

Characterization of Graphene and related materials

Collaborate with RISE to assure high-quality and trusted products.

Graphene and related two-dimensional materials are increasingly used in different industries, for example in batteries, coatings, electronics, and as lubricants.

In addition to graphene, there is few-layer graphene, graphene nano-platelets, reduced graphene oxide (rGO), graphene oxide (GO), and functionalized forms of graphene etc.

Characterization of graphene-related material (GRM) is needed to ensure reliable properties of the GRM in the application.

Characterization

- Chemical characterization
- Structural characterization of graphene/Graphene from powders and dispersions
- Electrical characterization
- Thermal characterization

Characterization methods offered by RISE

Users of Graphene-related materials need to be able to have reliable, accurate, and reproducible sources of the material to maintain quality in research and manufacturing.

Preparing a Liquid Dispersion

Dispersions can be performed to achieve the desired properties for your application as well as a preparation step for further characterization of a powder.

Structural Characterization of Graphene

The physical properties of the graphene-related material, such as the number of layers/thickness of the flakes, the lateral dimensions of flakes, layer alignment, the level of disorder and agglomeration, can change during its processing as well as lifetime. The characterization can be performed according to ISO/TS 21356-1:2021.

Chemical Characterization

Chemical characterization verifies the material in terms of for example oxygen level and impurities.

TGA, FT-IR, XPS and ICP-MS are example of the techniques used

Electrical Characterization

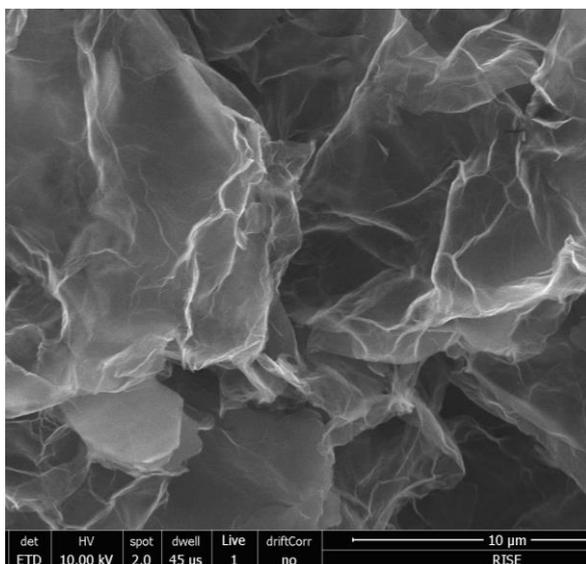
RISE can perform a wide range of electrical measurements. This includes standard resistance measurements and magnetotransport measurement in order to investigate the charge carrier density, mobility, quantum Hall effect, and more.

Application Specific Characterization,

RISE has a wide range of application-specific characterization methods including methods for Corrosion, barrier properties, etc.



Samples ready to put into the XPS instrument for surface chemical analysis



High-resolution electron microscopy of graphene structures

Thermal Characterization

Thermal conductivity and the specific heat capacity measurements are performed according to the TPS method. Thermal conductivity of solids, viscous liquids, gels, and powders at temperatures between -50°C to 600°C . RISE is accredited to measure thermal conductivity according to ISO-220071-2.