Phosphane tuning for [Cu(N^N)(P^P)][PF$_6$] complexes in Light Emitting Electrochemical Cells

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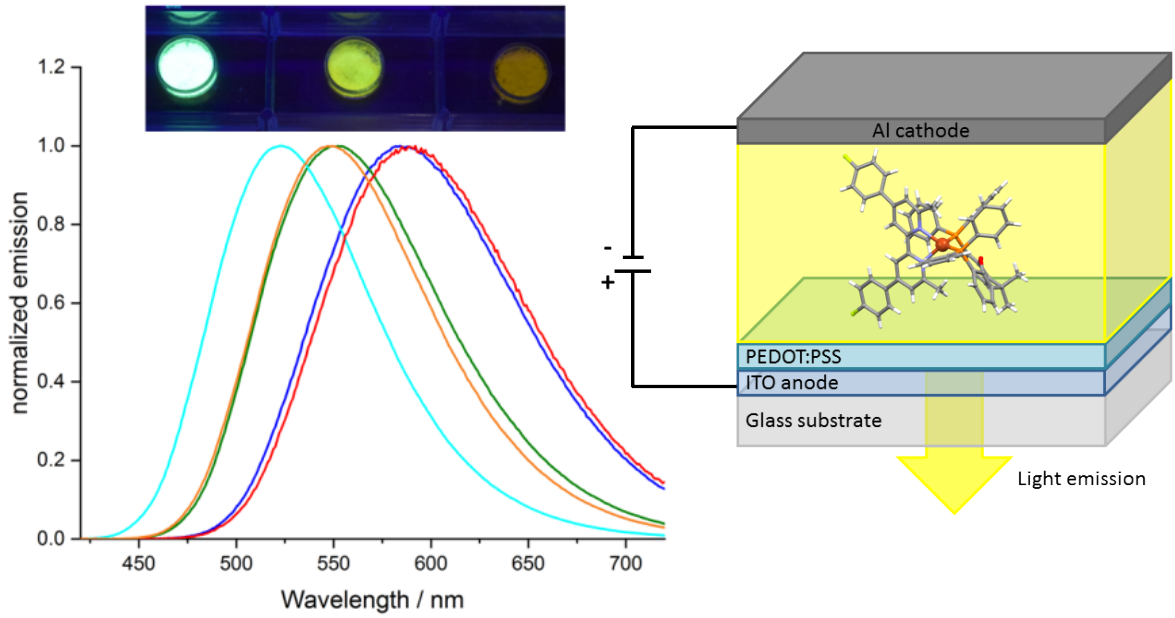
Light emitting electrochemical cells (LECs) are of growing importance in the field of flexible electronics and large surface lighting. Their simple device architecture and the use of air stable materials make them fundamentally suitable for large area lighting as well as display applications. The emissive layer can be easily deposited by solution based methods such as spin coating, which makes the fabrication of a LEC fairly simple and less complex than the fabrication of e.g. an OLED (organic light emitting diode). In the past iridium based transition metal complexes have been widely used in LECs but the low abundance and high cost of this rare metal demands the development of alternative materials for LEC applications[1].
Heteroleptic copper complexes of the type [Cu(N^N)(P^P)][PF$_6$] where N^N is a chelating diimine and P^P is a chelating diphosphine ligand show good photo- and electroluminescence properties. Careful adjustment of the steric and electronic properties of the ligands leads to colour variations as well as enhanced device performance[2]. In this work a series of new heteroleptic copper complexes is presented in which the phosphane ligand is tuned sterically and electronically to alter the emissive properties of the compound as well as the device functionality and lifetime.



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[2] Keller, S.; Pertegás, A.; Longo, G.; Martínez, L.; Cerdá, J.; Junquera-Hernández, J. M.; Prescimone, A.; Constable, E. C.; Housecroft, C. E.; Ortí E.; Bolink, H. J. *J. Mater. Chem. C*, **2016**, *4*, 3857–3871.