

Simultaneous AFM / STM - measurements on epitaxial graphene at ambient conditions

Abstract:

I report about oscillating scanning tunneling microscopy (STM) combined with atomic force microscopy (AFM) at ambient conditions with a qPlus sensor. Due to the high stiffness of the tuning fork, stable oscillations with small amplitudes are feasible. As a sample, epitaxial graphene is a good candidate for experiments at ambient conditions which provides well known structures as steps, a superstructure and atoms. With STM the known structures can be easily achieved, whereas with AFM the resolution was limited to steps on the graphene-surface. Simultaneous STM/AFM measurements were not able to acquire comparable results, because of different working points in STM and AFM, identified by spectroscopy data. An oxide layer on the tip surface as culprit was investigated by transmission electron microscopy (TEM) and scanning electron microscopy (SEM).