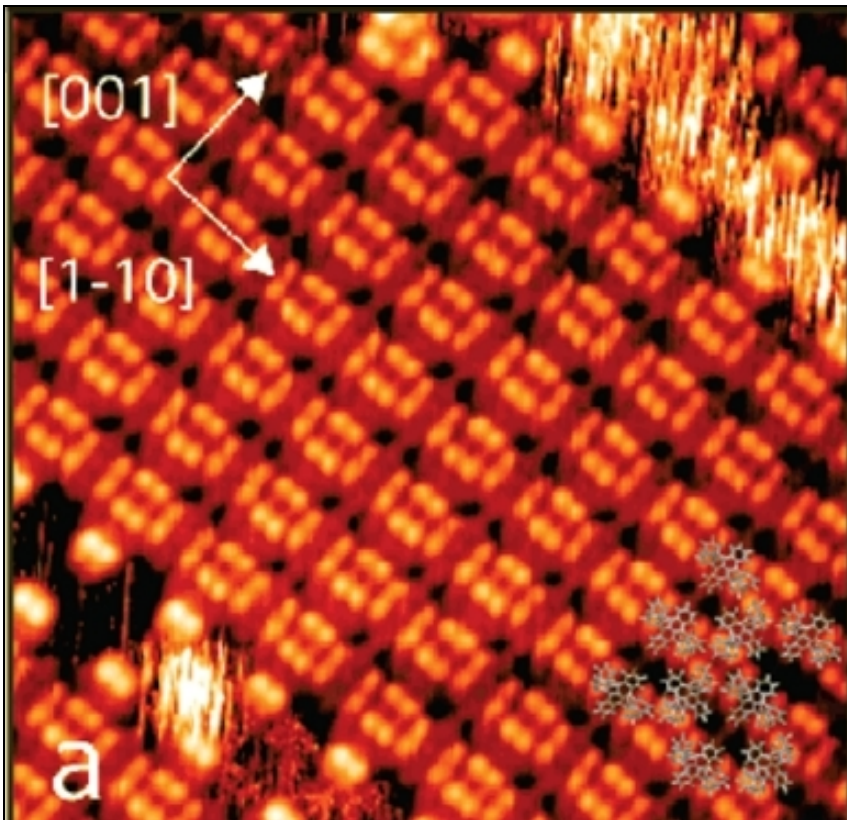
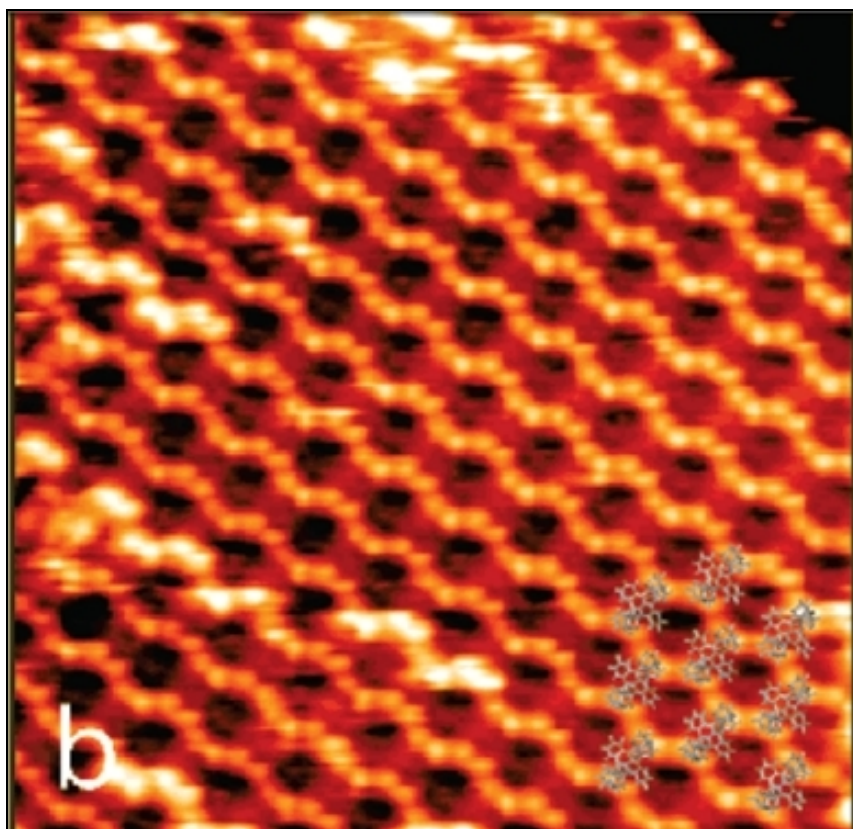


Molecular Assembly of Rubrene on a Metal/Metal Oxide Nanotemplate (Result of the month 04/2008)

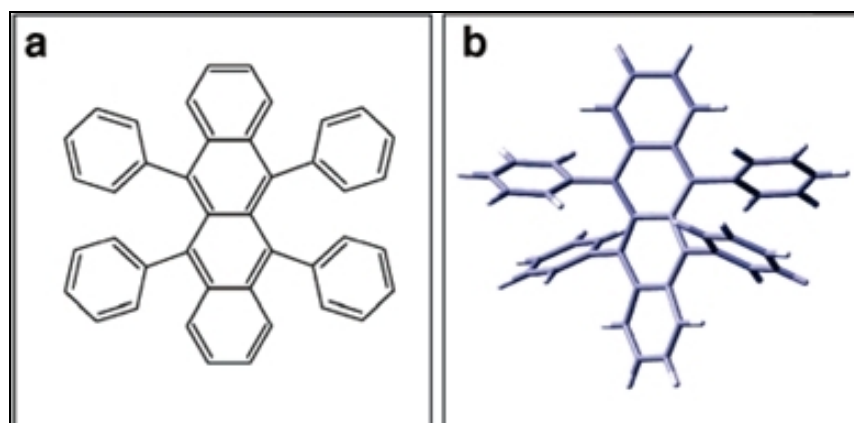
We investigated the adsorption properties and self-assembly of rubrene molecules on the copper oxide nanotemplate formed by high-temperature exposure of Cu(110) to molecular oxygen. Using high-resolution scanning tunneling microscopy under ultrahigh-vacuum conditions, we observed a complex variety of self-assembled motifs, driven by competing effects such as the chemical affinity between the organic molecule and the surface, surface coverage, and spatial confinement of the rubrene molecules within the rows of the template



Rubrene adsorption on Cu(110).
15 nm x 15 nm STM images of (a) structure A . It = 0.3 nA, Vt = -1.9V.



Rubrene adsorption on Cu(110). 15nm x 15 nm STM images of (b) structure A. $I_t = 0.34$ nA, $V_t = -0.53$ V.



(a) Molecular structure of rubrene and (b) 3-dimensional rendering of rubrene in the gas phase as calculated with density functional theory (B3LYP/6-31G(d)).

Data Courtesy of:

Fabio Cicoira⁽¹⁾, Jill A. Miwa⁽¹⁾, Dmitrii F. Perepichka⁽²⁾, and Federico Rosei⁽¹⁾

Institutes:

(1) Universite du Quebec, Canada

(2) McGill University, Montreal, Canada

Corresponding author:

Federico Rosei, rosei@emt.inrs.ca

Institutes webpage:

<http://www.nanofemtolab.qc.ca>

This result has been obtained with : **OMICRON Variable Temperature UHV SPM**