

- — ¹²CQ TECHNOLOGY
- — BIOCHIP TECHNOLOGY

ARCHER

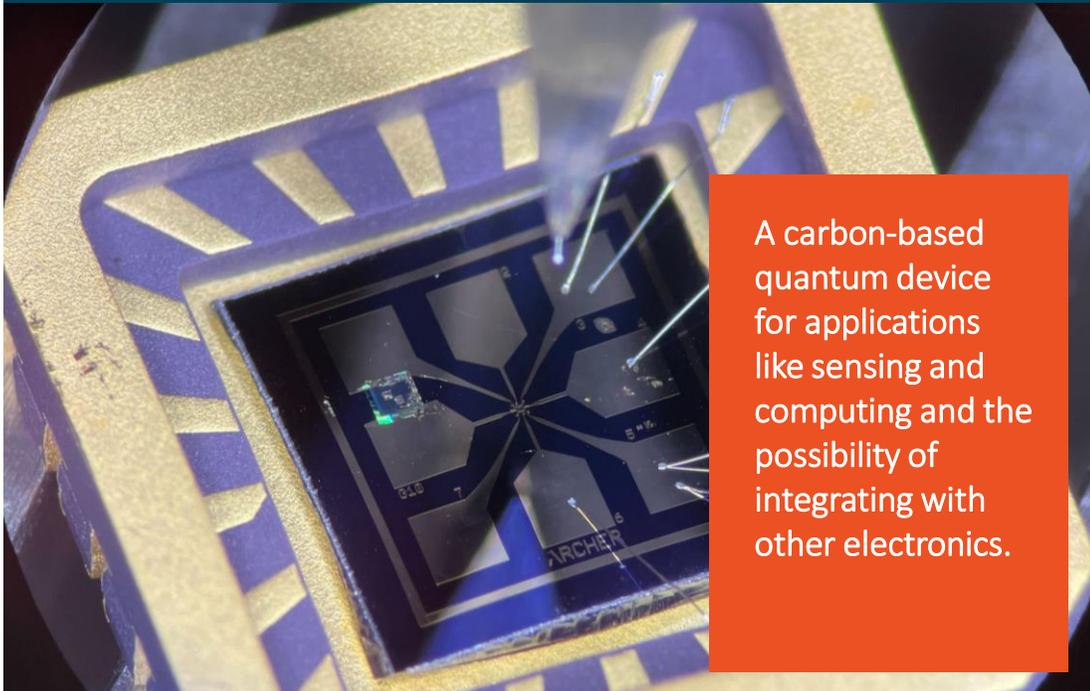
Archer Materials

Semiconductor Australia | October 2024



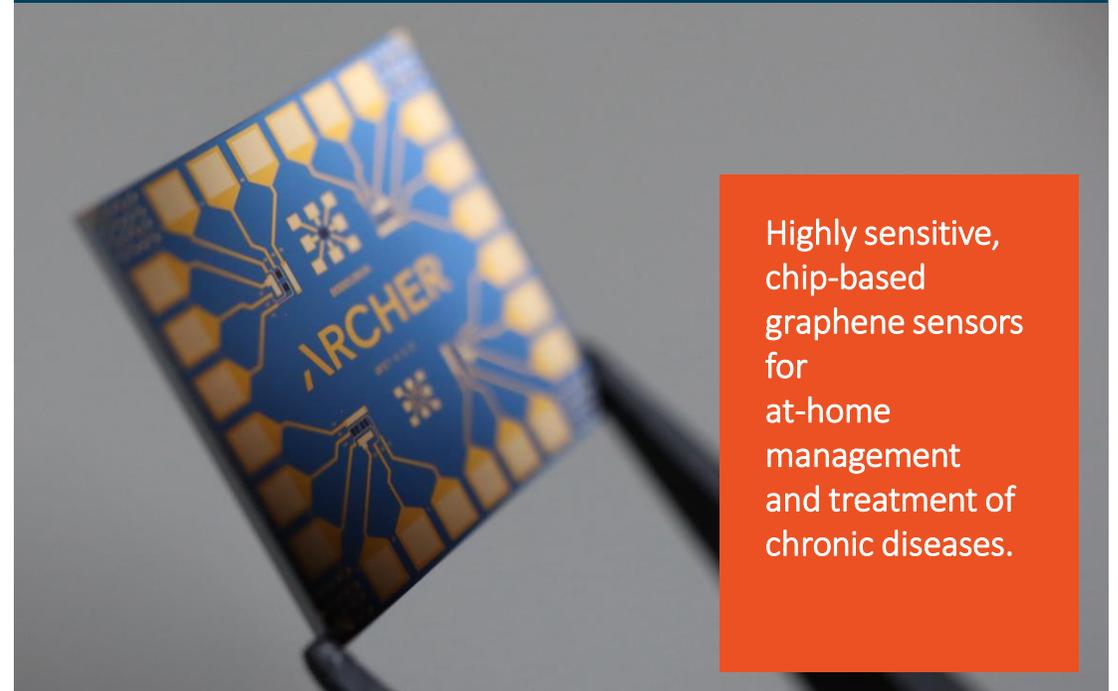
Archer Materials is building on its foundation of carbon-based technologies to develop products that will help solve critical problems.

Quantum Technology



A carbon-based quantum device for applications like sensing and computing and the possibility of integrating with other electronics.

Biochip



Highly sensitive, chip-based graphene sensors for at-home management and treatment of chronic diseases.

Biochip – the problem & addressable market

Archer is developing a biochip that uses the highly sensitive, high speed, low power sensors to detect ions that could be integrated into a lab-on-a-chip device for advanced medical diagnostics.



Chronic kidney disease affects more than 850 million people (>10% of the population).¹

Abnormal potassium levels can be lethal → kidney disease patients are at high risk as the kidneys control electrolytes like potassium.

Testing can only be done in a clinical setting with analysis done via a lab. Current testing is performed monthly, which is too slow and not done frequently enough.

>\$3B total addressable of the >\$80B renal disease market.²

Extendable to heart disease and treatment.

Extendable to other ion sensing applications in medicine and agriculture.

1. Kidney Care UK "1 in 10 people...", Hill N. et al. PLOS ONE (2016)
2. Yole "Biosensors Marketing Report 2024-32", Market Research Future "Renal Disease Market Report". Bottom-up estimate using refs above

Biochip – a ‘lab-on-a-chip’ for at home testing

Developing a biosensor, based in graphene field effect transistors (gFET) to test for potassium in chronic kidney disease.

High accuracy to bring testing for diseases like chronic kidney disease into the home at a low cost.



Game changing at-home potassium testing



High frequency of testing enables physicians to more effectively monitor and manage patients with the best available therapies and treatment.



Improved treatment for dialysis patients.



Potassium lowering drugs produced by pharmaceutical companies could be safely and regularly prescribed.



Patients in remote areas are empowered to take-action before its too late.

BETTER PATIENT OUTCOMES
REDUCED COST
HIGHER REVENUE FOR DRUG COMPANIES

Biochip – Potassium Sensing - Status

Proof of concept

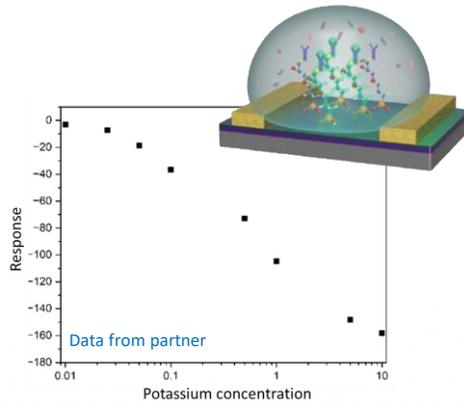
Feasibility

Development & Optimisation

----- Launch

BEGINNING THESE PHASES

- Initial data
- Foundry supplier sourced
- Academic support



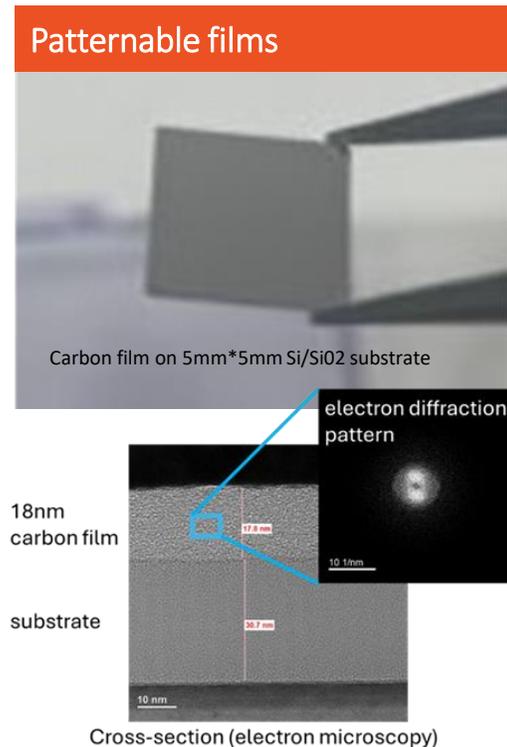
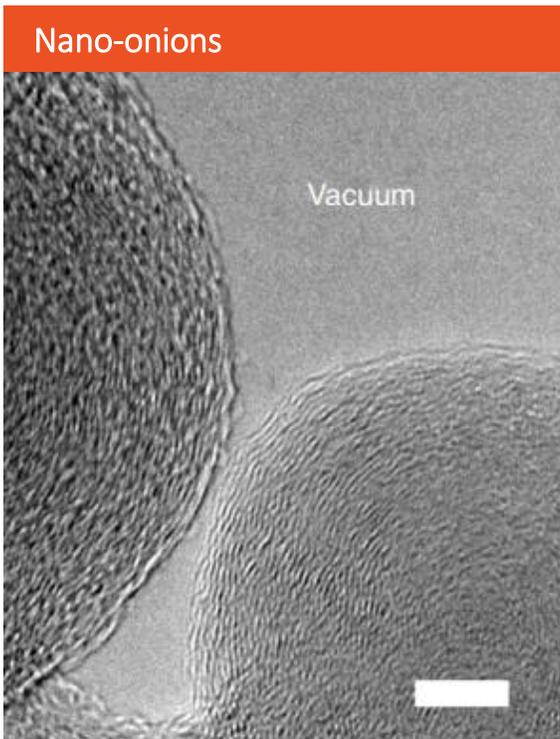
- Work ramping up in Sydney-Archer
- Forming partnerships with diagnostics companies
- Building access to clinical advisors, potential trial locations
- Building academic partners in Australia



Quantum technology

Carbon Materials

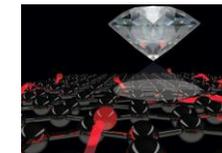
Applications



Magnetometers



MHz to THz detectors



Magnetic microscopes

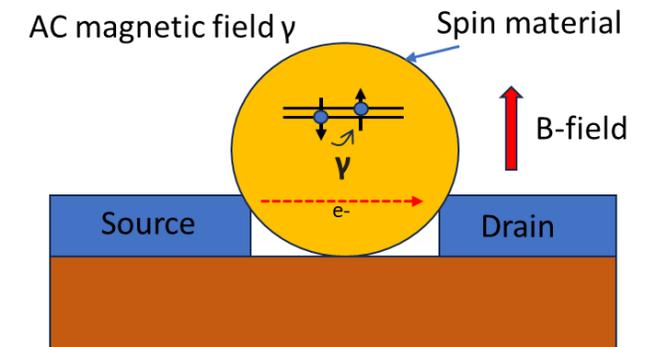
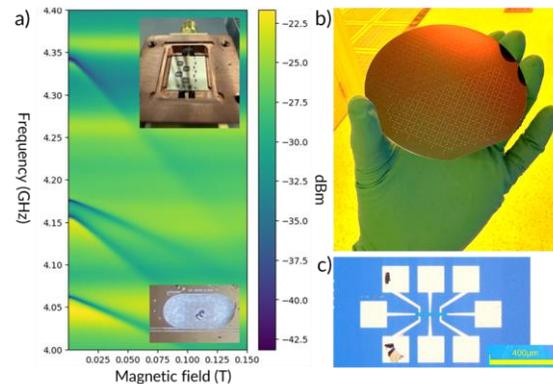
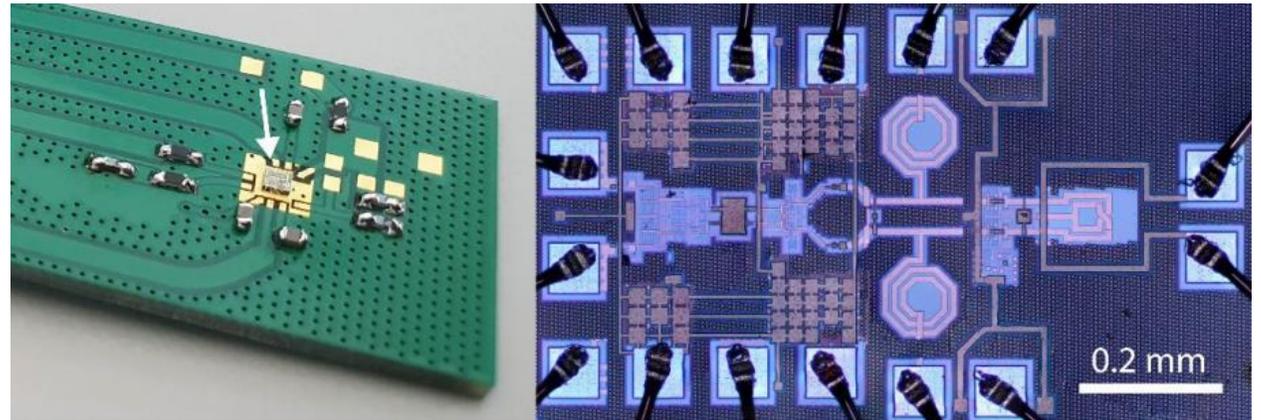


Qubits



Quantum technology – Status

- Recently bolstered manufacturability and scalability with a new carbon film.
- Probing microscale volumes of carbon material using pESR chip.
- Working with external collaborators to make progress on three fronts:
 - Improving materials properties and scaling to wafer-scale synthesis and processing;
 - Developing microwave resonant circuits to both probe and later control electron spin; and
 - Begun work on electrically detected spin resonance for readout.
- Building on team's expertise to investigate TMR sensors



Archer has the foundations in place to advance its technology towards commercialisation in global markets.

Future technologies

Archer's devices look to solve high value problems.

Strong partnerships

Archer has partnerships with foundries to help manufacture its technologies and with leading research institutions to help develop its technologies.

Growing markets

Archer's technologies have a range of applications across growing markets such as medical diagnostics, data centres, IoT, and automotive.

IP portfolio

A growing IP portfolio of granted and pending patents across key markets such as North America, APAC, and Europe.

○ — 12CQ TECHNOLOGY
○ — BIOCHIP TECHNOLOGY

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ASX Code: AXE

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

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