

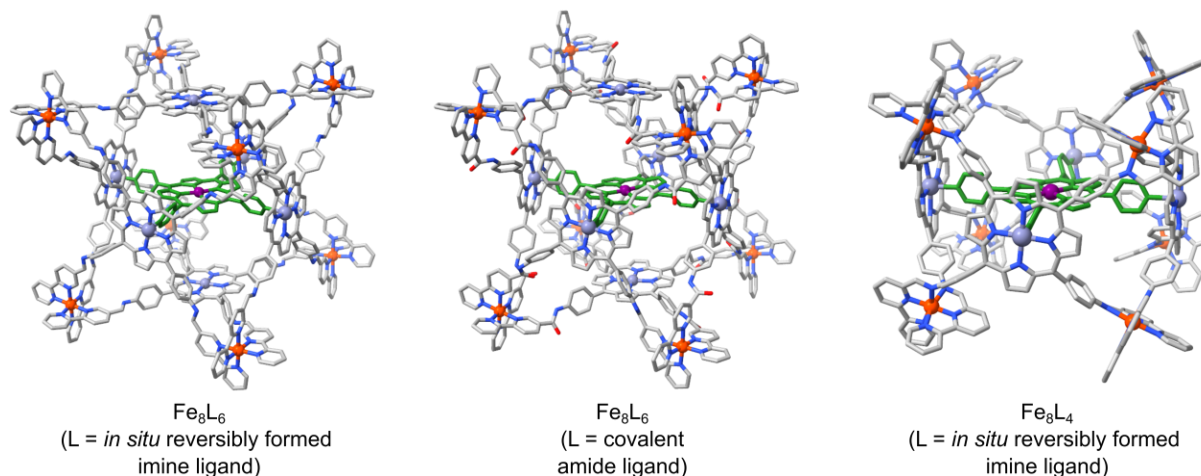
# Synthesis of porphyrin-based supramolecular catalysts

A. Steinhauer,\* Arne Lützen

University of Bonn, Kekulé Institute for Organic Chemistry and Biochemistry,  
Gerhard-Domagk-Str. 1, Bonn, Germany

\*E-mail: ayla.steinhauer@uni-bonn.de

The encapsulation of transition metal catalysts into the cavity of a self-assembled supramolecular aggregate leads to the formation of a supramolecular flask. This approach is inspired by the function of nature's enzymes. The shielding of the catalyst within the cavity increases its lifetime and allows control of the second coordination sphere of the catalytic transition metal, which can influence substrate and product selectivity.<sup>[1-3]</sup>



**Figure 1:** MMFF-minimized model structures of synthesized and envisioned supramolecular catalysts.

The aim is the synthesis of multiple porphyrin-based supramolecular catalysts with different structural properties. In the future, by performing catalytic reactions within these cavities, the influence of differently shaped microenvironments on the selectivity and performance of the encapsulated transition metal porphyrin can be compared.

## References:

- [1] S. H. A. M. Leenders, R. Gramage-Doria, B. de Bruin, J. N. H. Reek, Chem. Soc. Rev. 2015, 44, 433–448.
- [2] M. Yoshizawa, J. K. Klosterman, M. Fujita, Angew. Chem. Int. Ed. 2009, 48, 3418–3438.
- [3] T. S. Koblenz, J. Wassenaar, J. N. H. Reek, Chem. Soc. Rev. 2008, 37, 247–262.