Luminescent Binuclear Copper Complexes for Applications in Material Sciences and Chemical Biology

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Due to cooperative effects binuclear copper complexes exhibit tunable photophysical properties such as luminescence.\[1\] Over the last years we designed, synthesized and structurally investigated (X-Ray, DFT) dozens of novel binuclear copper complexes in a collaborative effort with industrial and theoretical chemists.\[1,2\] The spectroscopical properties were tuned by the aid of different ligand structures, e.g. using ClickPhos ligands.\[3\] Well over three dozens of new bi- and trinuclear structures were elucidated using X-Ray crystallography. Using these architectures, we were able to generate OLED devices.\[5\] Key feature of this approach was the auto-cross linking of an alkyne complex to a polymeric azide.

In addition, these complexes can be used as fluorophores in cellular assays (J. Bender, R. Schneider, M. Wallesch, U. Schepers et al. unpublished). In particular, azido sugar modified cellular membranes can efficiently be stained.