



Special Colloquium Announcement

of the Collaborative Research Centre 951

“Hybrid Inorganic/Organic Systems for Opto-Electronics”



Nobuo Ueno

Graduate School of Advanced Integration Science,
Chiba University, Japan

Giving answers to the following questions:

(i) What is the origin of Fermi level pinning phenomena?

(ii) Can we observe polaron dispersion in organic semiconductors by UPS?

Time: Wednesday, July 19, 2017, 3 p.m. c.t.

Place: **Department of Physics, Room 1'202,
Newtonstr. 15, 12489 Berlin**



Collaborative Research Centre 951
Department of Physics
Humboldt-University of Berlin

Email: sfb951@physik.hu-berlin.de
Tel.: +49 30 2093 66380
www.physik.hu-berlin.de/sfb951

Partners



Giving answers to the following questions:

- (i) What is the origin of Fermi level pinning phenomena?**
- (ii) Can we observe polaron dispersion in organic semiconductors by UPS?**

Nobuo Ueno

Graduate School of Advanced Integration Science, Chiba University, Japan

My seminar will discuss the answer to each of these questions.

They say that polarons play crucial role in organic semiconductors and organic/conductor interface. For energy level alignment at a weakly interacting organic/conductor interface people believe polaron plays the key role to Fermi level pinning phenomena near the HOMO or LUMO “edge”. Our recent study is telling that Fermi-level pinning occurs in band gap solids without any gap states for $T > 0$ by thermodynamic equilibrium mechanism. For the 2nd question, we will show that quasi-particle (polaron) dispersion was observed in rubrene single crystals by ARUPS, but not in pentacene single crystals within experimental precision/accuracy because of weaker electron-phonon coupling in pentacene.