

# Synthesis of porphyrin based supramolecular catalysts

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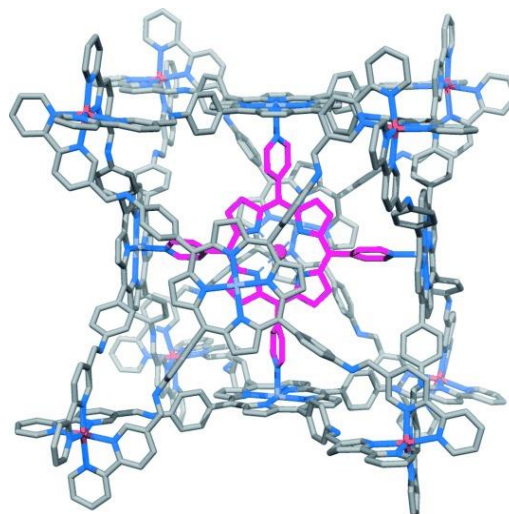
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Homogeneous catalysis is an omnipresent topic in every field of chemistry. It provides new possible products, stabilizes reaction pathways and yields high stereo- and regio-selectivity. However, problems during catalysis can occur, making it necessary to search for new and alternative catalysts. Supramolecular catalysts mimic enzymes, which are nature's most potent catalysts, representing the gold standard of catalytically activity and selectivity.

Following the work of *Nitschke*<sup>[1]</sup> with his design and synthesis of a supramolecular cube and utilizing it as shown by *de Bruin*<sup>[2]</sup> on the field of supramolecular catalysis in order to enhance cyclopropanations, the assembly shown in figure 1 was build up from 3 building blocks. During the underlying work each step of the synthesis was checked for possible improvements and therefore, an adjusted procedure was found to form this supramolecular cage.



**Figure 1:** The figure shows a 3D-plot of the supramolecular catalyst, consisting of 6 times the same ligand, one on each face of the cubic system. Inside (pink) a cobalt-porphyrin is fixed, providing the catalytically activity of the assembly.

References:

- [1] W. Meng, B. Breiner, K. Rissanen, J. D. Thoburn, J. K. Clegg, J. R. Nitschke, *Angew. Chem.* **2011**, *123*, 3541 –3545; *Angew. Chem. Int. Ed.* **2011**, *50*, 3479 –3483.
- [2] M. Otte, P. F. Kuijpers, O. Troeppner, I. Ivanovic-Burmazovic, J. N. H. Reek, B. de Bruin, *Chem. Eur. J.* **2013**, *19*, 10170-10178.