Design, synthesis and properties of modular Chiral Phosphoric Acid Organocatalysts

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Recently, modular 9,10-diphenylanthracene receptors were developed via a reversible singlet oxygen cycloaddition[1]. This [4+2] reversible reaction allows the dearomatization of the anthracene moiety inducing a change from a planar geometry to a concave one for the endoperoxyde product.

This modular anthracene/$^1O_2$ system has not been explored in modular catalysis, where stimuli are limited to physical (light), electrochemical or chemical (ion, molecule) ones[2].

We aim to develop new modular organocatalysts, by modifying chiral phosphoric acids (CPA) based on *(R)*-BINOL which Brönsted acid activity have been well-explored and mechanisms were supported by extensive theoretical studies[3].

We designed customized modular catalysts, synthesised them and studied their propreties and catalytic activity in benchmark reactions and by molecular modelling.

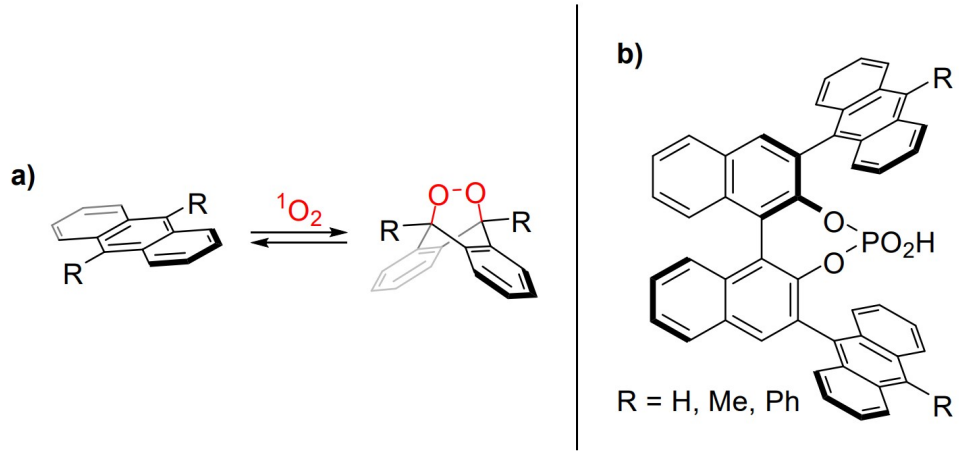

Figure 1. a) singlet oxygen modular system with 9,10-diphenylanthracene ; b) CPA for modular catalysis .

Keywords: Asymmetric organocatalysis, Modular catalalysis, Molecular modelling, DFT.

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3 R. Maji, S.C. Mallojjala, S.E. Wheeler, *Chem. Soc. Rev.*, 47 (2018) 1142-1158.