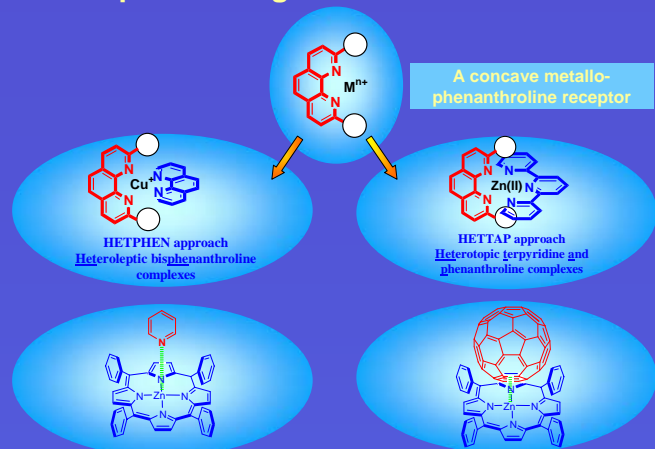
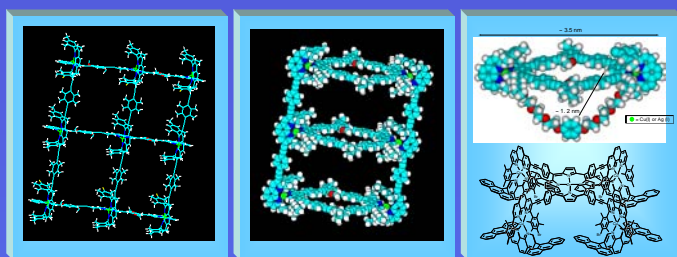


Heteroleptic binding motifs used in our work:



3-Component HETPHEN Nanostructures



Heteroleptic 3x3 Nanogrids

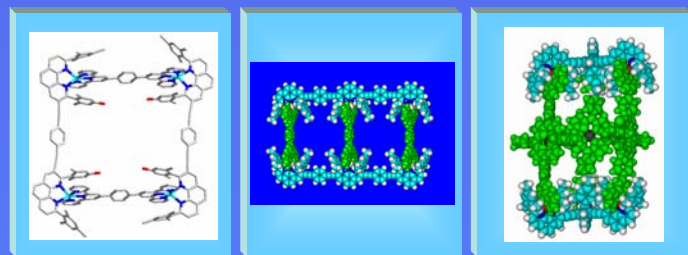
Heteroleptic Triple Nanodecker

Basket Structure (top) and Porphyrin Aggregate

Conclusion: A novel supramolecular toolkit is developed to generate photoactive nanoscale ladder aggregates.

M. Schmittel, R. S. K. Kishore, *Org. Lett.* **2004**, *6*, 1923-1926; M. Schmittel, V. Kalsani, D. Fenske, A. Wiegrefe, *Chem. Comm.* **2004**, 490-491; V. Kalsani, H. Ammon, F. Jäckel, J. P. Rabe, M. Schmittel, *Chem. Eur. J.* **2004**, *10*, 5481-5492; M. Schmittel, V. Kalsani, J. W. Bats, *Inorg. Chem.* **2005**, *44*, 4115-4117; M. Schmittel, V. Kalsani, C. Michel, P. Mal, H. Ammon, J. P. Rabe, F. Jäckel, *Chem. Eur. J.* **2007**, in press.

3-Component HETTAP Nanostructures

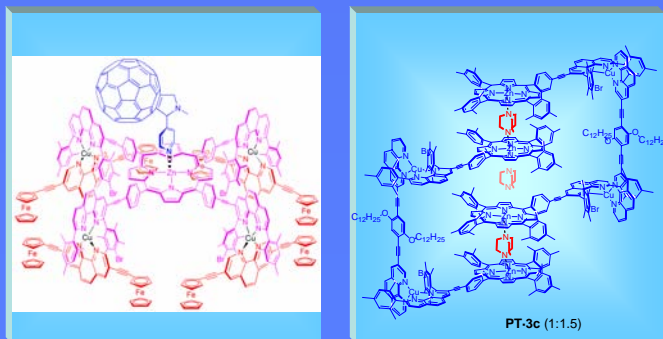


Heterotopic Nanoladder

Heterotopic Triple Nanoladder

Supramolecular Prism

Dynamic 4-Component Nanostructures



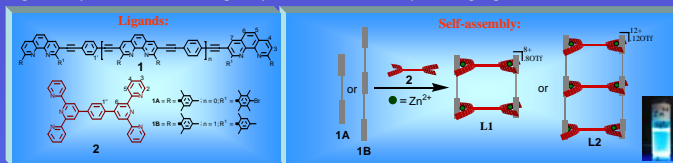
Supramolecular PET Tetrad

„Porphyrin Stack“

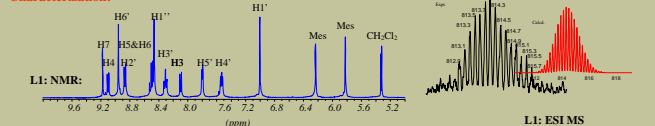
R. S. K. Kishore, T. Paululat, M. Schmittel, *Chem. Eur. J.* **2006**, *12*, 8136-8149; M. Schmittel, R. S. K. Kishore, J. W. Bats, *Org. Biomol. Chem.* **2007**, *5*, 78 - 86.

Fluorescent Nanoladders

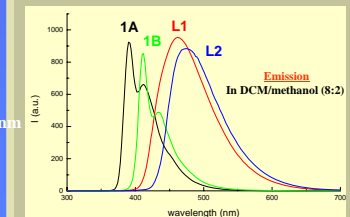
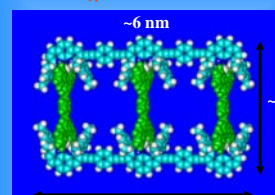
Goal: The design of photoactive assemblies is a blossoming area of research in the field of supramolecular chemistry since these architectures can act as sensoric materials for various purposes. Goal of this work is to develop a novel and general supramolecular toolkit to engineer photoactive architectures, possessing large internal voids.



Characterization:

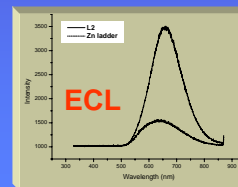
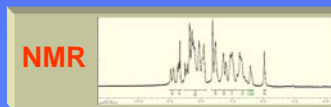
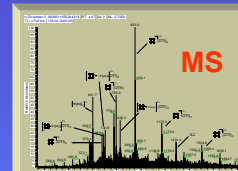
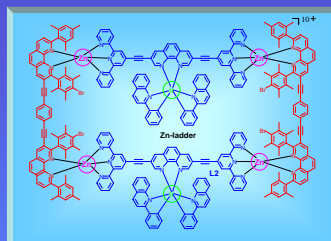


HyperChem model of L2



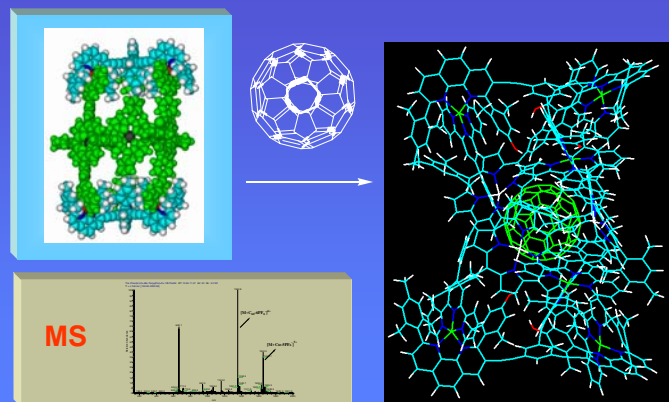
M. Schmittel, V. Kalsani, R. S. K. Kishore, H. Cölfen, J. W. Bats, *J. Am. Chem. Soc.* **2005**, *127*, 11545-11546. Unpublished work by V. Kalsani and P. Mal.

Electrochemiluminescent Nanoladders



Unpublished work by L. Chen

A C₆₀ Guest in an Adaptive Supramolecular Prism



Unpublished work by Bice He and P. Mal.

Conclusions: A large variety of dynamic nanostructures with interesting fluorescence, electrochemiluminescence and host/guest properties can be fabricated using the HETPHEN and HETTAP protocols.

Acknowledgments:

We are greatly indebted to the Deutsche Forschungsgemeinschaft for financial support and to the Fonds der Chemischen Industrie for continued assistance. We are also thankful to Dr. J. W. Bats for the single crystal measurements and Prof. Luisa De Cola for photophysical investigations.