

Atomic and electronic structure of graphene on multivincinal substrates

In this talk, I present the growth and morphology of graphene via chemical vapor deposition at different vicinal orientations of Pt(111) and Ir(332). By angle-resolved photoemission spectroscopy (ARPES), we show how the graphene's band structure is modified by the one-dimensional periodic nanostructured substrate. The growth of graphene modifies the original steps of the pristine substrate and transforms them into an array of (111) terraces (T) and step bunching areas (SB), as observed by STM (Fig.1.a). This nanostructuring of the underlying substrate induces a superperiodic potential on graphene that opens mini-gaps on the π band as observed by ARPES (Fig.1.b). This is consistent with the structural periodicity observed in STM and LEED [1,2].

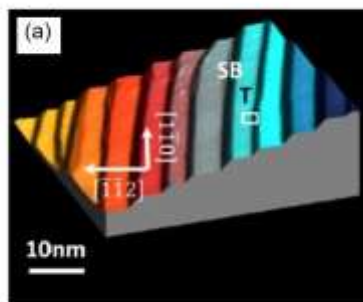


Fig. 1. (a) 3D representation of an STM image of graphene on Pt(111) crystal.

References

- [1] A. Celis et al., *Phy. Rev. B* 97,195410 (2018)
- [2] A. Celis et al., *Nanotechnology* 31, 285601 (2020)