silicon' project remains dependent on the outcomes of the project and the viability of silicon quantum computing and is therefore at risk. The future of the SILEX technology is therefore uncertain and any plans for commercial deployment are speculative.

Additionally, Silex has an interest in a unique semiconductor technology known as 'cREO®' through its ownership of subsidiary Translucent Inc. The cREO® technology developed by Translucent has been acquired by IQE Plc based in the UK. IQE is progressing the cREO® technology towards commercial deployment for 5G mobile handset filter applications. The outcome of IQE's commercialisation program is also uncertain and remains subject to various technology and market risks.

Forward Looking Statements
The commercial potential of these technologies is currently unknown. Accordingly, no guarantees as to the future performance of these technologies can be made. The nature of the statements in this Announcement regarding the future of the SILEX technology, the cREO® technology and any associated commercial prospects are forward-looking and are subject to a number of variables, including but not limited to, unknown risks, contingencies and assumptions which may be beyond the control of Silex, its directors and management. You should not place reliance on any forward-looking statements as actual results could be materially different from those expressed or implied by such forward looking statements as a result of various risk factors. Further, the forward-looking statements contained in this Announcement involve subjective judgement and analysis and are subject to change due to management's analysis of Silex's business, changes in industry patterns, and any new or unforeseen circumstances. The Company's management believes that there are reasonable grounds to make such statements as at the date of this Announcement. Silex does not intend, and is not obligated, to update the forward-looking statements except to the extent required by law or the ASX Listing Rules.

Risk Factors
Risk factors that could affect future results and commercial prospects of Silex include, but are not limited to: ongoing economic uncertainty including the impacts of the COVID-19 pandemic; the results of the SILEX uranium enrichment engineering development program; the market demand for natural uranium and enriched uranium; the outcome of the project for the production of 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing; the potential development of, or competition from alternative technologies; the potential for third party claims against the Company's ownership of Intellectual Property; the potential impact of prevailing laws or government regulations or policies in the USA, Australia or elsewhere; results from IQE's commercialisation program and the market demand for cREO® products; and the outcomes of various strategies and projects undertaken by the Company.