

# NEW PATHWAYS FOR ULTRA-ROBUST MOLECULAR ELECTRONICS AND FOR LIGHT SENSITIVE MOLECULAR SWITCHES

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**A** number of technological challenges need to be overcome to move organic-based thin-film devices from the research stage to the application level. In this talk, avenues toward the realization of organic electronics on the basis of ultrathin functional organic layers are outlined, specifically by leveraging on the self-assembly process at interfaces. As an attempt to, large area molecular junctions of outstanding robustness are presented and we show that they can be realized using densely packed molecular metal-terpyridine complex oligomers, which might enable a versatile platform for functional optoelectronic layers. By electron and optical spectroscopy, the electronic structure of the materials is elucidated and the robustness determined by nanotribological studies. Finally, as an example for biomolecular photoconductors, Sn-cyt C protein layers are shown to act as reversible photo-electrochemical switches upon integration into large area solid state junctions. The electrical properties of this protein system is investigated using a novel Hg-drop setup, allowing to detect the electrical response of the most fragile adsorbate layers.

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