

Nano-architecture of mixed molecular layers on a silver surface.

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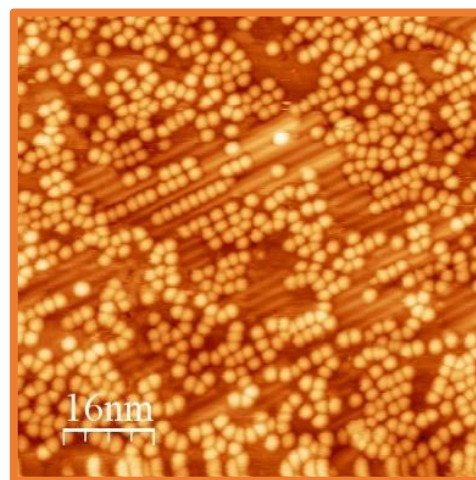
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We present a study of the formation of mixed organic molecular layers on a Ag(110) surface. We focus on layers of an Aromatic Polycyclic Hydrocarbon (APH) molecule, namely **perylene**, with added **fullerenes** (C₆₀). We use surface science techniques such as STM/STS, UPS/XPS and others to investigate the structure of these molecular assemblies and to study the link with their electronic, optical and vibrational properties.

We focus on these particular molecules because we demonstrated that the 3D structure of perylene multilayers on Ag(110) shows very interesting structural properties [1]. This over layer has the unique ability to adapt to the morphology of the underlying substrate preserving its lateral order and maintaining an epitaxial relationship with the various surface terraces. At the same time, fullerenes have proved to play a crucial role, along with perylene, in a specific process of artificial photosynthesis, namely Triplet-Triplet Annihilation-Up Conversion (TTA-UC) [2]. TTA-UC finds useful applications in OSC (Organic Solar Cells), OLED (Organic Light Emitting Diodes) and even in Photolysis cancer therapy.

We present a study on the ability of the perylene multilayer to be used as a template for the formation of composite layers with fullerenes (C₆₀).



[1] Nataliya Kalashnyk, Lionel Amiaud, Céline Dablemont, Anne Lafosse, Kirill Bobrov, and Laurent Guillemot, *The Journal of Chemical Physics* **148**, 214702 (2018).

[2] Anam Fatima · Jad Rabah · Emmanuel Allard · Hélène Fensterbank · Karen Wright · Gotard Burdzinski · Gilles Clavier · Michel Sliwa · Thomas Pino · Rachel Méallet-Renault *et al*, In *Photochemical & Photobiological Sciences* (2022) 21:1573–1584.