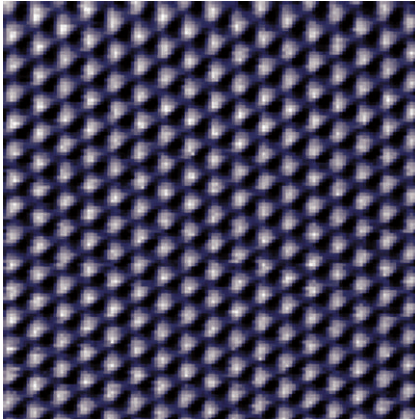


Atomic resolution images on HOPG

Nanosurf® STM Application Note

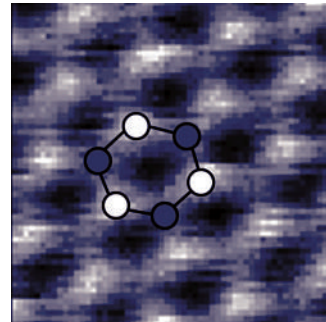
In a good top view image of graphite you will see a pattern consisting of white, grey and black spots. To interpret the image correctly: the bright spots mean higher tunneling current and dark spots mean low current.

STM image raw data of HOPG

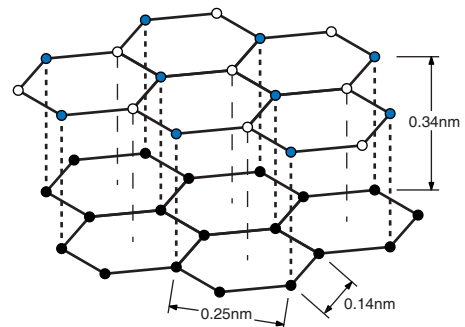


scan size: 4 nm

Illustration of the carbon atom position.



Out of the lattice model of graphite one can see that there are two different positions of the carbon atoms in the graphite crystal lattice (see e.g. R.C. Tatar et al. Phys Rev B 25 (1982) 4126).



One with a neighbouring atom in the plane below (grey) and one without a neighbour in the lattice below (white). Consequently the electrical conductivity of the graphite surface varies locally slightly (different electronic density of states) so that the atoms without neighbours appear "higher" than the others (see e.g. I.P. Batra et al. Surf Sci 181 (1987) 126). This also causes the lattice constant between the bright 'hills' to have the higher value of 0.25nm than the nearest neighbour distance in the graphite lattice of 0.14nm.