Electronics with Single Nanographenes

Jürgen P. Rabe

Department of Physics, Humboldt-Universität zu Berlin, Germany
www.polymerphysics.de

The control of electron transport through single molecules is a key for the development of molecular and organic electronics concepts. A very simple, robust and versatile molecular system for fundamental studies are nanographenes , i.e. finite single layers of electronically strongly coupled carbon atoms. Current-voltage characteristics through them depend on their size and symmetry, as well as the electric field at the interface, which in turn is controlled by the dielectric properties of the local environment. Scanning tunneling microscopy and spectroscopy (STM/STS) both in vacuum and at solid-liquid interfaces are powerful tools, which provide *in-situ* access to both structural and electronic properties and allow to characterize the basic function of a single molecule transistor. The obtained understanding may be applied to interface control for various organic electronic devices including all-organic transistors, light emitters or photovoltaic cells, or for very local electronic and chemical sensing.