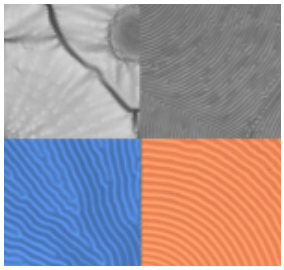
# Surfaces and Interfaces



Interfaces and surfaces are where the action happens. Catalysis, molecular recognition, charge transfer, polymerization and many other critical processes take place at the boundary between one medium and another. With the need to integrate new materials into devices, and applications ranging from catalysis to sensors, medicine to self-cleaning surfaces, and displays to lasers, fundamental and applied studies of surface and interface processes and optimization are of critical importance in developing new technology to meet today's challenges. The selection of recent research articles presented below illustrates the vast potential of this field.

For recent reviews, see

- F. Xia, L. Jiang
  Bio-Inspired, Smart, Multiscale Interfacial Materials
- J. Xu et al.
  Facile Creation of Biomimetic Systems at the Interface and in Bulk
- G. Ertl
  Reactions at Surfaces: From Atoms to Complexity (Nobel Lecture)

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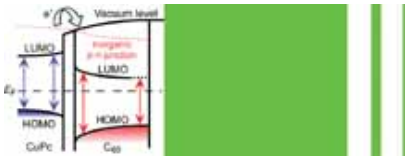
## Recent Articles

Kouki Akaike, Kaname Kanai, Yukio Ouchi, Kazuhiko Seki
**Impact of Ground-State Charge Transfer and Polarization Energy Change on Energy Band Offsets at Donor/Acceptor Interface in Organic Photovoltaics** [Full Paper]




**Energy band profiles at the donor/acceptor interface** in organic photovoltaics are key for understanding the behavior of free carriers at the interface. Ground-state charge transfer and changes in the polarization energies bring about band profiles at the donor/acceptor interface that are entirely different from those in inorganic p–n junctions (see figure). The changes in polarization energies in particular affect the bandgap energy at the interface.

*Adv. Funct. Mater.* **2010**, *20*, No. 05, 715-721

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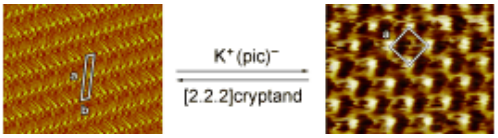
Artur Ciesielski, Stefano Lena, Stefano Masiero, Gian Piero Spada, Paolo Samorì
**Dynamers at the Solid–Liquid Interface: Controlling the Reversible Assembly/Reassembly Process between Two Highly Ordered Supramolecular Guanine Motifs** [Communication]




**String quartet**: A dynamic


assembly/reassembly process in octadecyl guanine (G) monolayers was triggered by addition of [2.2.2]cryptand, potassium picrate ($K^+(pic)^-$), and trifluoromethanesulfonic acid. The resulting structures, which alternate between a hydrogen-bonded G ribbon and a G quartet, were monitored by STM at the solid–liquid interface on graphite (see picture).

*Angew. Chem Int. Ed.* **2010**, *49*, No. 11, 1963-1966

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Ettore Fois, Gloria Tabacchi, Davide Barreca, Alberto Gasparotto, Eugenio Tondello
**"Hot" Surface Activation of Molecular Complexes: Insight from Modeling Studies** [Communication]


**Rock-and-roll over hot floors**: Theoretical modeling of the first activation stages of a Cu complex (see picture) on top of a heated surface (750 K) revealed two mobility regimes, a slow "bump-and-rock" diffusion over the surface and a fast "roll-and-go" motion accompanied by significant temperature-induced bond oscillations. This study enables a deeper insight into "hot" surface molecular activation processes.

*Angew. Chem Int. Ed.* **2010**, *49*, No. 11, 1944-1948

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Miguel López-Haro, Juan J. Delgado, José M. Cies, Eloy del Rio, Serafin Bernal, Robbie Burch, Miguel A.