



Graphene and Related 2D Materials

Technical Work Area 41

Project 8

Characterisation of graphene/rGO/GO powders by Thermal Gravimetric Analysis (TGA)

Objectives

- Validate methodology for characterisation of a graphene bulk materials (graphene, rGO and GO powders) using TGA method
- Determine the uncertainties associated with the measurement and data analysis;
- Input into ISO TC229 JWG2, for ISO/PWI 23359 'Chemical Characterisation for Graphene Flakes'.

Background

Graphene is predicted to impact many different application areas such as solar cells, composites, sensors, protective coatings, flexible electronics and energy storage due to its exceptional properties. One of graphene's many achievements is that it is the first truly two-dimensional material, being only 1 atom thick. The isolated research into a whole new family of other 2D materials has indicated that the new materials show exciting and complementary properties to graphene, revealing potential for many other industry applications.

Standardization Needs

As industry uptake on this material increases, international standardization is critical to enable commercialization. Reliable, accurate, and reproducible measurements are important due to the multiple production routes and producers of the material in order to maintain quality in manufacture.

Several standards are under development within ISO TC229 'Nanotechnologies', jointly with IEC, including ISO/PWI 23359 'Chemical Characterisation for Graphene Flakes', which will focus on determining the chemical properties of graphene, rGO and GO flakes in bulk form (i.e. powders). This will require interlaboratory comparisons to help develop best practice and understand the associated uncertainties.

Work Programme

Representative samples (3) of selected materials (graphene, rGO and GO powders) will be sourced by an industrial collaborator. Samples will be prepared by the project leadership and supplied to each participant for TGA

Call for Participation



measurements with a characterization protocol and reporting document supplied.

Deliverables and Dissemination

This interlaboratory study will be disseminated in a peer-reviewed scientific journal, and used to develop ISO/PWI 23359 'Chemical Characterisation for Graphene Flakes'.

International Participation

Current participation includes institutes from Australia, Asia and Europe. More participants are welcome.

Funding

Participants fund their own involvement in the project.

Project Status

Approved by the VAMAS Steering Committee for start-up.

For more information on participation, please contact:

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