Sächsische Forschergruppe
„From local contraints to macroscopic transport“
DFG-FOR 877

TU Chemnitz, Institut für Physik,
„Optische Spektroskopie und Mikroskopie in kondensierter Phase“

Gastvortrag

Dienstag den 6.11.2012, 11:00 Uhr
TU Chemnitz, Reichenhainer Str. 70
Neues Physikgebäude Raum P032

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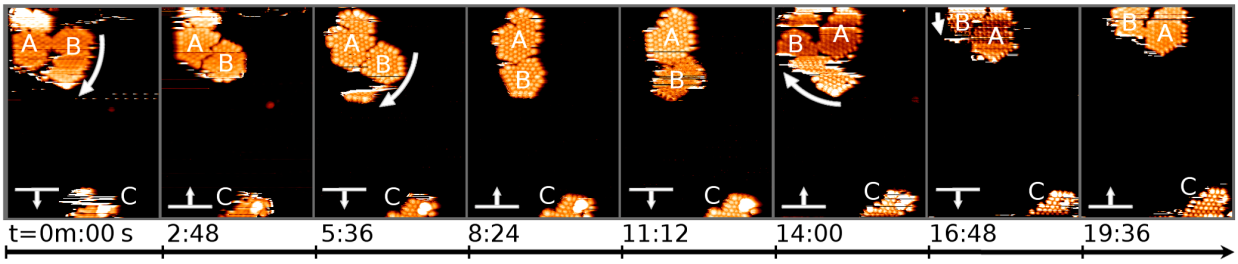
Role of substrate-molecular interactions in arrangement and collective motion of fullerene islands on epitaxial graphene

Carbon-based materials consisting of sp2-hybridized atoms are promising for numerous aspects. Among the most studied are graphene, nanotubes and fullerenes. Fullerenes interacting with graphene are a model system for studying van der Waals interactions. However, interaction of fullerene with epitaxial graphene can vary from strong bonding to purely van der Waals interaction, depending on the substrate used for the growth of graphene.

Fullerenes deposited on epitaxial graphene on a metal substrate have a strong preference for a binding site. On the contrary on the graphene grown on SiC(0001), we found islands of fullerenes, floating on the surface and pinned to surface defects or steps. The molecules are held together exclusively by the van der Waals cohesion forces, which is manifested by a collective movement of the islands and confirmed by theory.



Literature:

Jiong Lu et al., Using the Graphene Moiré Pattern for the Trapping of C60 and Homoepitaxy of Graphene, ACS Nano 6(1), 944–950 (2012).

M. Svec et al., Van der Waals interactions mediating the cohesion of fullerenes on graphene, Phys. Rev. B 86, 121407(R) (2012).