TOWARDS CONFINED GOLD CATALYSIS

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Gold complexes have been the subject of an intense research over the past decade.[1] The main driving force to this interest is to impart new reactivity to these complexes, that can be leveraged in catalysis. In addition to the widely used ligand engineering strategy,[2] the concept of confining gold complexes within supramolecular cages has also shown a great potential.[3] Toste *et coll.* have demonstrated, that small cationic gold complexes (**LAu$^+$**, L = Me_3P), generated within anionic cages show a markedly different reactivity compared to their non-confined analogues. However, the small cavity size of the cage (251 Å^3) has not allowed to extend this concept to larger complexes (L = ^{t}BuP, NHC) and substrates. Indeed, one obstacle to overcome is the synthesis of large anionic cages, that is far from being straightforward.

In order to design and synthesize large anionic cages, we have implemented a rational approach combining modellizations and cavity size calculations.[4] As a result, we have prepared an anionic, cyclotricatechylene based supramolecular cage **1** with a large cavity (558 Å^3).[5] Recently, we have been studying the host-guest chemistry of this cage, in order to prepare the confined gold-catalyst (**Au$^+$@1**, **Figure 1**). The catalytic activity of **Au$^+$@1** is being studied, with special attention to the synthetically challenging gold catalyzed macrocyclizations.

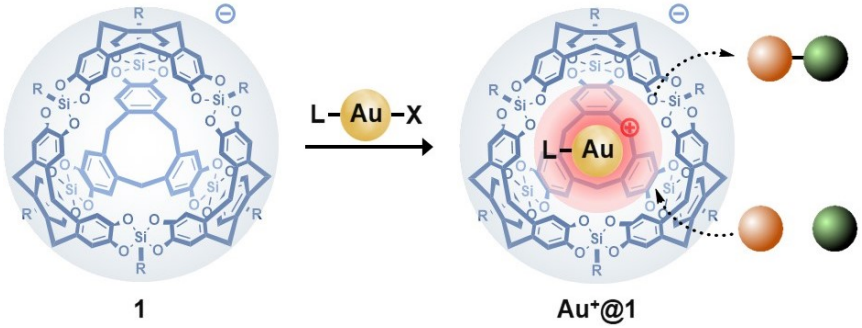

Figure 1. Concept: Using the confinement effect to alter the reactivity of gold complexes.

Acknowledgements

The CNRS, the ANR and the French Ministry of Higher Education and Research is gratefully acknowledged for funding.

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