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## CERTIFICATE OF ANALYSIS

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Product name:

**Reduced Graphene Oxide (rGO)**



Fig. 1. Reduced Graphene Oxide (rGO).

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Manufacturer : PBR

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Product Number : 000-002

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Manufacturer Date : 1 November 2025

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Emergency Phone : +66(0)86 3636 324

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Quality Release Date: 1 November 2025

## PROPERTIES

Specifications		Appearance
Size of sheet		≈ 4-6 μm
Layer		3-5
Thickness		0.6-1.8 nm
Particles size		300-500 nm
Reduction process		chemical method
Color		Black
Smell		odorless
Water Solubility		Insoluble
Electrical Conductivity		≈ 100-1,000 S/m
Specific surface area		500-700 m <sup>2</sup> /g
purity		>99%
Component Element	Carbon	≥82.0%
	Oxygen	≤18.0%

Production Process : Hummer's Method

## Application

- 1) Supercapacitors
- 2) Catalyst
- 3) Solar energy
- 4) Semiconductor chips
- 5) Conductive film
- 6) Computer memory
- 7) Biomaterials
- 8) Transparent conductive coatings

## CHARACTERIZATION

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### X-ray diffraction (XRD)

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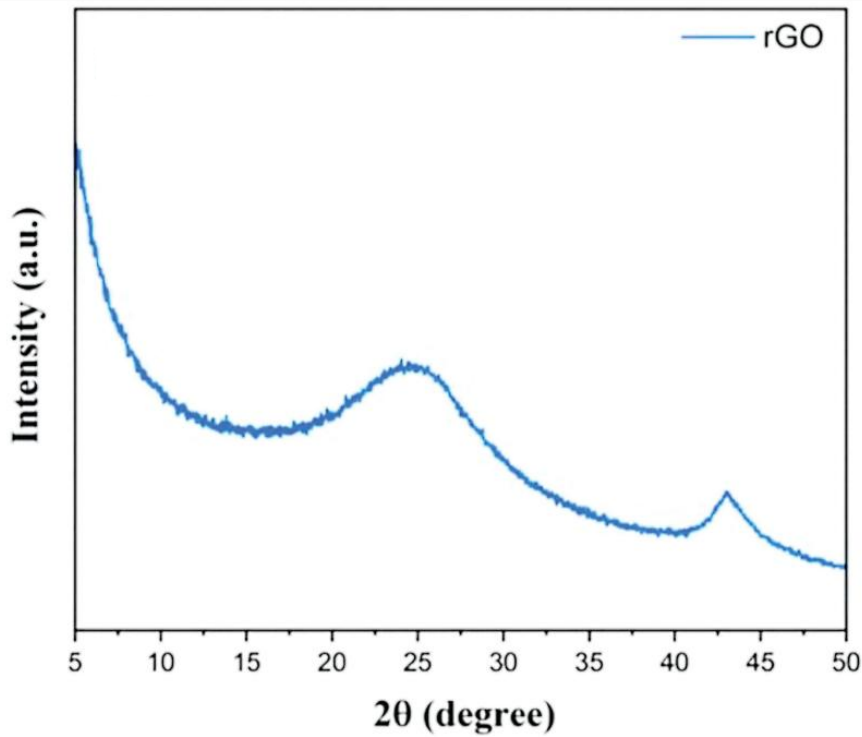


Fig. 2. X-ray diffraction of rGO.

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## RAMAN SPECTROSCOPY (RAMAN)

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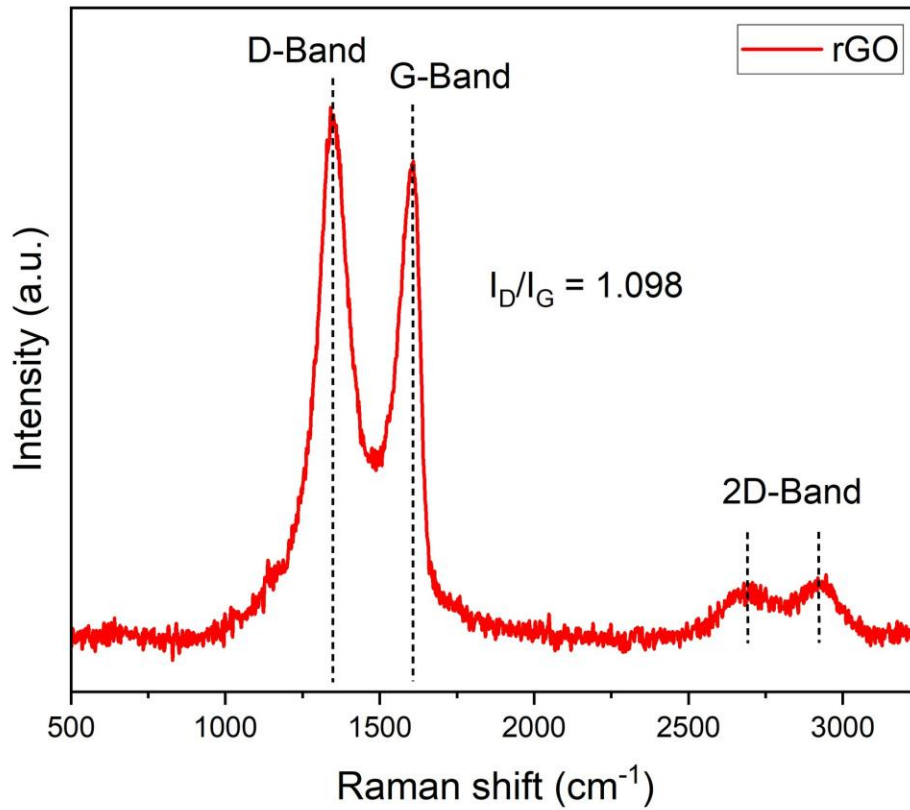


Fig. 3. Raman Microscope of rGO.

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## SCANNING ELECTRON MICROSCOPE (SEM)

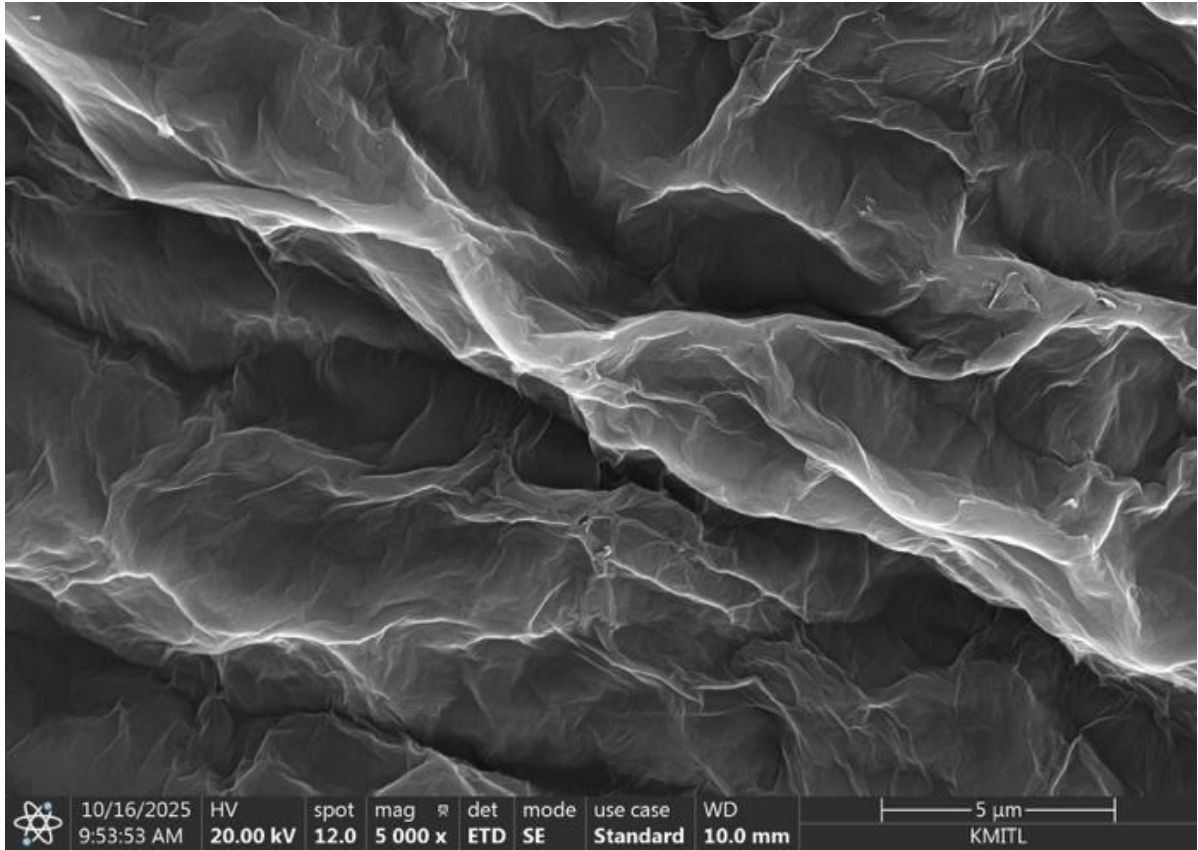


Fig. 4 Scanning electron microscope (SEM) of rGO

### SPECIFICATION AND CHARACTERIZATIONS



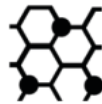
**Mechanical Properties:**

High Mechanical Properties



**Appearance (Color) :**

Black



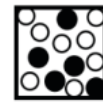
**Appearance (Form) :**

Powder or Suspension



**Electrical conductivity :**

Good Electrical Conductivity



**Concentration :**

1-2 (mg/ml)  
(Dispersion in H<sub>2</sub>O)