

## Project 7

### Functional groups of graphene powders by Infrared Spectroscopy

#### Objectives

This project aims to validate methodology for measuring the functional groups of graphene powders by Fourier Transform Infrared Spectroscopy (FTIR).

The uncertainties associated with the measurement and data will be assessed.

#### Background

Graphene Oxide (GO) have been widely used in biology, energy and composites application areas due to its good affinity and solubility in water as oxygen groups existing in the surface.

FTIR is commonly used to identify the types of oxygen containing functional groups, including epoxy and alkoxy (C-O), carbonyl (C=O) and carboxyl (COOH) groups, especially for graphene prepared by oxide reduction method.

#### 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 consistency in quality and manufacture.

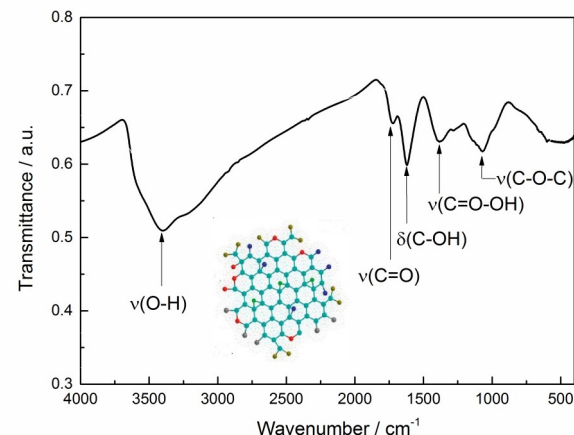
Several standards are under development within ISO TC 229 or IEC TC 113, focusing on the measurements of key physico chemical or electrical specific properties of graphene. Measurement standards relating to the chemical composition is an urgent need.

#### Work Programme

The samples will be prepared and delivered to each participating laboratory by the project leader.

A protocol including sample preparation, measurement procedure and data analysis will be developed.

## Call for Participation



A data template will be supplied to the participants for reporting the results.

#### International Participation

Current participation includes volunteers from Australia, Brazil, China, Japan, Korea and the UK.

Additional volunteers for participation are welcome.

#### Deliverables and Dissemination

- VAMAS Technical Report
- Publications in peer-reviewed scientific journals
- Submission of drafts to be considered for future international standardization.

#### Funding

Participants fund their own involvement in the project.

#### For more information:

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