



Synthesis of hybrids luciferin-BODIPY and porphyrin-BODIPY

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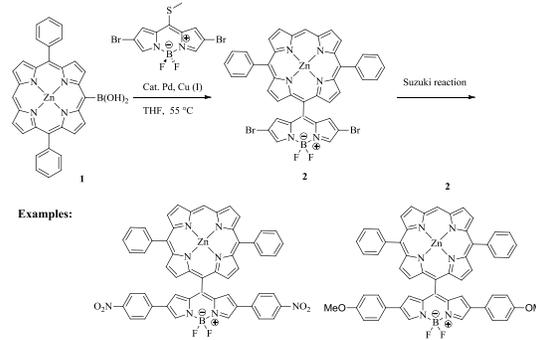
Organometallic chemistry is an ever-growing field in which valuable products can be prepared by the use of transition metals in either stoichiometric or catalytic amounts. A dominant field within organometallic chemistry is homogeneous catalysis and more specifically, transition-metal cross-coupling reactions.

One can find the structure of porphyrin in nature, such as in various types of chlorophylls and hemes. Chlorophylls play pivotal roles in photosynthesis as both light harvesting antennae and charge separation reaction systems. Hemes are one of the key components for biocatalysts and oxygen carriers in the blood. Without porphyrins, no life can exist on earth.

A new area that we will start in our group, is the preparation of multichromophoric systems, hybrids luciferin-BODIPY and porphyrin-BODIPY. We are interested in developing new methodology that would allow us the preparation of such compounds as well as studying the optical properties of the new derivatives.

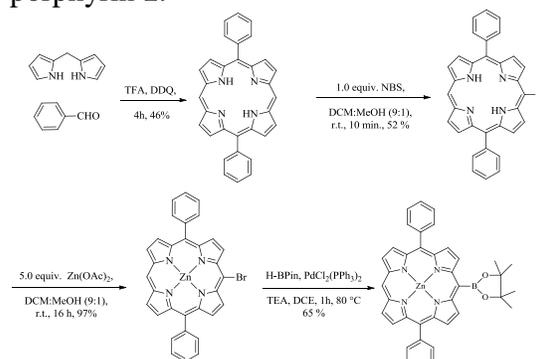
Methodology: Liebeskind-Srogl cross-coupling reaction¹ will be used to prepare the hybrids. In case of the porphyrin BODIPY hybrid **2**, synthesis is illustrated

in Scheme 1 will be followed starting from boronic acid of porphyrin **1**.²



Scheme 1. Synthesis of porphyrin-BODIPY hybrids.

The following is the methodology used for the synthesis of boronic acid of porphyrin **1**.



In the coming future, we will synthesize the boronic acid of porphyrin from its ester and then perform Liebeskind-Srogl cross coupling reaction with methylthio BODIPY to generate **2**.

References:

- ¹ Prokopcova, H.; Kappe, C. O. *Angew. Chem. Int. Ed.* **2009**, *48*, 2276.
- ¹¹ Hyslop, A. J.; Kellett, M. A.; Iovine, P. M.; Therien, M. J. *J. Am. Chem. Soc.* **1998**, *120*, 12676.