# Statistical Self-Assembly of Catalytically Active Heteroleptic Metallosupramolecular Cages

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The concept of catalytically active metallosupramolecular cages is inspired by nature's enzymes and mimics their confined microenvironments that allow selective chemical transformations.[1] The envisioned discrete heteroleptic $M_2L_4$ or $M_{12}L_{24}$ cages consist of concave bis(pyridyl) ligands and Pd(II) or Pt(II) cations. In a statistical approach, NCN-Pt-azide *endo*-functionalized analogues of the ligands will be incorporated into the cages. Post-assembly, the catalytically active species is obtained *via* photochemically induced $N_2$ loss and the formed metallonitrene can undergo C–H insertion reactions with aldehydes to give amides *via* nitrogen atom transfer.[2]

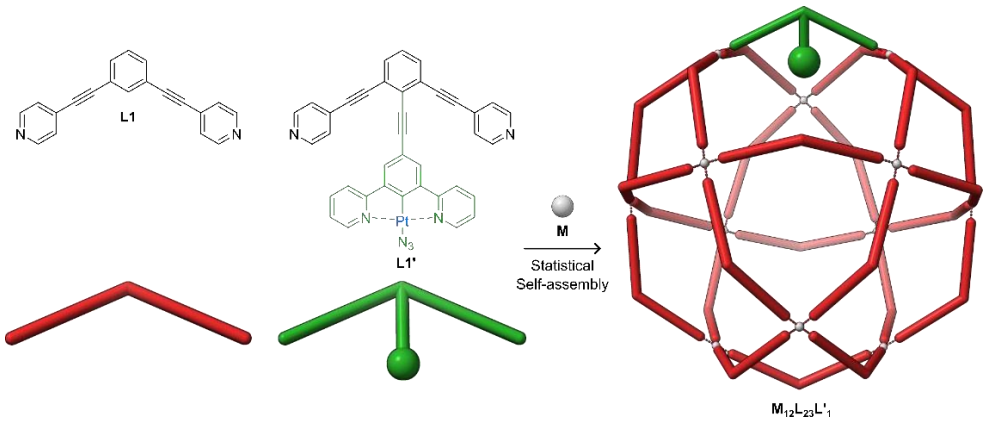


**Figure 1:** Example of a statistically self-assembled heteroleptic $M_{12}L_{24-x}L'_x$ cage.

A library of ligands containing different chromophores will be synthesized and studied, to obtain light-harvesting cages that facilitate the light induced nitrene formation.

References:

[1] a) C. C. James, B. de Bruin, J. N. H. Reek, *Angew. Chem. Int. Ed.* **2023**, *62*, e202306645; b) A. C. Pearcy, J. D. Crowley, *Chem. Eur. J.* **2023**, *29*, e202203752

[2] a) T. Schmidt-Räntsch, H. Verplancke, J. N. Lienert, S. Demeshko, M. Otte, G. P. van Trieste, K. A. Reid, J. H. Reibenspies, D. C. Powers, M. C. Holthausen, S. Schneider, *Angew. Chem. Int. Ed.* **2022**, *61*, e202115626