



PHYSIKALISCHES KOLLOQUIUM

Referent: **Prof. Dr. Vitaly Podzorov**
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Thema: **Fascinating photophysics of functional organic semiconductor surfaces and interfaces**

Zeit und Ort: Dienstag, 10.7.2018, 16:40 Uhr
Recknagel-Bau, Hörsaal REC/C213, Haeckelstr. 3

Leiter: Dr. Frank Ortmann

Kurzfassung: Molecular organic semiconductors form the materials basis for "organic electronics", the field that may someday lead to ubiquitous flexible optoelectronics. In order to better understand the intrinsic photophysical and transport phenomena in this important class of materials, it is necessary to study samples of very high structural order and chemical purity. Such materials exist in the form of molecular single crystals that can be used in fabrication of high-performance prototype organic field-effect transistors, photo-diodes and photo-voltaic cells, in which the intrinsic properties of organic semiconductors can be investigated without parasitic effects of disorder. This talk will overview some of the exciting recent achievements in this area. An emphasis will be put on novel methods of surface functionalization leading to unusual transport and photoconducting properties of organic interfaces, as revealed by Hall effect measurements and photocurrent excitation spectroscopy. In addition, very interesting non-linear effects in photoconductivity of crystalline organic semiconductors originating from a long-range exciton diffusion and exciton-charge interactions will be discussed and briefly compared with the behavior of completely different types of semiconductors, such as lead-halide perovskites.

Biographie: Vitaly Podzorov is a Professor of Physics at Rutgers University, New Jersey, USA. He received his Master degree in Physics from Moscow Institute of Physics and Technology in 1995. In 1995-1997, he worked at Lebedev Institute of Physics in Moscow on semiconductor spectroscopy. In 2002, he received his Ph.D. in condensed matter physics from Rutgers University, where he studied strongly-correlated multiferroic oxides. Podzorov's current research interests include: (a) charge carrier transport and optical properties of highly ordered organic semiconductors; (b) molecular self-assembly, (c) electric field-effect in layered inorganic materials and strongly-correlated oxides, and (d) photophysics of hybrid perovskites.

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