

26<sup>th</sup> September 2024

# **Commercial agreement secured to supply graphene for in-demand perovskite solar cells**

## **Highlights**

- **Two-year commercial agreement secured with Australian perovskite solar cell manufacturer Halocell Energy to supply PureGRAPH<sup>®</sup>**
- **Graphene utilised as a high-performing coating for solar cells, improving durability and efficiency while reducing costs**
- **Multi-year deal provides strong pipeline of commercial opportunities for First Graphene in growing renewable energy sector**

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First Graphene Limited (ASX:FGR; “First Graphene” or “the Company”) has secured an agreement with Halocell Energy to supply graphene for the manufacture of perovskite solar cells.

The initial two-year agreement will result in the Company providing its leading PureGRAPH<sup>®</sup> to the New South Wales-based manufacturer for use as a high-performing coating for perovskite solar cells (see Figure One).

By incorporating PureGRAPH<sup>®</sup> into its products, Halocell Energy can expedite its manufacturing process and enhance light absorbing performance, which will enable the company to scale up commercial production to meet demand.

Halocell Energy will release its first commercially available indoor perovskite solar cell module this month, which can be used to charge small electronic goods, replacing disposable batteries.

These graphene enhanced modules are up to five times more efficient than conventional silicon solar cells. They are also more cost-effective, with Halocell Energy demonstrating graphene can reduce manufacturing and materials costs by over 80% as the need for high-cost conductor materials such as gold and silver are eliminated.

By delivering cost-effective perovskite solar cells, First Graphene and Halocell Energy could help drive down renewable energy costs and accelerate the rate of uptake around Australia.

The graphene formulations will also allow the use of roll-to-roll dispersion, which is a rapid, scalable, and low-cost production technique used to create the perovskite solar cells.

Combined with First Graphene’s materials, this technique will pave the way forward for Australia to become a cost-competitive manufacturer of this in-demand renewable energy technology.

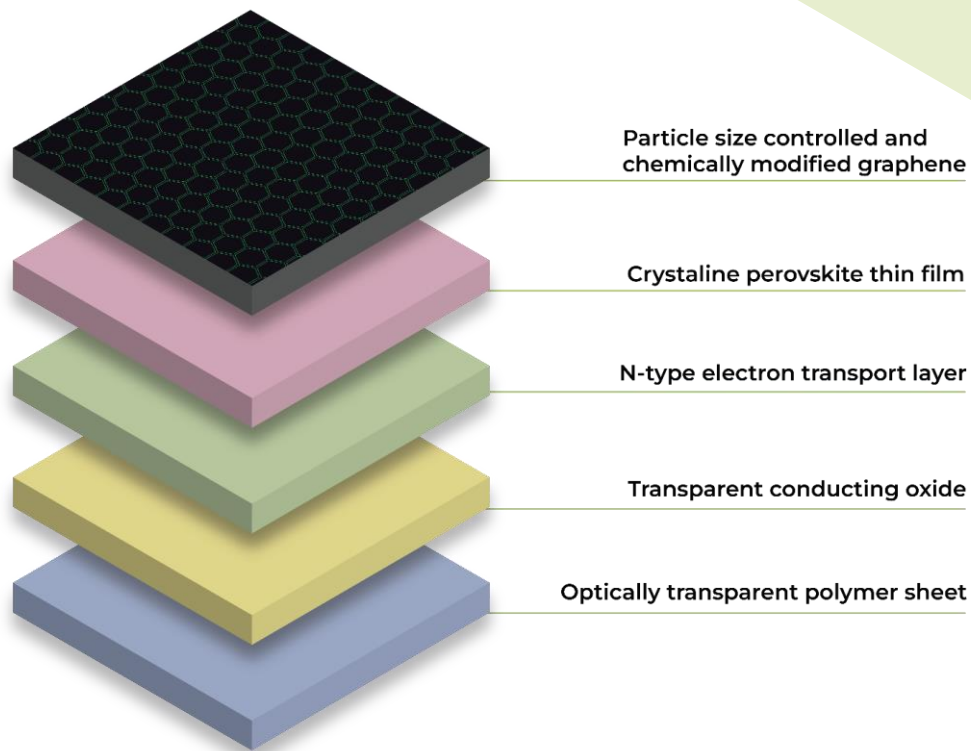


Figure 1 - Perovskite solar cell layers

The roll-to-roll technique is also the subject of research and development work conducted in collaboration between First Graphene, Halocell Energy and Queensland University of Technology.

In September 2023, the three organisations received A\$2 million in funding from the Australian Government to support a three-year project investigating commercialisation of this renewable energy technology.

The global perovskite solar cell market has been valued at more than A\$95 million<sup>1</sup>, with demand expected to nearly double the market value over the next year. In Australia, energy generated by solar cells accounts for more than 11%<sup>2</sup> of the nation's total energy supply.

**First Graphene Managing Director and CEO Michael Bell said:**

*“This landmark agreement with Halocell Energy is a significant milestone for First Graphene as we officially enter the commercial perovskite solar cell industry.*

*These locally manufactured products will change the way Australians leverage solar power in their home and improve Australia's renewable energy performance as a whole.*

*Importantly, this agreement will open the door further for First Graphene to showcase the benefits of leveraging the unique properties of graphene to improve renewable energy technology.*

*We are excited to embark on this venture with Halocell Energy and look forward to delivering the benefits of our PureGRAPH<sup>®</sup> products to energy consumers across the country.”*

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**Halocell Energy CEO Paul Moonie said:**

*“We are excited to announce this pivotal manufacturing supply agreement with First Graphene, which marks a significant step forward for Halocell in developing cutting-edge perovskite solar cells.*

*By leveraging First Graphene’s advanced graphene formulations, we can optimise particle size and surface chemistry, enhancing the efficiency and scalability of our solar cells.*

*The integration of these locally supplied materials into our roll-2-roll production process enables cost-effective, rapid manufacturing, which will be a gamechanger for the solar industry in Australia.*

*This partnership not only strengthens our position as a leading innovator in the solar cell market but also aligns with our commitment to supporting domestic suppliers.”*

**References:**

<sup>1</sup>[Fortune Business Insights](#) – Perovskite Solar Cell Market Size, Share, and Industry Analysis 2024-2032

<sup>2</sup>[Clean Energy Council](#) - Clean Energy Australia 2024 Report

**-Ends-**

**This release has been approved for release by the Chairman.**

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## **About First Graphene Ltd (ASX: FGR)**

*First Graphene Limited is focused on the development of advanced materials to help industry improve. The Company is a leading supplier of graphitic materials and product formulations with a specific commercial focus on large, high-growth global markets including cement and concrete; composites and plastics; coatings, adhesives, sealants and elastomers (CASE); and energy storage applications.*

*One of the key outcomes these advanced materials offer is the reduction of carbon dioxide emissions, whether directly through a reduction in output of these harmful greenhouse gases or lower energy usage requirements in manufacturing, or indirectly due to enhanced performance characteristics and extending the usable life of products.*

*First Graphene has a robust manufacturing platform based on captive and abundant supply of high-purity raw materials, and readily scalable technologies to meet growing market demand. As well as being the world's leading supplier of its own high performance PureGRAPH® graphene product range, the Company works with multiple industry partners around the world as a supplier of graphitic materials and partner to research, develop, test and facilitate the commercial marketing of a wide range of sector-specific chemical solutions.*

*First Graphene Ltd is publicly listed in Australia (ASX:FGR) and has a primary manufacturing base in Henderson, near Perth, WA. The Company is incorporated in the UK as First Graphene (UK) Ltd where it has a strong R&D capability.*

## **About Halocell Energy**

*Halocell Energy is a pioneering company dedicated to revolutionizing solar technology with its development of next-generation perovskite solar cells. Unlike traditional silicon-based solar cells, perovskite cells offer remarkable efficiency, versatility, and cost-effectiveness using all sources of light. Halocell Energy's innovative approach harnesses the unique properties of perovskite materials to capture solar energy more effectively, enabling higher energy conversion rates and wider applications in various environments.*

*One of the standout features of Halocell's perovskite solar cells is their lightweight and flexible design, which opens up new possibilities for novel power integration into satellites, drones, and even IoT devices. The first IndoorPV product will be released within the next month, the first company globally to offer retail perovskite cells.*

*Halocell's products are 100% Australian made, and we are proud to include First Graphene's carbonaceous materials to reduce cost of production.*