Filed Pursuant to Rule 424(b)(3)
Registration No. 333-295256

SUPPLEMENT NO. 5 TO

PROSPECTUS OF XANADU QUANTUM TECHNOLOGIES LIMITED

This prospectus supplement amends and supplements the prospectus dated May 1, 2026, as supplemented or amended from time to time (the "Prospectus"), which forms a part of our Registration Statement on Form F-1 (Registration Statement No. 333-295256). This prospectus supplement is being filed to update and supplement the information included or incorporated by reference in the Prospectus with the information contained in our Report on Form 6-K, which was furnished to the Securities and Exchange Commission on October 19, 2026 (the "Form 6-K"). Accordingly, we have attached the Form 6-K to this prospectus supplement.

This prospectus supplement updates and supplements the information in the Prospectus and is not complete without and may not be delivered or utilized except in combination with, the Prospectus, including any amendments or supplements thereto. This prospectus supplement should be read in conjunction with the Prospectus and if there is any inconsistency between the information in the Prospectus and this prospectus supplement, you should rely on the information in this prospectus supplement.

Our Class B Subordinate Voting Shares are listed on the Nasdaq Global Market ("Nasdaq") under the symbol "XNDU" and the Toronto Stock Exchange (the "TSX") under the symbol "XNDU." On October 16, 2026, the last reported sales prices of the Class B Subordinate Voting Shares on Nasdaq and the TSX were $3.04 and C$4.29 respectively.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading "Risk Factors" beginning on page 1 of the Annual Report and beginning on page 6 of the Prospectus, and under similar headings in any amendments or supplements to the Prospectus.

None of the Securities and Exchange Commission, any state securities commission or the securities commission or regulatory authority of any Canadian province or territory has approved or disapproved of the securities offered by this prospectus supplement or the Prospectus or determined if the Prospectus or this prospectus supplement is accurate or adequate. Any representation to the contrary is a criminal offense.

This Supplement No. 5 is dated October 19, 2026.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 6-K

Report of Foreign Private Issuer
Pursuant to Rule 13A-16 or 15D-16
of the Securities Exchange Act of 1934

For the month of October 2026

Commission File Number: 001-43205

Xanadu Quantum Technologies Limited
(Translation of registrant's name into English)

777 Bay Street, Suite 2400, Toronto, Ontario M5G 2C8
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.

Form 20-F ☒ Form 40-F ☐

INCORPORATION BY REFERENCE

This Report on Form 6-K, including Exhibit 99.1, is incorporated by reference into the registrant's registration statement on Form S-8 (File No. 333-296231) (including any prospectuses forming a part of such registration statement) filed with the U.S. Securities and Exchange Commission, to be a part thereof from the date on which this Report on Form 6-K is submitted, to the extent not superseded by documents or reports subsequently filed or furnished.

Signature

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Dated: October 19, 2026

Xanadu Quantum Technologies Limited

By: /s/ Michael Trzupek
Michael Trzupek
Chief Financial Officer

Exhibit Index

Exhibit	Description of Exhibit
99.1	Press release dated October 19, 2026 – Xanadu Secures Up to USD $10 Million in Additional DARPA Support to Accelerate Quantum R&D Roadmap

Exhibit 99.1

Xanadu Secures Up to USD $10 Million in Additional DARPA Support to Accelerate Quantum R&D Roadmap

Continued DARPA investment reinforces Xanadu's progress toward fault-tolerant, utility-scale photonic quantum computing

TORONTO, ON | October 19, 2026 /GLOBE NEWSWIRE/ — Xanadu Quantum Technologies Limited ("Xanadu"; NASDAQ/TSX: XNDU), a leading photonic quantum computing company, today announced that it has received provisional approval for project funding worth up to USD $10 million under DARPA's Quantum Benchmarking Initiative (QBI). This one-year contract extension reflects DARPA's ongoing support and investment in Xanadu's R&D, and builds on the company's work in Stage B.

DARPA's QBI program evaluates leading quantum computing architectures to determine which approaches can deliver utility-scale performance within realistic budgets and real-world timelines. Under this contract, Xanadu expects to execute a dual-purpose strategy over the next 12 months; providing regular progress reports to DARPA for continued evaluation, while directly allocating the majority of the funding to accelerate the advancement of critical components in its R&D roadmap.

Xanadu believes that its photonic quantum computing architecture offers distinct advantages over traditional quantum systems. Most notably, it has minimal cooling requirements due to room-temperature compute operations, a modular, networkable design, and fast clock speeds. The company's latest photonic quantum computer, Aurora, not only validates the scalability and viability of Xanadu's photonic approach by demonstrating networkability, but the Company believes it also establishes a foundation for all future fault-tolerant quantum systems—systems built to tackle the world's most intractable problems.

"Ongoing participation in QBI reinforces Xanadu's goal of developing quantum computing solutions that deliver practical value across industries, including drug discovery, advanced chemistry, aerospace, defense, and AI," said Dr. Christian Weedbrook, Founder and Chief Executive Officer of Xanadu.

Successful completion of Stage B evaluations maintains Xanadu's path through the DARPA QBI program, where quantum computer concepts will undergo formal verification and validation to ensure they can be constructed as designed and operated as intended.

About Xanadu

Founded in 2016, Xanadu is a Canadian photonic quantum computing company with the mission to build quantum computers that are useful and available to people everywhere. Xanadu is building fault-tolerant quantum computers using light, with systems designed to compute at room temperature. Xanadu develops both hardware and software, including PennyLane, its open-source quantum computing platform. Xanadu is the first pure-play photonic quantum computing company to list on public markets (Nasdaq/TSX: XNDU) and is recognized globally for its breakthroughs in scalable quantum technologies. Visit xanadu.ai or follow on X @XanaduAI.

Forward-Looking Statements

This communication includes "forward-looking statements" within the meaning of the U.S. federal securities laws and "forward-looking information" within the meaning of applicable Canadian securities laws (collectively, "forward-looking statements"). Forward-looking statements may be identified by the use of words such as "estimate," "plan," "project," "forecast," "intend," "will," "expect," "anticipate," "believe," "seek," "target," "continue," "could," "may," "might," "possible," "potential," "predict" or similar expressions that predict or indicate future events or trends or that are not statements of historical matters. Xanadu has based these forward-looking statements on current expectations and projections about future events. These statements include: statements regarding Xanadu's expectations with respect to the one-year contract extension of up to USD $10 million under the DARPA QBI program; and Xanadu's expectation to establish a foundation for all future fault-tolerant quantum systems built to tackle the world's most intractable problems.

These forward-looking statements are provided for illustrative purposes only and are not intended to serve as, and must not be relied on as, a guarantee, an assurance, a prediction or a definitive statement of fact or probability. Actual events and circumstances are difficult or impossible to predict and will differ from assumptions, many of which are beyond the control of Xanadu. These forward-looking statements are subject to known and unknown risks, uncertainties and assumptions that may cause the actual results of Xanadu, levels of activity, performance or achievements to be materially different from any future results, levels of activity, performance or achievements expressed or implied by such statements. Such risks and uncertainties include: that risk that Xanadu may never receive the entire additional US $10 million under its one-year contract extension with DARPA on the timelines currently expected or at all; that Xanadu is pursuing an emerging technology, faces significant technical challenges and may not achieve commercialization or market acceptance; Xanadu's historical net losses and limited operating history; Xanadu's expectations regarding future financial performance, capital requirements and unit economics; Xanadu's use and reporting of business and operational metrics; Xanadu's competitive landscape; Xanadu's dependence on members of its senior management and its ability to attract and retain qualified personnel; the potential need for additional future financing; Xanadu's ability to manage growth and expand its operations; potential future acquisitions or investments in companies, products, services or technologies; Xanadu's reliance on strategic partners and other third parties; Xanadu's concentration of revenue in contracts with government or state-funded entities; Xanadu's ability to maintain, protect and defend its intellectual property rights; risks associated with privacy, data protection or cybersecurity incidents and related regulations; the use, rate of adoption, and regulation of artificial intelligence and machine learning; uncertainty or changes with respect to laws and regulations; uncertainty or changes with respect to taxes, trade conditions and the macroeconomic environment; material weaknesses in Xanadu's internal control over financial reporting and its ability to maintain internal control over financial reporting and operate as a public company; the outcome of any legal proceedings or government investigations that may be commenced against Xanadu; Xanadu's ability to issue equity or equity-linked securities in the future; and other factors described in Xanadu's filings with the SEC (www.sec.gov) and the Canadian Securities Administrators (www.sedarplus.com). These forward-looking statements are based on certain assumptions, including that none of the risks identified above materialize; that there are no unforeseen changes to economic and market conditions, and that no significant events occur outside the ordinary course of business. Additional information concerning these and other factors that may impact such forward-looking statements can be found in filings and potential filings by Xanadu with the SEC and the Canadian Securities Administrators, including under the heading "Risk Factors." If any of these risks materialize or assumptions prove incorrect, actual results could differ materially from the results implied by these forward-looking statements. In addition, these statements reflect the expectations, plans and forecasts of Xanadu's management as of the date of this communication; subsequent events and developments may cause their assessments to change. While Xanadu may elect to update these forward-looking statements at some point in the future, they specifically disclaim any obligation to do so, unless required by applicable securities laws. Accordingly, undue reliance should not be placed upon these statements.

In addition, statements that "we believe" and similar statements reflect Xanadu's beliefs and opinions on the relevant subject. These statements are based upon information available to Xanadu as of the date of this communication, and while Xanadu believes such information forms a reasonable basis for such statements, such information may be limited or incomplete, and Xanadu's statements should not be read to indicate that Xanadu has conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

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