

GRAPHENE GROWTH ON CU(111): MICROSCOPIC ANGLE-RESOLVED PHOTOEMISSION AND SCANNING TUNNELING MICROSCOPY INVESTIGATIONS.

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The investigation of graphene grown on a copper foil by chemical vapor deposition has been widely explored in last few years. However, only in a very few experiments the graphene growth on highly-ordered copper surfaces (*i.e.* single crystals) has been studied. In these studies, graphene was grown in-situ under ultrahigh vacuum conditions.

Our studies focus on graphene on Cu(111) grown ex-situ in a vacuum furnace by chemical vapor deposition of methane. All investigations have been carried out in an ultrahigh vacuum environment while the samples were annealed at 400°C in or-

der to remove surface contaminants. Angle-resolved photoemission spectroscopy with a microscopic photon beam resulted in the detection of a clear band structure exhibiting a Dirac cone shape. Scanning tunneling microscopy experiments showed that the Cu surface is covered mainly by a single layer of graphene. Different rotational domains were detected, some showing a Moire pattern. In addition, the role of oxygen on the growth process and its contribution to the modification of the morphology of the copper/graphene is also presented.