

Graphene on semi-insulating 2-inch SiC

Description:

- Graphene grown on 2-inch Si-face of semi-insulating silicon carbide (SiC)
- Growth method: Thermal sublimation.
- Analysis: AFM, Optical microscopy and Raman measurements ^[1]
- Coverage: >95%
- Monolayer graphene: >60% ^[2]
- Comments: Transparent. C-face laser marked
- Conductivity type: n-type
- Carrier concentration: 5×10^{11} - 5.0×10^{12} ^[3]
- Hall electron mobility (room temperature): up to $3000 \text{ cm}^2 \text{V}^{-1} \text{s}^{-1}$ ^[3]

SiC substrate:

- Type: Semi-insulating SiC
- Polytype: 4H
- Orientation: (0001) \pm 0.2 deg
- Thickness: $350 \pm 50 \text{ }\mu\text{m}$
- Resistivity: $>1 \text{E}+7 \text{ }\Omega \cdot \text{cm}$
- Micropipe density: $<5 \text{ cm}^{-2}$
- Primary flat orientation: $\langle 11\text{-}20 \rangle$
- Secondary flat orientation: $\langle 1\text{-}100 \rangle$
- Additional: C-face laser marked. C-face etched after thermal sublimation

^[1] Optical microscopy: >15 regions inspected. AFM: 5 regions inspected. Raman: 5 regions inspected.

^[2] Monolayer percentage is calculated via 2D Raman mappings, using the [Code of Good Practice](#) of the Spanish Graphene Alliance.

^[3] Values obtained on Hall bars patterned on top of a terrace via electron beam lithography on $8 \times 8 \text{ mm}^2$ samples.

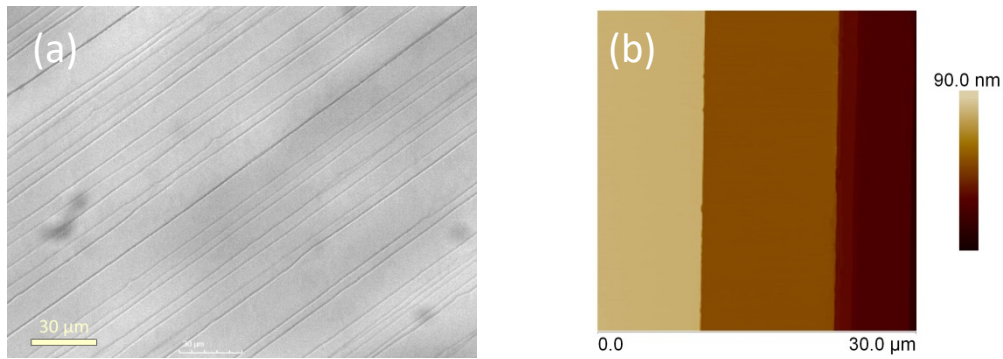


Fig. 1: (a) Optical image showing a top-view of the terraces of the surface and (b) atomic force microscopy leveled image.

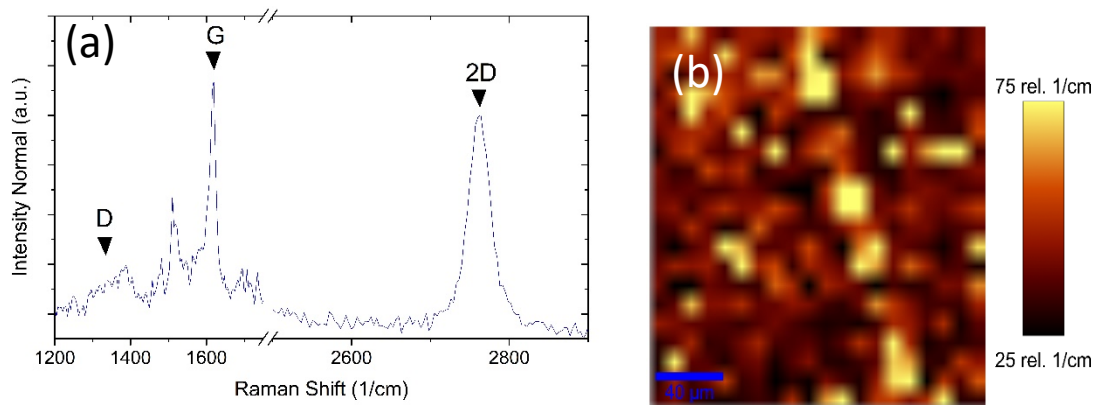


Fig. 2: (a) Raman spectroscopy single measurement where representative peaks of graphene are evidenced, and [(b) and (c)] 200x200 μm² sized 2D-mapping of the FWHM of the 2D peak.

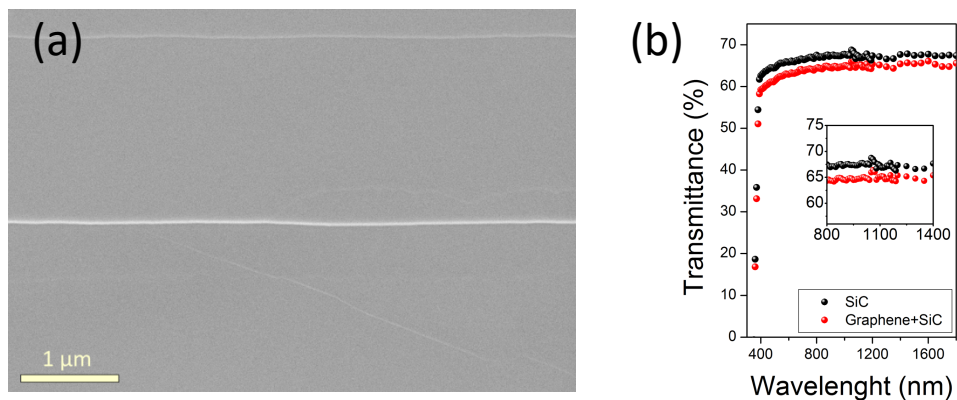


Fig. 3: (a) SEM image of epitaxial graphene grown on SiC, and (b) transmittance of SiC wafer and SiC wafer after graphene growth.