

ASX Announcement

20 April 2026

## Breakthrough Demonstration of Graphene Formed at Low Temp Unlocking Next Gen Chip

*Breakthrough low temperature graphene on a 1cm<sup>2</sup> coupon to enable post-Copper Interconnect Era*

### Highlights

- **Continuous Graphene layer deposited using industrial Atomic Layer Deposition (ALD) system**
- **Interconnect Dilemma – copper interconnects are a critical bottleneck for advanced chip development and AI1 is a crucial step closer to the solution**
- **Characterization tests confirm continuous graphene films on a 1cm<sup>2</sup> coupon**
- **Deposition process operates at temperatures well below semiconductor industry thermal limits (~450°C)**
- **AI1 can now enter the industry collaboration and commercial engagement phase targeting Tier 1 global semiconductor giants**
- **Transitions the program to film optimization, repeatability testing and scale-up to wafer-level formats**

Adisyn Ltd (ASX: AI1) (“Adisyn” or “the Company”) is excited to announce the successful demonstration of full coverage graphene on a 1cmx1cm coupon using an industrial Atomic Layer Deposition (ALD) system. The company notes that the deposition process was well below 450°C.

The result represents a key step toward addressing one of the semiconductor industry’s most persistent and widely recognised challenges - the performance limitations of copper interconnects in advanced chips.

In the most advanced semiconductor chips, the interconnect - the wiring that connects billions of transistors - has emerged as a critical bottleneck. As device geometries shrink, copper interconnects suffer from increasing resistance, heat generation and power loss, constraining performance, energy efficiency and further scaling. In an industry already producing over 1 trillion chips annually<sup>1</sup> AI1 is targeting the high-performance segments of AI, GPU’s, CPU’s, advanced mobile and networking.

Graphene has long been identified as a potential solution due to its superior electrical and thermal properties. However, the industry has been unable to establish a manufacturing process capable of producing graphene within the constraints of semiconductor fabrication, particularly using standard equipment and temperature limits.

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<sup>1</sup> Deloitte 2026 Global Semiconductor Industry Outlook, 5 February 2026

This result demonstrates graphene formation within an industrial ALD system under semiconductor-compatible conditions, providing a pathway toward integration into semiconductor manufacturing. If this solution is deployed it will empower those who adopt it to win the sub 2nm scale down race and allow the industry to continue Moore's Law.

### Industrial Process, Not Lab-Scale

Through its wholly owned subsidiary 2D Generation, the Company has produced graphene using a standard industrial ALD system, rather than laboratory-scale techniques or transfer-based methods.

The semiconductor industry does not adopt materials that require entirely new manufacturing approaches. Demonstrating graphene formation within equipment already used in fabrication environments is a necessary step toward real-world adoption.

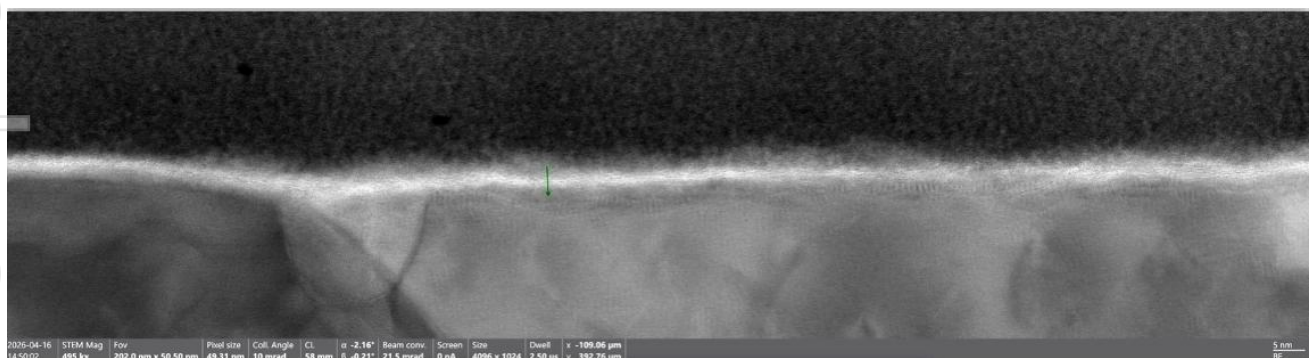
The process is based on Adisyn's patented ALD methodology and proprietary precursor chemistry, developed specifically to enable graphene growth within semiconductor manufacturing constraints.

Adisyn Chairman Kevin Crofton commented:

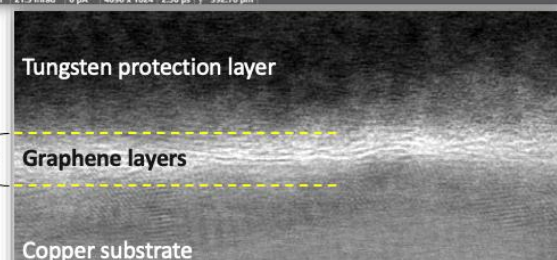
*"This is an important step - not just for Adisyn, but in the context of what the semiconductor industry has been trying to achieve. Producing graphene on an industrial ALD system, rather than a lab environment and at low temperature, is what starts to make this relevant from a manufacturing perspective."*

He added:

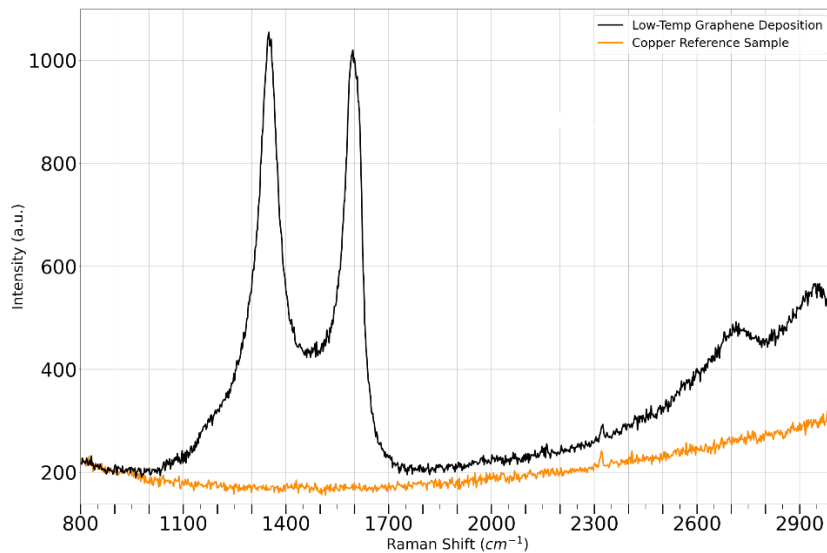
*"The interconnect is now one of the key constraints in semiconductor performance. If you can solve that, you're solving a problem the entire industry is focused on."*



~1 nm layer of graphene  
 $d = 3.4 \pm 0.3 \text{ \AA}$



**Figure 1: TEM / FIB-THEMIS cross-section showing graphene layers formed on copper substrate, demonstrating continuous layer formation (~1nm thickness).**



**Figure 2: Raman Spectroscopy Analysis of Low Temperature Plasma Enhanced Atomic Layer Deposition (PEALD) of Graphene on Copper Substrate**

Transmission Electron Microscopy analysis (Figure 1) and Raman Spectroscopy characterization tests (Figure 2) have confirmed continuous graphene layers across a 1cm x 1cm coupon.

This is a critical requirement for semiconductor applications. Achieving deposition of a continuous graphene layer is a prerequisite for any material being considered for semiconductor interconnect applications.

Ultimately, for graphene to be viable in interconnect structures, the material must be uniform, with no discontinuities that would impact electrical performance or reliability.

Adisyn Chairman Kevin Crofton noted:

*“What we’ve demonstrated here is continuous graphene across the copper surface - and that’s fundamental. It is the first step in delivering an interconnect solution to the semiconductor industry.*

### Operating Within Industry Limits

The deposition process operates well below the semiconductor industry’s thermal ceiling of approximately 450°C.

Temperature compatibility is a key constraint in semiconductor manufacturing. Any new material must be able to integrate within existing thermal budgets.

Historically, graphene growth has required significantly higher temperatures, limiting its applicability.

This result positions the process within the operating window required by semiconductor fabrication facilities, a key barrier that has historically prevented graphene adoption.

Adisyn Chairman Kevin Crofton said:

*“Temperature has always been one of the major hurdles. If you’re outside the thermal limits of a fab, you’re not even part of the discussion. What we’ve demonstrated here is that we are operating inside that window.”*

### **A Step Toward Commercial Relevance**

What makes this result important is the convergence of several key requirements that the semiconductor industry has been unable to achieve simultaneously:

- Use of an industrial ALD system
- Operation within semiconductor-compatible temperatures
- Continuous graphene layer formation

**Together, these elements point toward a pathway for integrating graphene into semiconductor manufacturing using existing tools and processes.**

By the early 2030’s, billions of advanced computing chips will be produced annually to support the demands of AI, high performance computing, etc. If graphene is adopted broadly across the next generation of semiconductor devices, there is a significant commercial opportunity for the company.

On the back of this result, Adisyn will commence engagement with semiconductor industry participants to explore collaboration, validation and integration pathways.

Crofton added:

*“The industry has known for a long time that graphene could address interconnect challenges. The difficulty has always been how to get there in a way that fits within existing manufacturing environments. This starts to show that there is a scalable pathway to adopt graphene as an interconnect material.”*

### **What Comes Next**

The Company will now move into recipe optimization to optimise film quality combined with repeatability trials to confirm that the process can be consistently reproduced.

In parallel, the Company will focus on scale-up from coupon-level to wafer-level substrates, alongside continued optimisation of deposition parameters, material performance and productivity.

The next key milestone will be demonstrating repeatable industry-quality films, followed by wafer-scale validation and engagement with industry partners.

Adisyn Chairman Kevin Crofton said:

*“Now it’s about doing it again and again – consistently, with high quality - and then scaling it. That’s the phase that ultimately determines whether this becomes a commercial process.”*

### **Outlook**

This milestone represents a major step toward enabling graphene to move from a promising material to one that can be integrated into semiconductor manufacturing.

Once repeatable high-quality film properties are achieved at scale, this technology has the potential to enable graphene to replace copper in next-generation semiconductor interconnects – unlocking the next generation of advanced chip manufacturing.

Adisyn will continue to update shareholders as the program progresses through this next phase.

**This announcement has been approved for release by the Board of Adisyn Ltd.**

**-ENDS-**

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### **About Adisyn**

Adisyn Ltd (ASX: AI1) is an Australian technology company developing advanced graphene materials for high-value applications in the semiconductor and advanced materials sectors.

The Company’s core focus is the development of a patented low-temperature Atomic Layer Deposition (ALD) process designed to enable direct graphene growth on semiconductor wafers. This technology aims to address the performance limitations of copper interconnects and support faster, more energy-efficient next-generation semiconductor devices.

Adisyn is also exploring additional commercial applications of its graphene expertise, including advanced composite materials designed to reduce radar signatures in UAV and defence platforms.

Adisyn's broader business includes Adisyn Services, which provides managed IT services, cloud, cybersecurity and artificial intelligence solutions to Australian small and medium-sized enterprises.

**Forward-looking statements:**

Statements contained in this release, particularly those regarding possible or assumed future performance, revenue, costs, dividends, production levels or rates, prices, or potential growth of Adisyn Ltd are, or may be, forward-looking statements. Such statements relate to future events and expectations and as such, involve known and unknown risks and uncertainties. These forward-looking statements are not guarantees or predictions of future performance and involve known and unknown risks, uncertainties, and other factors, many of which are beyond the Company's control, and which may cause actual results to differ materially from those expressed in the statements contained in this release.

The Company cautions shareholders and prospective shareholders not to put undue reliance on forward-looking statements, which reflect the Company's expectations only as of the date of this announcement. The Company disclaims any obligation to update or revise any forward-looking information, whether as a result of new information, future events or otherwise, except as required by law.