Grapherry

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Grapherry® Graphene Technical Datasheet

1. Product Description

High-surface-area few-layer graphene synthesized via upcycling of carbonaceous feedstocks. Designed for applications in construction, composites, and energy storage.

2. Product Specifications

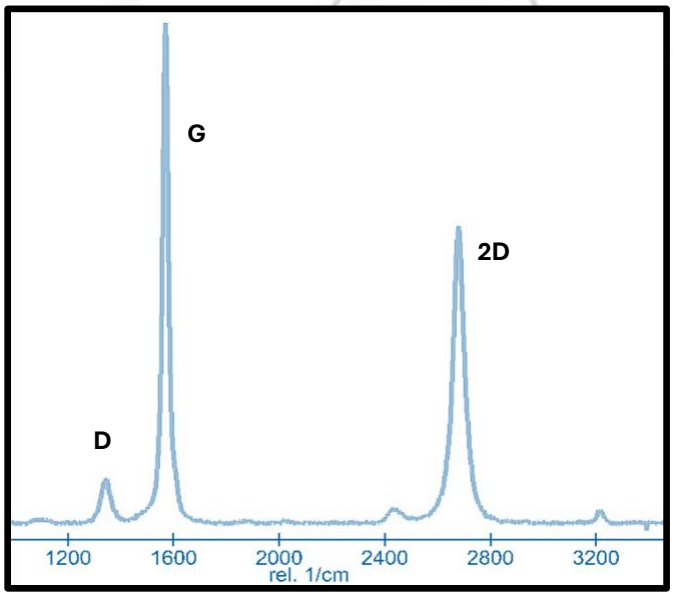
Property	**Typical Value**	**Test Method**
Form	Fluffy Dry Powder	Visual
Appearance	Black	Visual
Electrical Conductivity	1 - 3 × 10^3 S/m	Compression Dependent

3. Technical Specifications

Property	**Typical Value**	**Test Method**
Number of Layers	~1–5 layers	Raman
Carbon Purity (%)	>95% (predominantly sp^2 carbon)	XPS
Oxygen Content (%)	<5% (minor surface functionalization)	XPS
Particle Size (µm)	~1–5 µm lateral sheet size	TEM
Crystallinity	Turbostratic	Raman/XRD

4. Characterization Data

4.1. Raman Spectroscopy

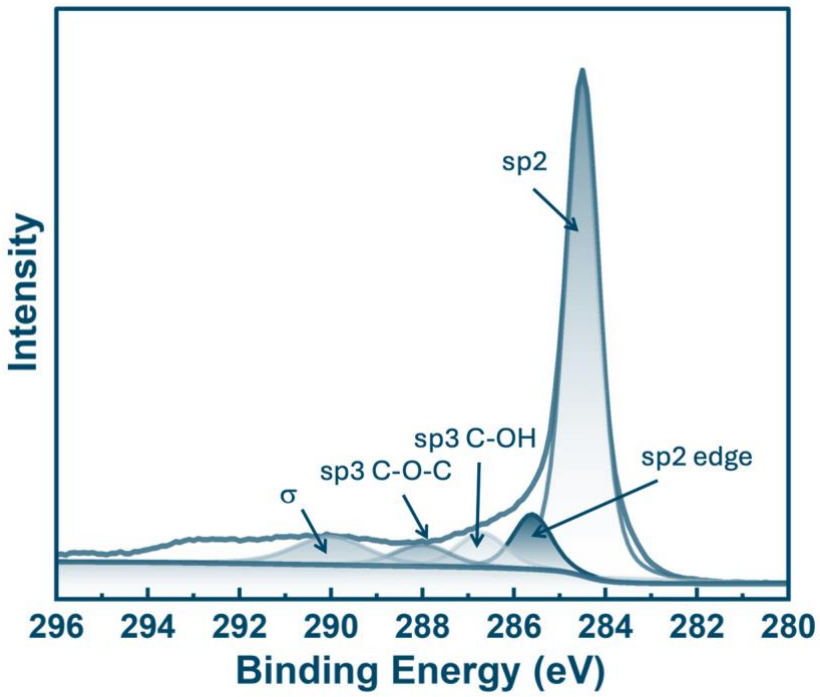


Spectral Interpretation:

- Strong G peak (~1580 cm^{-1}) confirms dominant sp^2 carbon structure.
- Well-defined 2D peak (~2700 cm^{-1}) confirms layered structure.
- I_{2D}/I_G ratio (~0.58) is consistent with few-layer graphene.
- Low I_D/I_G ratio (~0.09) indicates minimal structural defects and high crystallinity.
- Raman features in the 1800–2200 cm^{-1} region and the unsplit 2D band are consistent with turbostratic stacking and rotationally disordered stacking in few-layer graphene.

Overall Raman analysis confirms a high-quality low-defect few-layer graphene.

4.2. X-ray Photoelectron Spectroscopy (XPS)

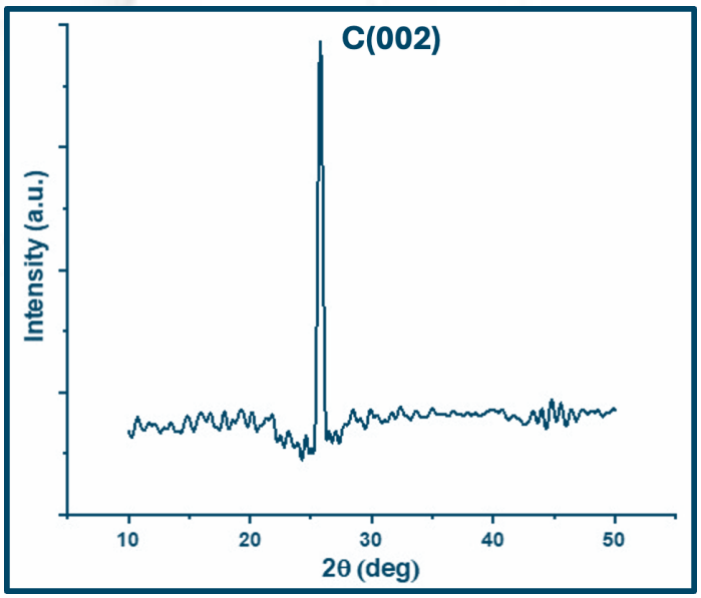


Spectral Interpretation:

- Dominant peak at ~284.5 eV corresponds to sp^2-bonded C–C, confirming a graphitic carbon framework.
- Minor contribution from sp^2 edge carbon, indicating exposed graphene edge sites.
- Small peaks assigned to C–O–C (~286 eV) and C–OH (~287 eV) suggest limited oxygen functionalization.
- Weak higher-binding-energy component indicates minimal sp^3 carbon content.

XPS analysis confirms predominantly sp^2-bonded carbon with minimal oxygen functionalization, consistent with high-purity few-layer graphene.

4.3. X-Ray Diffraction (XRD)



Spectral Interpretation:

- A dominant (002) peak XRD confirms layered sp^2 carbon with few-layer stacking and minimal crystalline impurities.