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FGA-2 Fractal Graphene Aggregate Technical Datasheet

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Product Number: FGA-2	Product: Fractal Graphene Aggregate
Product Description	
A non-functionalized, turbostratic graphene in a powdered form of aggregated nano-platelets from carbon-rich gas explosion synthesis	

Product Information	
Production Method	Explosion Synthesis
Raw Material	Carbon Bearing Gas
Forms of Materials	PWD – Dry Powder

Characteristic	Test Method	Value
SP2 Bonded Carbon	RAMAN, XPS	Yes (G peak), 80% sp2 (D parameter)
Structural Defects	RAMAN	D/G = 0.3 G width = 50cm ⁻¹
Number of Layers	RAMAN, X-Ray Diffraction	32-layer average
Z-Axis Dimensions	RAMAN, X-Ray Diffraction	~ 10 nm
Primary Particle Shape	TEM, Light Scattering	Platelets (aggregated)
Lateral Dimensions	TEM	75-200nm
Aspect Ratio	TEM	1:7.5 to 1:20
Bulk Density	Manual Tapping	70-100mg/mL*
Chemical/Elemental Analysis %	Chemical Analysis	C 98.6%
Oxygen Content %	Chemical Analysis	1.35%
Impurities %	Chemical Analysis	0.1%
Functionalization	Chemical Analysis	Not Detected
Surface Particle Charge	Zeta Potential	33 mV
Graphene Orientation	RAMAN, XRD	Turbostratic
Specific surface Area (SSA)	BET	25m ² /g
Crystallinity	Electron Diffraction, X-Ray Diffraction	Crystalline

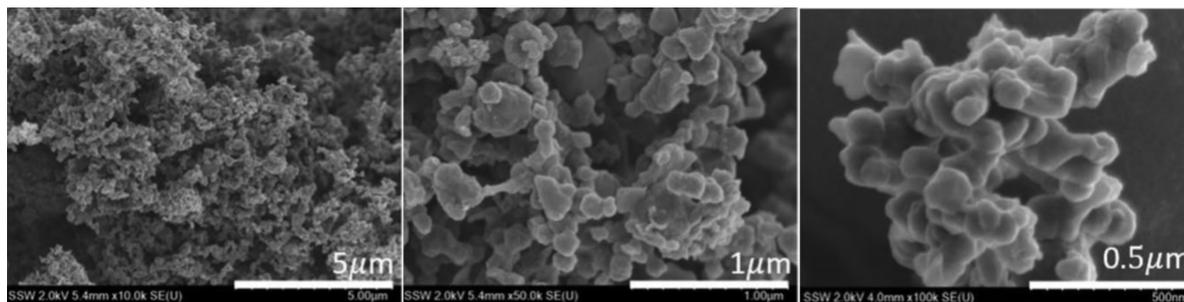
*Density may vary



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Parameters	
Appearance	Black fluffy powder
Number of Layers	~ 32 layers
Lateral Size	Nano-platelets 75 to 200nm.
Shape and Form	Fractal aggregate of nano-platelets
Elemental Analysis	Atomic %: 98.6% Carbon, 1.35% Oxygen, 0.05% Hydrogen, No PAHs
Dispersants/Surfactants	None
Concentration	100%
Solid Content	100%
Solvent content	N/A
Substrate Material	N/A
Sheet Resistance	Not applicable
Color	Black
Odor	None
Solubility in Water	Hydrophobic
Electrical Conductivity	Function of powder compression.

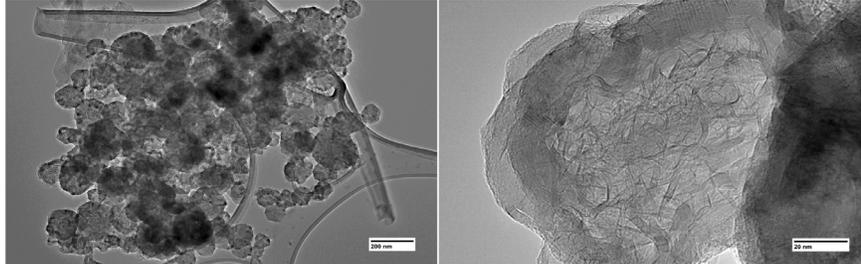
Scanning Electron Micrographs



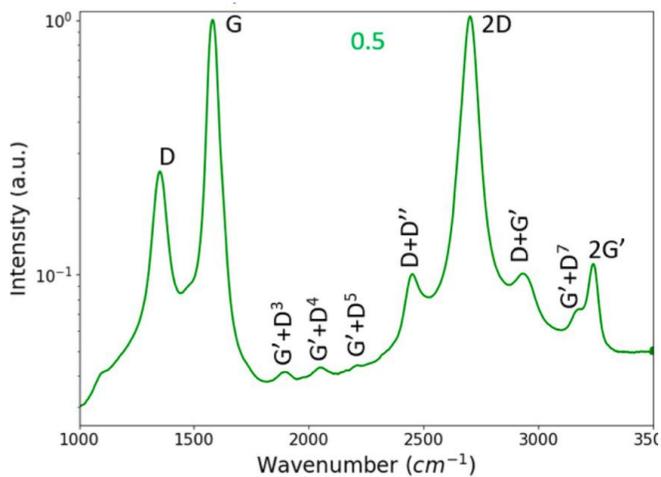


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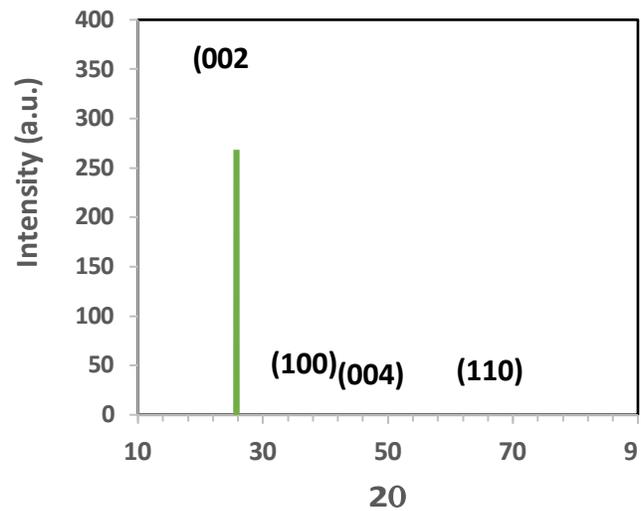
Transmission Electron Micrographs



Raman Spectrum (514 nm)



X-Ray Diffractogram



Notes on Analysis

- The turbostratic nature is indicated by peaks at position 1885cm^{-1} and 2035cm^{-1} in the Raman spectrum and the asymmetric (100) peak in the X-Ray Diffractogram.
- AFM- The aggregate nature of our fractal graphene is not amenable to AFM analysis.
- Raman- The nanoscale lateral dimensions of our monomer platelets leads to a high fraction of defect edge sites which enhance the intensity of the Raman D bands.



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