Archer Materials
Technology

Archer Materials Limited (ACN: 123 993 233)
Lot Fourteen, Frome Road, Adelaide SA 5000
www.archerx.com.au

ASX Announcement (ASX: **AXE**) 20 November 2025

Archer achieves readout milestone towards qubit demonstration

Highlights

- Archer has shown it can electrically control its quantum device, enabling accurate readout of quantum information.
- This improves how the chip reads quantum information and marks a major step toward demonstrating a single qubit.
- The latest progress reduces technical risk and strengthens Archer's ability to read quantum information. It builds on earlier work that confirmed Archer's method for detecting quantum signals is feasible.
- The work was completed using Archer's quantum carbon films, which are designed to be reliably manufactured with standard chip-fabrication methods, supporting future integration with conventional semiconductor processes.
- Archer tested many devices across different temperatures to understand how they behave. These tests provided important insights needed for scalable production and a clear understanding of the devices' quantum properties.
- Next phase underway to demonstrate spin-state readout in magnetic fields. Early qubit readout testing has begun, with first results expected next month.

Archer Materials Limited ("Archer", the "Company", "ASX: AXE"), a quantum company developing technologies in computing, sensing, and medical diagnostics industries, has achieved a key milestone on its roadmap to qubit demonstration by showing electrical gating within its quantum single electron transistor (SET) devices, boosting the 12CQ's readout (the output of quantum information) capabilities.

The work builds on the SET device previously reported (ASX announcement 30 October 2024) using Archer's carbon nano onions. Demonstrating electrical gating using these materials significantly de-risks the readout pathway for Archer's quantum carbon films. Importantly, the carbon films are being developed to be manufacturable and compatible with conventional chip making processes and positioning the technology for future scalability.

The electrical measurements were performed under a range of temperatures. These varied conditions allowed the Archer team to characterise a large number of SET devices, gain insight relevant to the scaled manufacturing of the devices, confirmation of reproducible device behaviour and to gain a very accurate understanding of the quantum properties of key devices. This level of characterisation is essential for progressing toward qubit demonstration and for future engineering of the carbon films at scale.

Commenting on the Quantum progress, Dr Simon Ruffell, CEO of Archer, said,

"Achieving readout and control is key for our qubit demonstration, and the qubit is the foundation in building a full quantum chip. Showing electrical gating within our quantum single SET devices, helps us improve readout capabilities.

Archer Materials Limited (ACN: 123 993 233)
Lot Fourteen, Frome Road, Adelaide SA 5000
www.archerx.com.au

We're developing the qubit technology on carbon nano onions and films. Although this work was done on our nano onions, it derisks the film material technology. By using carbon film materials, we can bolster the manufacturability our quantum technology, as films allow for better integration with conventional chip making processes."

This path to qubit readout is complementary to the electrical detected magnetic resonance (EDMR) method which was shown to be feasible (see ASX announcement 3 July 2025).

Qubit readout and next steps

Qubit operation requires control of electron spins – this is done by microwave pulses. These spins then need to be read out shortly after. Archer is pursuing multiple methods, two of which are via a SET and the EDMR process. Archer's SET devices allow to isolate a single electron in the qubit. Once that is achieved, the spin state of the electron is readout electronically.

Work is currently underway to operate our SET devices in magnetic fields to demonstrate that the spin state of the electron on the qubit can be read out. Initial testing should be completed by the end of the year.

The Board of Archer authorised this announcement to be given to ASX.

Investor enquiries

Luke Maffei
+61 403 193 579
luke.maffei@automicgroup.com.au

Media enquiries

Dylan Mark
+61 475 783 675
dylan.mark@automicgroup.com.au

About Archer

Archer is a quantum technology company that operates within the semiconductor industry. The Company is developing advanced semiconductor devices, including chips relevant to quantum computing, sensing, and medical diagnostics. Archer utilises its global partnerships to develop these technologies for potential deployment and use across multiple industries. www.archerx.com.au