

Near-Field Imaging of Graphene

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We carried out the high-resolution dielectric mapping of graphenes on SiO₂/Si substrate, using the scattering Apertureless Near-Field Scanning Optical Microscopy (s-ANSOM) in both visible (633 nm) and infrared (3.6 μm) wavelengths. In the visible wavelength, the dielectric contrasts are almost proportional to the number of the graphene layers, which indicates that the near-field interaction between the tip and individual graphene layers leads to an image charge oscillation in two-dimension. In the infrared region, on the other hand, we observe unique layer-specific contrasts that do not linearly increase with number of layers. It is attributed to the layer-dependent band-structure of graphenes.

Keywords: Graphene, Near-Field