

ASX Announcement ([ASX: AXE](#))

9 November 2023

Archer's first-generation Biochip gFET design validated by joint fabrication with a foundry partner

Highlights

- Archer Materials has validated its first-generation Biochip gFET design by manufacturing the chips in a multi-project wafer ("MPW") run at a German foundry.
 - Archer's first joint fabrication of graphene devices with an external foundry partner.
 - The MPW fabricated gFET chips include unique features for biosensing, with the final semiconductor fabrication processes performed in-house by the Company.
 - The first-generation Biochip gFET validation comes alongside the foundry validation in the Netherlands of advanced gFET device designs for multiplexing.
 - The development of the gFET designs and devices advances Archer's Biochip technology towards foundry readiness.
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Archer Materials Limited ("Archer", the "Company", "ASX: AXE"), a semiconductor company advancing the quantum computing and medical diagnostics industries, has validated its first-generation Biochip graphene field effect transistor ("gFET") design through a multi-project wafer ("MPW") run by its external German foundry partner.

The gFET device manufacture is also the first joint fabrication between Archer and an external foundry partner, as the final fabrication processes were performed in-house by the Company in Australia. As announced on 13 July 2023, Archer submitted the first-generation Biochip gFET design to a commercial foundry in Germany for an MPW run.

The MPW-produced gFETs were fabricated on a 6-inch wafer and diced into individual chips (Image 1). An MPW is where Archer's device design is imprinted on a small area of a wafer with the designs of other companies on the same wafer. The gFET devices have been measured and function as expected, including the demonstration of liquid gating, and are compatible with the Archer Biochip system platform.

This development follows Archer's previous announcement on 14 September 2023 on the validation of its advanced Biochip gFET designs for multiplexing through a whole four-inch wafer run by a commercial foundry partner in the Netherlands. The MPW and whole wafer gFET fabrication are consistent with Archer validating its chip designs to ensure scalability for the manufacturing process of the Biochip graphene devices. The outcomes of the runs will be used by Archer in the evaluation of foundries that are best suited to Archer's technology.

The first-generation gFET devices were designed by the Archer team. Archer is continuing discussions with its commercial foundry partners to secure future semiconductor product manufacturing capability and to support technology development of its Biochip, including further plans for device design validations.

Commenting on the first-generation Biochip gFET device design validation, Dr Mohammad Choucair, CEO of Archer, said,

“Archer’s Biochip gFET device designs, including the first-generation and advanced designs for multiplexing, are now on their way towards foundry readiness, as they each have gone from design and into the development stages independently.

“Acting as a ‘lab-on-a-chip’, Archer’s Biochip would have the potential to detect multiple disease samples at once and provide powerful data analytics, which could contribute towards the disruptive, digital transformation occurring in the global medical diagnostics industry.”

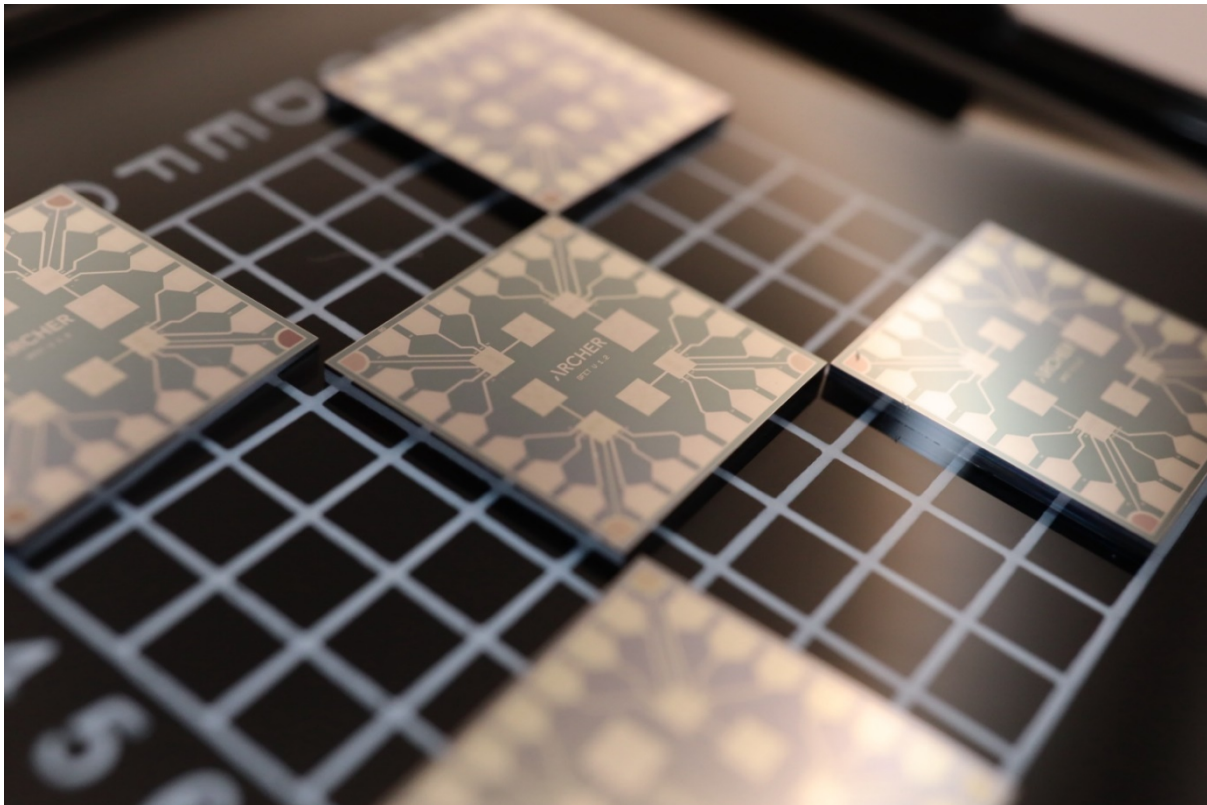


Image 1. Archer’s Biochip gFET chips diced from the 6-inch multi-project wafer.

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

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About Archer

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