



## PRODUCT DATA SHEET

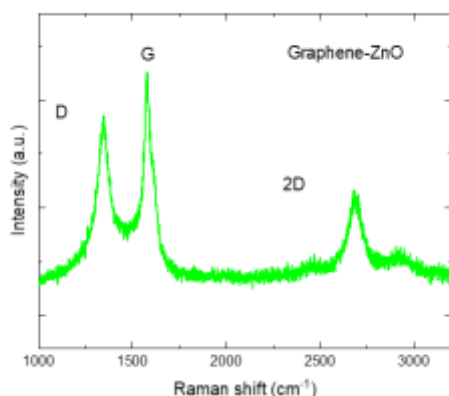
### Graphene – Zinc Oxide Nanocomposite

The nanocomposite has been synthesized by the formation of nanoparticles of zinc oxide in the surface of pristine graphene nanoplatelets. This product has the following composition: ZnO 20-23 %, Graphene 75-77 % and Volatiles <1%.

The addition of zinc oxide nanoparticles synthesized with Gnanomat IP confers better electrochemical performance to pure graphene. The nanomaterial showed interesting features for applications of electrical energy storage systems as active material in supercapacitor electrodes and as a Li-ion battery anode material; and it can be used in other applications as photocatalytic activity, photocurrent generation, catalyst and antibacterial activity.

Gnanomat develops and tailor-made nanocomposites of carbon materials with nanoparticles and additives of different source for technologically advanced applications.

Graphene – Zinc Oxide Nanocomposite	
Form	Powder
Morphology	Graphene lateral size: 40-200 nm Nano/micro particles diameter (TEM): 20-200 nm BET Surface area: 377 m <sup>2</sup> /g
Color	Black
Potential uses and applications*	Active material: supercapacitor electrodes and LiB anodes Photocatalytic activity / Photocurrent generation Catalyst 7 Antibacterial activity
Composition	ZnO 20-23 % Graphene 75-77 % Volatiles <1%



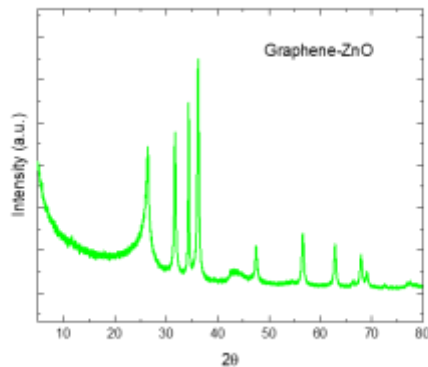
\*Raman Spectroscopy



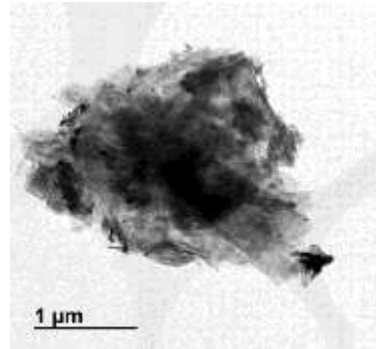
\*Graphene-Zinc Oxide



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\*X-Ray diffraction



\*TEM Image

### About Gnanomat

Gnanomat, your nanotech partner of choice to bring nanomaterials to Industrial applications. The Company offers a versatile range of advanced materials for technologically advanced applications.

Nanomaterials need to be tailored for each specific device and application to ensure the best performance and we establish early collaborations with clients through custom product development.

**Contact us** to design and optimize products that from the first moment address the customer pains and offer real solutions that can fit into your manufacturing process.

Contact Gnanomat: [ts@gnanomat.com](mailto:ts@gnanomat.com)



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\*Application and uses references:

"Glucose sensing, photocatalytic and antibacterial properties of graphene-ZnO nanoparticle hybrids Thangavelu Kavitha, Anantha Iyengar Gopalan, Kwang-Pill Lee, Soo-Young Park. This work was supported by the National Research Foundation of Korea (NRF-2011-0020264). Published 8<sup>th</sup> March 2012."

"Synthesis of graphene-transition metal oxide hybrid nanoparticles and their application in various fields. Arpita Jana, Elke Scheer and Sebastian Polarz doi:10.3762/bjnano.8.74"

"Graphene-Nanoparticle Composites and Their Applications in Energy, Environmental and Biomedical Science. Avijit Mondal and Nikhil R. Jana, Centre for Advanced Materials, Indian Association for the Cultivation of Science, Kolkata 700032, India. Reviews in Nanoscience and Nanotechnology Vol. 3, pp. 177-192, 2014."

