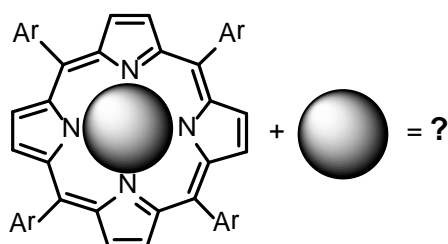


Stabilization of metallacyclopentadiene in porphyrinoid environment – access to atypical metal-metal interactions

Porphyrins are biologically important compounds. Their function depends on their structure, in particular on a metal ion binding ability. The porphyrin is a macrocycle with a four nitrogen coordination core, i.e. an appropriately organized central pocket for a metal ion. Appropriately substituted porphyrin with inserted iron ion at proper oxidation state forms hem, the prosthetic group of haemoglobin and the functional center of this metalloprotein.

The porphyrin coordination cavity size matches the size of an iron ion, however, the macrocycle is flexible enough to accommodate also larger or smaller metals in the core. Nevertheless, fitting of two metal ions in one porphyrin pocket seems at first totally impossible. The present project will prove that it can be achieved, and we do not consider a trivial strategy of formation of a larger macrocycle.



Two metal ions squeezed in one porphyrin frame will be placed in very close mutual proximity and their environment will differ much from a typical coordination environment of a metal ion in a porphyrin. A smart idea will allow research on a new class of bimetallic porphyrins.