Zero-Spin Silicon Project Successfully Completes Stage One

29 June 2020

Highlights:

- ***Stage one of the three-year project completed on budget and schedule***
- ***Project aims to produce Zero-Spin Silicon (ZS-Si) - a key enabling material for the emerging silicon quantum computing industry***
- ***Commercially valuable isotopic purity of 99.95% demonstrated at lab-scale using a variant of the SILEX laser isotope separation technology***
- ***Project remains on track for completion by the end of CY2022 with aim of demonstrating ability to cost-effectively produce ZS-Si***
- ***Project supported by collaboration partners SQC and UNSW, and funding from the Federal Government's Cooperative Research Centres Projects (CRC-P)***

Silex Systems Limited (Silex) (ASX: SLX) (OTCQX: SILXY) is pleased to announce in conjunction with project partners Silicon Quantum Computing Pty Ltd (SQC) and UNSW Sydney (UNSW), that it has achieved completion of stage one in the project to develop a process for the commercial production of high-purity 'Zero-Spin Silicon' (ZS-Si) using a variant of the SILEX laser isotope separation (LIS) technology. Silex's LIS technology has the potential to efficiently produce ZS-Si to provide a secure supply of this material for SQC in support of its efforts to commercialise silicon-based quantum computing in conjunction with UNSW.

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 of today's conventional computers, opening new frontiers and opportunities in many industries, including medicine, artificial intelligence, cybersecurity and global financial systems.

"We are very pleased with the timely achievement of the first milestone in this world-leading collaboration – I want to congratulate the team for achieving an impressive start to the project", Dr Michael Goldsworthy, Silex CEO said today. "The results achieved have exceeded our expectations. Not only has proof-of-concept been verified for the silicon LIS process and stage one completed, but the team has already managed to achieve commercially valuable isotopic purity of at least 99.95% in laboratory-scale tests. If this process can be successfully scaled-up in the next stage of the project, then we will be well on our way to potentially establishing a new business segment for Silex," he added.

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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 involved 'proof-of-concept' demonstration of the silicon enrichment process using laboratory-scale equipment, and initial optimisation of the process to support the development of an enrichment model which will be used to help scale the process and associated production equipment. The second stage of the project involves the design, construction and operation of scaled-up prototype equipment with the objective of validating the silicon LIS technology and scalability of the process. The second stage includes four separate milestones due for completion by late CY2021. A final set of milestones, culminating in the operation of the pilot production facility, form the basis of stage three of the project, scheduled for completion by the end of CY2022.

The first batches of ZS-Si product will be purchased by SQC under an Offtake Agreement executed in December 2019, which includes SQC making three annual payments of $300,000 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, mostly using gas centrifuge technology. Should the ZS-Si project be successful, it would enable Australia to establish itself as the world-leader in ZS-Si production, creating a new value-added export market. The project is also supported by a $3 million Federal Government funding grant from the CRC-P which was awarded in February 2020 (refer to ASX announcement - 10 February 2020).

The project remains on track to achieve its objective of utilising the SILEX LIS technology to cost-effectively 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 over 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 Business Risks:

Silex Systems Limited (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 was licensed exclusively in 2006 to GE-Hitachi Global Laser Enrichment LLC (GLE) in the USA for application to uranium enrichment. GLE has been undergoing a restructure for a number of years after GE-Hitachi disclosed it was seeking to exit the venture. In view of the time the GLE restructure has taken to date and the dependency of the Closing of the restructure on obtaining US Government approvals, combined with the continuing depressed nuclear fuel market conditions, plans for commercial deployment of the SILEX technology have been significantly delayed, and remain at risk.

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 highly uncertain and any plans for commercial deployment are speculative.

Silex also 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 in various advanced semiconductor products. The outcome of IQE's commercialisation program is also highly uncertain and remains subject to various technology and market risks.

The commercial potential of these technologies is currently unknown. Accordingly, the statements in this announcement regarding the future of the SILEX technology, the cREO™ technology and any associated commercial prospects are forward looking and actual results could be materially different from those expressed or implied by such forward looking statements as a result of various risk factors.

Risk factors that could affect future results and commercial prospects include, but are not limited to: the outcome of the GLE restructure including obtaining US Government approvals; 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.