

CEA - Saclay 91191 Gif-sur-yvette Cedex
Service de Physique de l'Etat Condensé
SÉMINAIRE

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Molecules, Surfaces and Symmetry: from Geometry to
Nanoscience

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Supramolecular 2D networks are attracting considerable interest as highly ordered functional materials for applications in nanotechnology. The challenge consists in directing the ordering of pre-designed molecular species into periodic architectures over extended length scales with atomic precision. Highly-organized supramolecular 2D arrays can be obtained by self-assembly of molecules which interlock via chemical (H-bonding, etc) or physical (size and shape recognition, etc) interactions. By controlling the subtle interplay between molecule-molecule and molecule-substrate interactions it is possible to tailor a variety of 2D self-organized architectures based on functional organic molecules such as liquid crystals, large planar conjugated compounds, guest-host systems and various biological molecules. The use of low-current scanning tunnelling microscopy (STM) at the liquid-solid interface allows to visualize the various resulting 2D networks down to atomic resolution, thus giving access to a refined modelisation. In this seminar we report on recent examples of 2D self-organized systems and their potential implications in molecular electronics.

1. L. Piot, C. Marie, X. Dou, X. Feng, K. Müllen, D. Fichou, *J. Am. Chem. Soc.*, **131**, 1378 (2009).
2. L. Piot, C. Marie, X. Feng, K. Müllen, and D. Fichou, *Adv. Mater.*, **20**, 3854 (2008).
3. E. Menard, A. Marchenko, V. Podzorov, M. E. Gershenson, D. Fichou, and J. A. Rogers, *Adv. Mater.*, **18**, 1552 (2006).

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