

**Directa Plus plc**  
("Directa Plus" or the "Company")

**Publication of Scientific Paper from Two Year Research Project**

Directa Plus (AIM: DCTA), a leading producer and supplier of graphene nanoplatelets based products for use in consumer and industrial markets, is pleased to announce the publication in this month's Journal of Applied Polymer Science of the results of a two year research project on graphene use in advanced textiles and fashion.

The project (GRATA - GRAfene per il Tessile Avanzato e la moda) was undertaken by the Materials for Innovation Laboratory (Department of Chemistry, Materials and Chemical Engineering at Politecnico di Milano) led by Professor Luigi De Nardo with the technical support of Fondazione Politecnico di Milano. The GRATA project used G+® graphene nanoplatelets ("GNPs") supplied by Directa Plus.

The project group from Milan Polytechnic, Italy's largest and most prestigious scientific university, conducted a deep and comprehensive investigation of the Company's G+® GNPs and their application in functional textile membranes, commonly used in apparel and technical markets. The findings confirmed that:

- G+® GNPs comply with ISO/TS 80004-13:2017 "graphene nanoplatelets" definition following an analysis of their morphology which showed a typical thickness below 3 nm and a lateral dimension of 3 µm;
- a very high crystalline quality of the GNPs, crucial for applications where thermal and electrical conductivity is targeted; and,
- G+® GNPs confer very high in-plane thermal conductivity to functional membranes, endorsing their use for thermal comfort.

The full scientific paper is available at <https://onlinelibrary.wiley.com/doi/abs/10.1002/app.49645>

**Professor Luigi De Nardo, Politecnico di Milano, commented,** "With the GRATA project, my research group had the privilege of following the entire path from design to final product assessment: a unique opportunity for materials scientists! The GRATA project also demonstrated the simple, yet effective, scale-up approach developed by Directa Plus for exploiting graphene properties in textiles."

**Giulio Cesareo, Chief Executive of Directa Plus, added:** "We are very pleased that this comprehensive investigation into our products by the leading technical university in Italy, and also my alma mater, has confirmed the characteristics that are so attractive to our textile customers. I would like to thank Prof De Nardo and the team at the Department of Chemistry, Materials and Chemical Engineering for their rigorous analysis and hard work."

For further information please visit <http://www.directa-plus.com/> or contact:

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#### **About Directa Plus**

Our focus is principally on the two sectors in which we have strong commercial advantage through developed and launched products and a technological lead: environmental (based on our Grafysorber® product) and textiles (based on our G+ products). In addition, we will continue to pursue opportunities in elastomers and composites (including tyres and asphalt), also using our G+ products. All our products are hypoallergenic, non-toxic and sustainably produced.

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