Ordered Vacancy Network Induced by the Growth of Epitaxial Graphene on Pt(111)

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We have studied large areas of √3×√3R30º graphene commensurate with a Pt(111) substrate. A combination of experimental techniques with ab initio density functional theory indicates that this structure is related to a reconstruction at the Pt surface, consisting of an ordered vacancy network formed in the outermost Pt layer and a graphene layer covalently bound to the Pt substrate. The formation of this reconstruction is enhanced if low temperatures and polycyclic aromatic hydrocarbons are used as molecular precursors for epitaxial growth of the graphene layers.

References

[1] G. Otero et al., Physical Review Letters, **105** (2010) 216102.

Figures

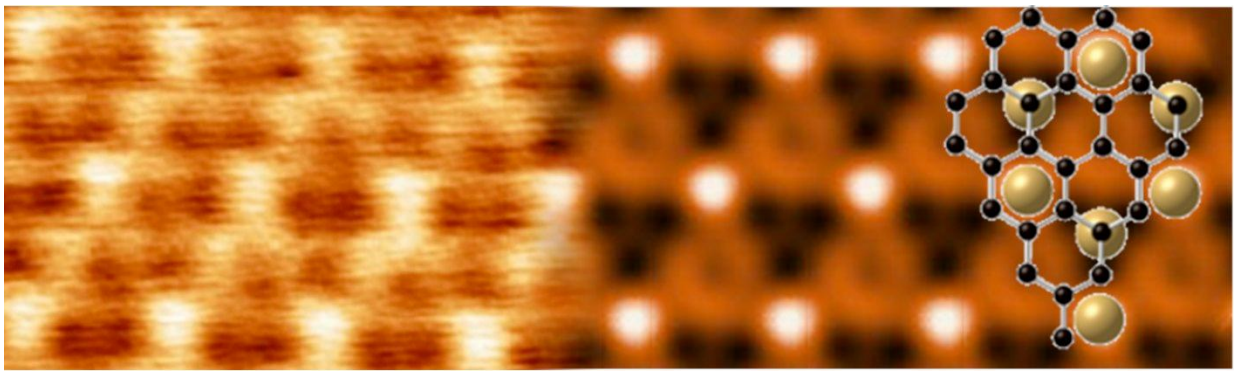

Figure caption. STM image (left) and DFT simulation (right) of the proposed vacancy model (overlaid).