

## Stabilization of Emitters – a Guide to Stable Acenes

Dr. Jan Freudenberg

Organisch-Chemisches Institut, Ruprecht-Karls-Universität Heidelberg, Im Neuenheimer Feld 270,  
69120 Heidelberg

freudenberg@oci.uni-heidelberg.de

This presentation will detail our research in designing and stabilizing organic fluorophores. The underlying design motifs are based on aromatic hydrocarbons such as per-arylated butadienes/distyrylbenzenes, oligophenylenes or anthracenes. Stabilization is understood in terms of i) stimuli-induced desolubilization strategies to stabilize thin layers in organic electronic devices against redissolution or ii) suppressing light-induced decay reactions such as photocyclizations, -dimerizations or -oxidations, which arise as a consequence of steric encumberment of the chromophores or the generation of additional Clar sextets after decomposition. Degradation pathways are inhibited by blocking the reactive sites. Among sterically demanding substituents variants such as covalent encapsulation or rotaxation stand out. Anthracenes are a useful test bed to develop stabilization strategies – transfer of the lessons learned provide guidelines to robust pentacenes (Geländer pentacenes) and, most likely, even higher homologues.