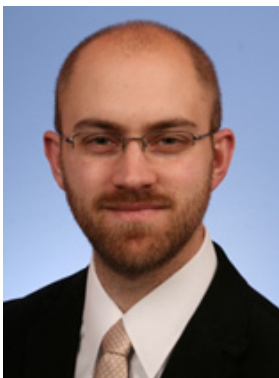


Montag, 16.01.2017 um 15.15 Uhr
Ort: Seminarraum 87, Wilhelm-Klemm-Straße 10

2-D confinement of planar (electro)luminescent metal complexes with tunable sub- and intermolecular setscrews



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We have recently developed a straightforward one-pot synthesis of neutral, soluble Pt(II) coordination compounds bearing dianionic tridentate ligands. The complexes reached up to 87% photoluminescence quantum yield (PLQY) in thin films, and we demonstrated their suitability as phosphorescent dopants in organic light-emitting diodes (OLEDs). The judicious choice of bulky peripheral substituents allowed us to prevent aggregation and to enhance their color purity. On the other hand, we were able to deliberately induce self-assembly into bright nanofibers, yielding highly emissive organo- and hydrogels (90% PLQY). The properties of the filaments arise from the metal-metal to ligand charge-transfer states of the aggregated species, which display Pt-Pt interactions. Currently, we investigate the molecular integrity and the hybridization upon 2-D confinement employing scanning tunneling microscopy and spectroscopy, as well as the coupling between d-orbitals in monolayers by using XPS. These tools are used to tune the excited state properties by finding the sub- and intermolecular electronic set-screws. We further explore the use of bidentate luminophores in combination with solubilizing ligands, and also started using tetradentate chelators in order to guarantee the stability under any processing condition.

