

HydroGraph Achieves Breakthrough in Sustainable Plastic Packaging Research

Fractal graphene significantly enhances the performance and sustainability of plastic packaging

TORONTO, Nov. 07, 2024 -- [HydroGraph Clean Power Inc.](#) (CSE: HG) (OTCQB: HGRAF) (FRA: M98) (the “Company” or “HydroGraph”), a leader in sustainable commercial manufacturer of graphene, today announced a technological advancement which hopes to revolutionize across various sectors.

As the global polyethylene terephthalate (PET) packaging industry faces unprecedented regulatory pressure to reduce virgin plastic consumption, HydroGraph discovers that its Fractal Graphene powder (FGA-1) dramatically improves the performance and sustainability of PET bottles.

"These performance gains in PET arrive at a critical moment for the packaging industry," said Kjirstin Breure, interim CEO and president at HydroGraph. "As manufacturers struggle with the challenge of increasing recycled content while managing costs and maintaining performance, our technology offers a solution that addresses these needs simultaneously. By enabling significant material reduction while improving performance with recycled content, we're helping the industry meet environmental mandates without compromising product competitiveness."

Resulting from tests conducted at the Graphene Engineering Innovation Centre (GEIC), HydroGraph demonstrated that its FGA-1 enhances the performance of PET bottles at an ultra-low loading of just 0.006 wt-% of graphene added, which could lead to lightweighting and an overall reduction in plastic use. When applied to a 50:50 blend of virgin PET and rPET, the technology delivers:

- 23% improvement in top-load compressive strength
- Potential weight reduction of approximately 20%
- 83% decrease in water vapor transmission rate

According to [Mordor Intelligence](#), The PET bottle industry, which produces more than 500 billion bottles annually (25 million tons of PET), has faced mounting challenges from extended producer responsibility (EPR) legislation worldwide.

- The [EU Directive 2019/904 on single-use plastics](#) mandates that PET beverage bottles must contain at least 25% recycled content by 2025 and 30% by 2030.
- The UK Plastic Packaging Tax imposes fees on packaging with less than 30% recycled content.
- In California, [Assembly Bill 793](#) requires that beverage bottles contain a postconsumer recycled content of 15%, increasing to 25% in 2025 and 50% in 2030.
- Multiple other US states, including Washington, New Jersey, and Maine, have implemented or announced recycled content mandates.
- Canada's [Zero Plastic Waste Agenda](#) targets 50% recycled content by 2030.

Global legislation is increasingly demanding higher recycled content in plastic packaging, posing significant challenges for manufacturers. Recycled PET (rPET) can cost 20-30% more than virgin PET, and global rPET supply can only partially meet current demand.

"Manufacturers are at a crossroad when it comes to the development of plastic packaging," said Breure. "Given previous success we've seen with our graphene technology, we responded to the mounting pressure for increased sustainability and lightweighting by researching ways fractal graphene can benefit the material. We're proud of what we've accomplished so far, and we're excited to see what other breakthroughs are on the horizon as we continue our extensive research of nanomaterial technology."

Based on current global PET bottle production, adoption of this FGA-1 technology could achieve a potential reduction of 5 million tonnes of plastic usage annually (20% of current consumption). In an ideal scenario where FGA-1 technology is fully commercialized with PET:rPET blends of 50:50, the emissions reduction from using 20% less overall PET in bottles could represent a reduction of more than 8 million tonnes of CO₂.

HydroGraph remains committed to pioneering sustainable solutions and looks forward to further advancements in nanomaterial technology. For more information about HydroGraph's sustainable packaging solutions, visit www.hydrograph.com.

ABOUT HYDROGRAPH CLEAN POWER INC.

HydroGraph Clean Power Inc is a leading producer of pristine graphene using an “explosion synthesis” process, which allows for exceptional purity, low energy use and identical batches. The quality, performance and consistency of HydroGraph's graphene follows the Graphene Council's Verified Graphene Producer® standards, of which very few graphene producers are able to meet. For more information or to learn about the HydroGraph story, visit: <https://hydrograph.com/>.

For company updates, please follow HydroGraph on [LinkedIn](#) and [X](#).

Forward-Looking Statements

This release contains certain “forward looking statements” and certain “forward-looking information” as defined under applicable Canadian securities laws. Forward-looking statements and information can generally be identified by the use of forward-looking terminology such as “may”, “will”, “expect”, “intend”, “estimate”, “upon” “anticipate”, “believe”, “continue”, “plans” or similar terminology.

Forward-looking statements and information include, but are not limited to: statements in respect of the Private Placement, the use of the net proceeds from the Private Placement, the timing and ability of the Company to close the Private Placement, if at all, the gross proceeds of the Private Placement, the timing and ability of the Company to obtain all necessary regulatory approvals, if at all, and the terms and jurisdictions of the Private Placement; the statements in regards to existing and future products of the Company; the Company’s future personnel appointments; the Company’s plans and strategies.

Forward-looking statements and information are based on forecasts of future results, estimates of amounts not yet determinable and assumptions that, while believed by management to be reasonable, are inherently subject to significant business, economic and competitive uncertainties and contingencies. Forward-looking statements and information are subject to various known and unknown risks and uncertainties, many of which are beyond the ability of HydroGraph to control or predict, that may cause HydroGraph’s actual results, performance or achievements to be materially different from those expressed or implied thereby, and are developed based on assumptions about such risks, uncertainties and other factors set out herein, including but not limited to: HydroGraph’s ability to implement its business strategies; risks associated with general economic conditions; adverse industry events; stakeholder engagement; marketing and transportation costs; loss of markets; volatility of commodity prices; inability to access sufficient capital from internal and external sources, and/or inability to access sufficient capital on favourable terms; industry and government regulation; changes in legislation, income tax and regulatory matters; competition; currency and interest rate fluctuations; and other risks. HydroGraph does not undertake any obligation to update forward-looking information except as required by applicable law. Such forward-looking information represents management’s best judgment based on information currently available. No forward-looking statement can be guaranteed, and actual future results may vary materially. Accordingly, readers are advised not to place undue reliance on forward-looking statements.

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