BGI Product Data Sheet

Monolayer Graphene on TEM Grids

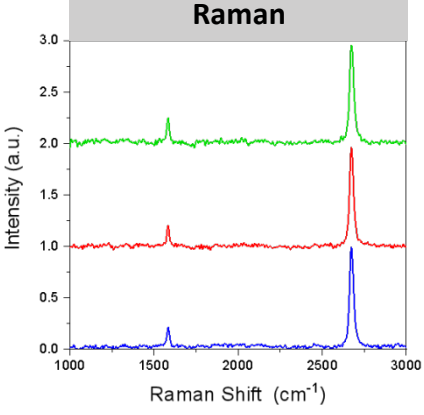
Graphene Film Properties

Growth Method	CVD synthesis
Transfer Method	Polymer-free transfer
Size	3 mm（TEM grid diameter）
Appearance	Transparent
Transparency	> 97%
Number of layer	1
Coverage	> 80%
Grain Size	Single/poly-crystalline
Sheet Resistance（SiO_2/Si）	300-400 Ω/sq
Quality Control before Deliver	Raman & Optical Microscopy checked

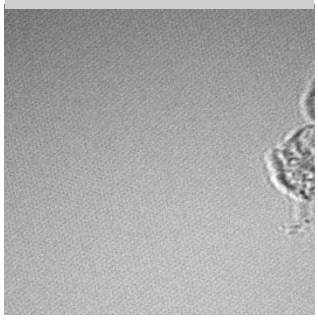
TEM Grid Properties

Type	QUANTIFOIL
Coating	Au mesh/ holey carbon film
Hole Size/Space between Holes	1.2/1.3 μm
Mesh	300

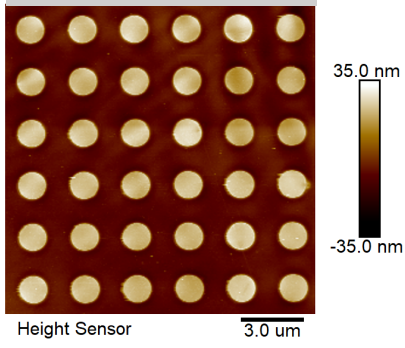
Raman



TEM



AFM



BGI Product Operation Manual

Monolayer Graphene on TEM Grids

Treatment before use

When preparing cryo-EM samples, we typically use relatively mild plasma treatment conditions, such as reducing the plasma treatment time. Excessive glow discharge and vitrification intensity may lead to damage of the graphene film. Based on our experience and that of our partners, we have compiled the following glow discharge conditions for different equipment for your reference.

1.1 Recommended Glow Discharge Conditions

Devices	PDC-32G Plasma Cleaner	PELCO easiGlow	Gatan Solarus	Coolglow	PIE Tergeo
Appearance					
Voltage	220V	220V	220V	220v	220v
Current	/	10mA (Soluble Protein) 15mA (Membrane Protein)	/	/	/
Power	Low (Soluble Protein) Med (Membrane Protein)	/	5 W (Soluble Protein) 10W (Membrane Protein)	15W (Soluble Protein) 20W (Membrane Protein)	15W
Vacuum Pumping Time	2-2.5min	/	/	/	/
Hold Time	/	20-30s	20s	/	/
Glow Time	10-20 s	10-15 s	10 s-12s	10s-15s	15s
Gas	Air	Air	Ar:11.5 sccm (Soluble Protein) Or a mixture of Ar and O_2	Air	H_2+O_2
Pressure （Vacuum Level）	/	0.39 mbar	70 mTorr	40Pa	70 mTorr

For preparing graphene-supported cryo-EM samples, we set the humidity of the Vitrobot Mark IV (ThermoFisher Scientific) chamber to 100% and the temperature to 8°C. A 4 µl sample solution is applied to a freshly glow-discharged graphene grid, and blotting is performed with filter paper (Ted Pella) using a force of 0 for 3–4 seconds for membrane proteins, or a force of -2 for 0.5–2 seconds for soluble proteins. After blotting, the grid is plunge-frozen in liquid ethane and stored in liquid nitrogen.

The protein concentration can be adjusted to 1/4 to 1/5 of the concentration typically used with Quantifoil Holey carbon supports.

Storage & Notification

- BGI monolayer graphene TEM grid shall be stored in a cool and low humidity environment, avoiding strong vibration.
- Monolayer CVD graphene support film is thin and easy to break. When using tweezers to clamp the BGI graphene grid, please hold it at the edge metal bar of the grid to reduce the damage or wrinkle caused by the unexpected force from the tip of tweezers.
- Please avoid the Graphene support film facing down or contacting with other materials. The front side of BGI Graphene grid usually faces to the letter row on the bottom of the grid box.
- Generally, monolayer graphene electron microscopy support films have high chemical stability. However, we recommend using the product within 6 months of receipt and avoiding prolonged exposure to open environments to prevent the adsorption of dust or other contaminants. Store the product sealed and in a dry environment.
- Plasma and blotting control parameters can be referenced in the user manual. Due to differences in specimen types and laboratory equipment, initial use of graphene TEM support films may require experimenting with various conditions to avoid film damage and achieve satisfactory experimental results.