3. **Bis-Porphyrinic Cofacial Tweezers :**
Self-assembling and molecular recognition by host/guest interactions.

Another research theme developed in our group concerns the synthesis of self-coordinated molecular systems with predictable spectral and redox characteristics. Various cofacial bis-porphyrinic tweezers have been synthesized, differing by the length of the spacer. For the small tweezers bearing an anthracenic linker, an almost quantitative photoinduced energy transfer from the anthracene towards the porphyrins was observed, as well as the generation of an electronic coupling between the two porphyrins by insertion of a pyrazine molecule inside the cavity of the bis-porphyrinic dimer. The second tweezers synthesized is an extended cofacial bis-porphyrinic tweezers with an adjustable cavity, bearing a tris-anthracenic spacer in order to facilitate a cofacial orientation of the chromophores, while allowing a free rotation around the acetylenic axis. The aim was to enable the complexation of photoactive guests, potential good energy acceptors for photoinduced energy transfer processes between host and guest. The adjustment of the cavity to a large variety of guests such as DABCO, pyrazine, 1,4-bipyridine, cis and trans bis-pyridyl-porphyrins was indeed observed. A nearly quantitative energy transfer from the anthracenic spacer of the dimer to the porphyrinic guest was highlighted in the tris-porphyrinic complex (studies realized in collaboration with Dr. Lucia Flamigni from the CNR in Bologna, Italy), ***which paves the way toward the elaboration of nano-strucutres with new properties***.

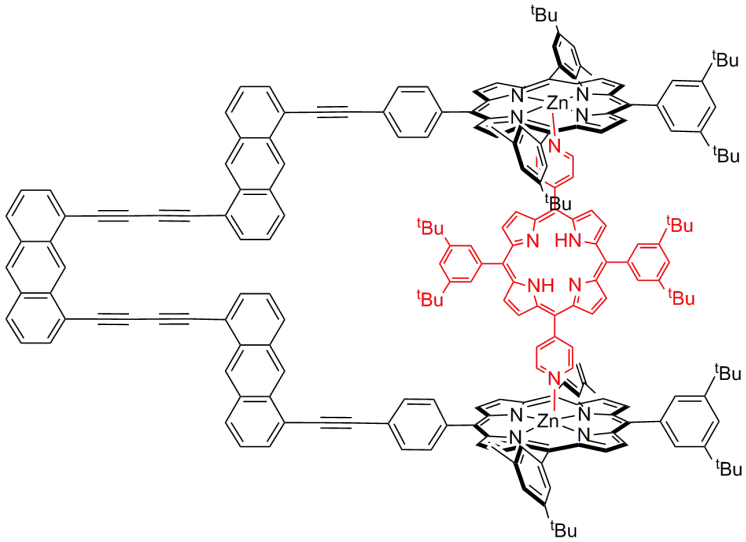

Figure. Host/guest complex between the bis-porphyrinic cofacial tweezers with adjustable cavity (in black) and a free-base photo-active porphyrin.