

FGR Consolidates Industry Leadership by Publishing its Quality Control Methodology and Joining ISO Standards Committee

Technical Update on PureGRAPH® Additives

HIGHLIGHTS

- A unique Raman spectroscopy method developed by FGR is accepted for publication in the *Spectroscopy* Journal, confirming industry leadership credentials
- FGR discloses Six-Sigma methodology used to control the quality of PureGRAPH® graphene products.
- FGR agrees to join the ISO/TC229 Nanotechnologies Standards Committee.

Advanced materials company, First Graphene Limited ("FGR" or "the Company") (ASX: FGR) is pleased to advise it has joined the ISO Nanotechnologies Technical Committee (ISO/TC229).

Since the isolation of graphene at the University of Manchester in 2004, much effort has been put into developing characterisation methods for the new generation of 2-D materials. This was initially led by academic researchers who developed new techniques to determine the chemical make-up, size and shape of 2D materials. These techniques have since been adopted by graphene manufacturers and are currently being formalised through the ISO Nanotechnologies Technical Committee (ISO/TC229).

Following discussions with Denis Koltsov, chairperson of the ISO 229 Committee, Dr. Andy Goodwin of First Graphene Ltd has agreed to join the BSI and ISO/TC229 working groups for the development of graphene characterisation standards, thereby ensuring alignment of the Company's quality processes with the emerging international standards.

Denis Koltsov, chairperson ISO 229 Committee, says "We are very pleased to see First Graphene joining UK (BSI/NTI/1) and international standards working groups (ISO/TC229) to advance the development of graphene related standards. Direct involvement of industry players is critical to the development of technical standards. It demonstrates the maturity of industry. It also highlights direct relevance of the standardisation work at ISO/TC229, which currently have 36 standards under development 4 of which are in graphene area".

First Graphene Limited

ACN 007 870 760

ABN 50 007 870 760

Registered Office

1 Sepia Close

Henderson WA 6166

Tel: +61 1300 660 448

Directors

Warwick Grigor

Craig McGuckin

Peter R Youd

Joint Company Secretaries

Peter R Youd

Nerida Schmidt

E: info@firstgraphene.net

W: firstgraphene.net

ASX Symbol

FGR

FGROC

Frankfurt Stock Exchange

FSE:M11

As an early-adopter in the use of scientific approaches to measurement of graphene materials, First Graphene has pioneered these methods to assure the quality of their own PureGRAPH® products. First Graphene's production and technical teams have over 100 years of experience in the manufacture and supply of high quality speciality chemical products. They have used this experience to implement state-of-the-art quality improvement tools such as LEAN and Six Sigma to implement a simple 4-step approach to develop and deliver a consistent and reliable supply to our customers.

4-Step approach to high quality PureGRAPH® products:

1. **Representative sampling.** Whenever possible, at-line and quality assurance testing is carried out directly on large aliquots of graphene powder product.
2. **At-line and factory laboratory tests.** These have been designed to be simple and robust whilst they also relate to fundamental material parameters.
3. **Statistical process control tools.** These are used to record and monitor all batch data, ensuring full understanding and control of the manufacturing process.
4. **Communication to customers.** Customer needs are translated into product specifications, with every shipment being accompanied by a certificate of analysis (CoA).

Representative tests have been developed that can be delivered at-line or in a factory quality assurance laboratory. These are directly related to the fundamental properties of the PureGRAPH® products. An example is the implementation of a Raman spectroscopy test method that is unique to First Graphene. It involves the use of a remote sampling probe to enable representative sampling of product in bulk powder form, meaning that rapid and robust characterisation is available. This method was developed by First Graphene in collaboration with the equipment supplier, B&W-Tek. It has been accepted for publication in the *Spectroscopy* Journal.

Use of Statistical Process Control Techniques to understand the voice of our process

PureGRAPH® graphene products are currently supplied to global customers from the Company's manufacturing site in Henderson, Western Australia. Minitab® software is routinely used to analyse manufacturing data and produce process control charts at the facility. The Company is manufacturing graphene at tonnage scales and multiple batches of PureGRAPH® products have been analysed. This enables "voice of our process" understanding through process control charts such as those shown below, demonstrating a stable production platform and the delivery a consistent product.

Figure 1 shows the mean particle size of our PureGRAPH® 10 product, measured using a Malvern 3000 Mastersizer. It is a clear example of how industry leading analytical equipment can be combined with Six Sigma concepts to monitor and control product quality.

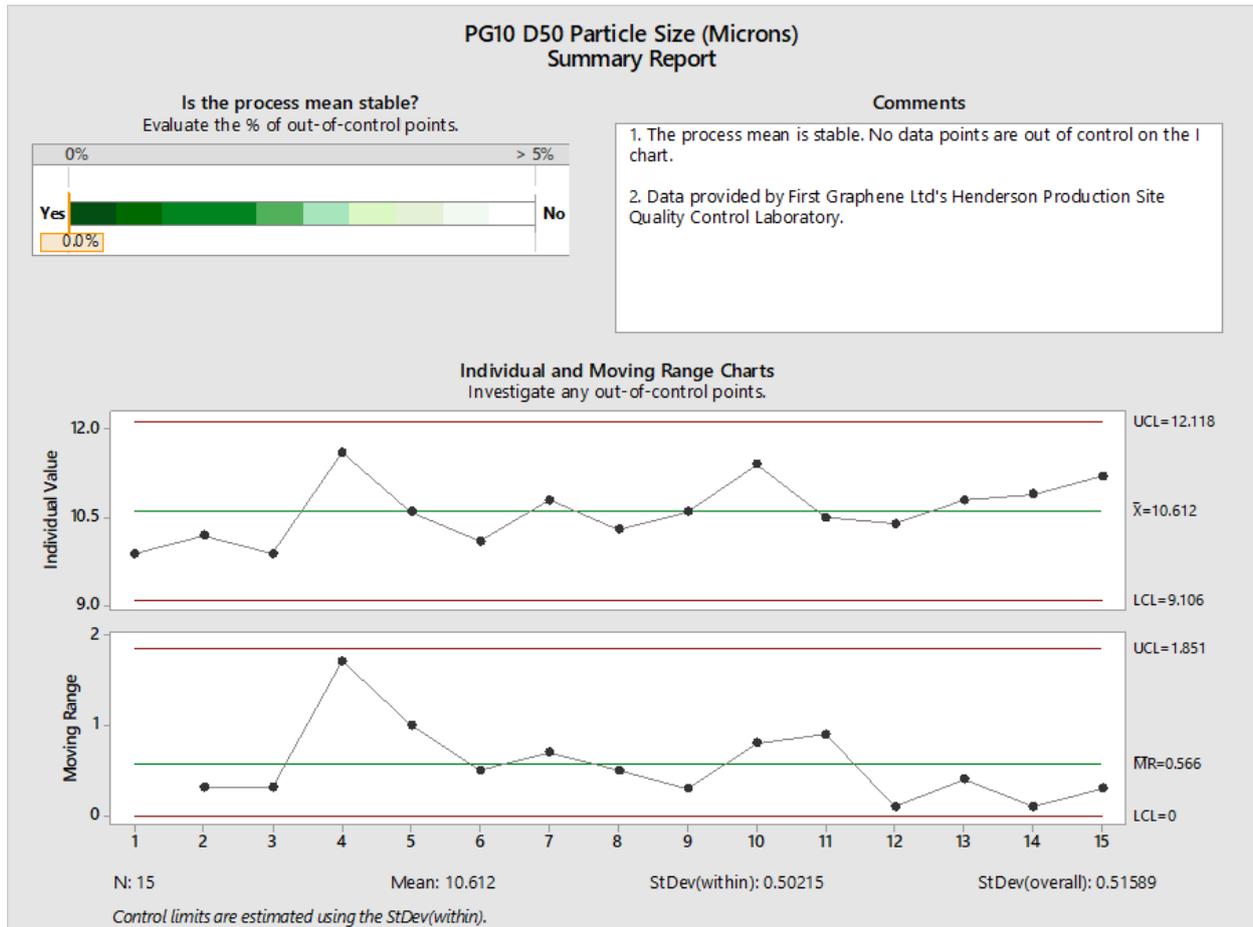


Figure 1 shows the mean particle size of PureGRAPH® 10 product, measured using a Malvern 3000 Mastersizer. The data shows that the average platelet size (or D₅₀) is produced within tight control limits, providing the customer with a consistently sized graphene product.

Figure 2 below shows the Raman data for PureGRAPH® 10 product. A novel at-line Raman measurement technique provides immediate analysis of the quality of PureGRAPH® products. The statistical analysis again shows consistent product across multiple batches.

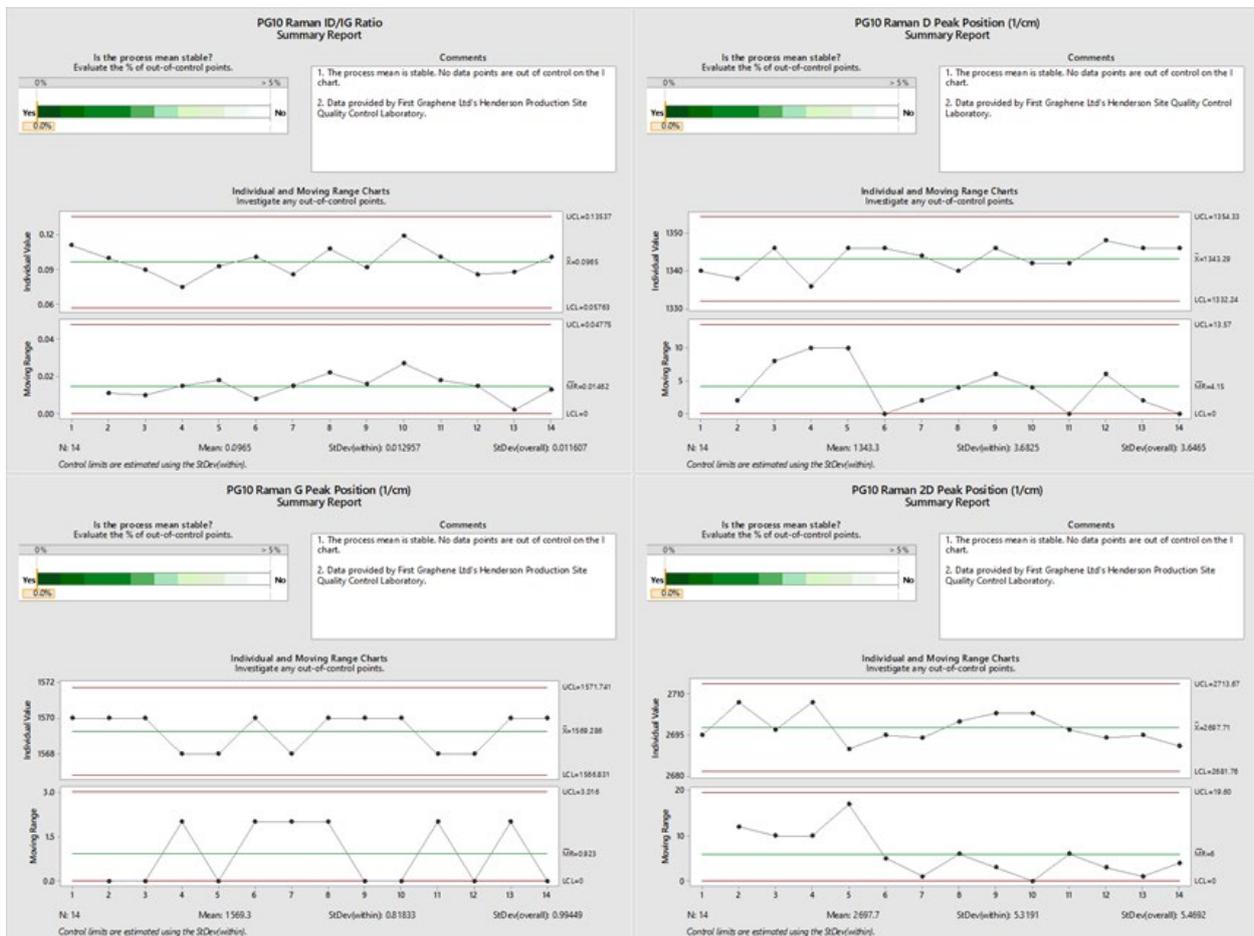
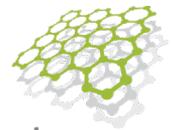


Fig 2: Raman analysis of PureGRAPH® 10 product. A novel at-line Raman measurement technique provides immediate analysis of the quality of PureGRAPH® products. By measuring the I_D/I_G ratio and confirming the position of the D, G and 2D peaks - defect levels and platelet thicknesses can be quickly indicated.

Paul Ladislaus, Senior Process Engineer at First Graphene Ltd said: "We have implemented well-established quality improvement tools and techniques to ensure we can consistently deliver a high-quality product to our customers."

Craig McGuckin, Managing Director at First Graphene Ltd. added: "Our process is robust and we can use these tools and techniques throughout our supply chain to reassure our customers that we are capable of reliably delivering the quality of graphene materials that they require."

First Graphene intends to stay at the leading edge in terms of controlling the quality of graphene related products. The Company continues to invest in its processing capability through measurement and automation and is a Tier 1 Member of the Graphene Engineering Innovation Centre at the University of Manchester with direct access to world-class analytical equipment and techniques and supporting expertise. The Company will continue to invest in analytical methods and process tools to ensure world leading PureGRAPH® product quality for our customers.

About First Graphene Ltd (ASX: FGR)

First Graphene Ltd. is the leading supplier of high-performing graphene products. The company has a robust manufacturing platform based upon captive supply of high-purity raw materials and an established 100 tonne/year graphene production capacity. Commercial applications are now being progressed in composites, elastomers, fire retardancy, construction and energy storage.

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. and is a Tier 1 partner at the Graphene Engineering and Innovation Centre (GEIC), Manchester, UK.

PureGRAPH® Range of Products

PureGRAPH® graphene powders are available in tonnage volumes with lateral platelet sizes of 20µm, 10µm and 5µm. The products are high performing additives, characterised by their high quality and ease of use.

*With authority of the board, this announcement has been authorised for release, by Peter R. Youd
Director, Chief Financial Officer and Company Secretary*

For further information, please contact

*Craig McGuckin
Managing Director
First Graphene Limited
+ 61 1300 660 448*

*Warwick Grigor
Non-Executive Chairman
First Graphene Limited
+61 417 863187*