

## EINLADUNG

Im Rahmen der gemeinsamen Kolloquien der Fakultät für Chemie und Chemische Biologie der Technischen Universität Dortmund und des DFG Graduiertenkollegs GRK2376 "Confinement-Controlled Chemistry" hält

### Michael D. Ward

University of Warwick, Coventry CV4 7AL, UK.  
[m.d.ward@warwick.ac.uk](mailto:m.d.ward@warwick.ac.uk)

einen Vortrag mit dem Thema:

#### "Coordination cages as catalysts: cavity-binding and surface-binding effects"

An octanuclear coordination cage has been investigated for its (i) host guest chemistry, and (ii) its ability to catalyse reactions of bound guests. Chemical catalysis is based on the ability of the cage to accumulate anions around its highly positively charged (16+) surface which brings them into close proximity with hydrophobic guests which bind in the central cavity in water: thus there are two quite different types of interaction of reaction partners with the cage. Several different substrates undergo reactions promoted by hydroxide ions including an E2 elimination reaction (Kemp elimination), phosphotriester hydrolysis, nucleophilic attack on dinitro-fluorobenzene, and an aldol condensation of indane-dione. Whilst some of the catalysed reactions are associated with strong binding of the substrate in the cage cavity, in other cases the reactivity is associated with the exterior surface of the cage – which is equally as hydrophobic as the interior surfaces. In some cases a redox cycle involving Co(II)/Co(III) conversion of the metal ions in the cage can also facilitate oxidation-based catalytic reactions.

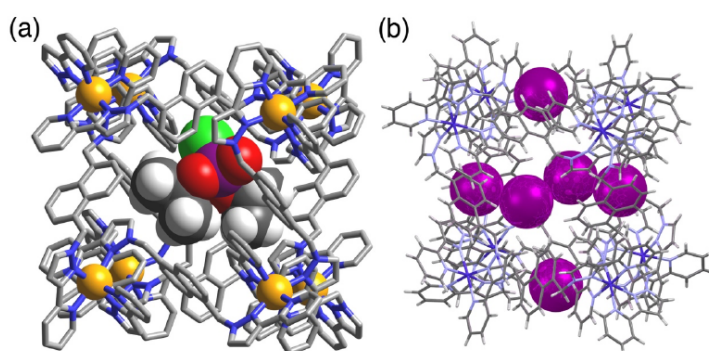


Fig. 1: Crystal structures of an  $M_8L_{12}$  cubic coordination cage with (a) a neutral guest in the cage central cavity and (b) anions at the surface sites in the cage faces.

Reference:

<sup>1</sup> Review article: *New insights into coordination-cage based catalysis*, M. D. Ward, *Chem. Commun.*, 2024, **60**, 10464.

**Zeit:** Donnerstag, 20.03.2025, 16.30 Uhr  
**Ort:** Campus Nord, Chemiegebäude, Hörsaal 1

Für die Dozierenden der Chemie

Im Auftrag des Dekans

Kontakt: Dr. Guido Clever (8138)