



HYDROGEN BONDING ORGANOCATALYST MODULABLE BY SINGLET OXYGEN

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Modular catalysis involves in the use of a catalytic species, that possesses at least two stable states with different electronic and structural properties. The switch between these states is usually controlled by an external stimulus such as pH, light or temperature.¹

We propose to use singlet oxygen² as a new molecular stimulus for a modular catalysis. For this purpose, a hydrogen-bonding organocatalyst with an anthracene core was developed.

A structural modification within catalyst is induced by a [4+2] cycloaddition between anthracene and ¹O₂ (Fig. A).³ By forming a 9,10-endoperoxide catalyst, this change affects the activation of substrates and modifies the reaction kinetics profile. The catalytic properties of the two catalyst states, *i.e.* anthracene and endoperoxide ones, were investigated in the intramolecular ring-opening of epoxides, used as a benchmark reaction (Fig. B).⁴

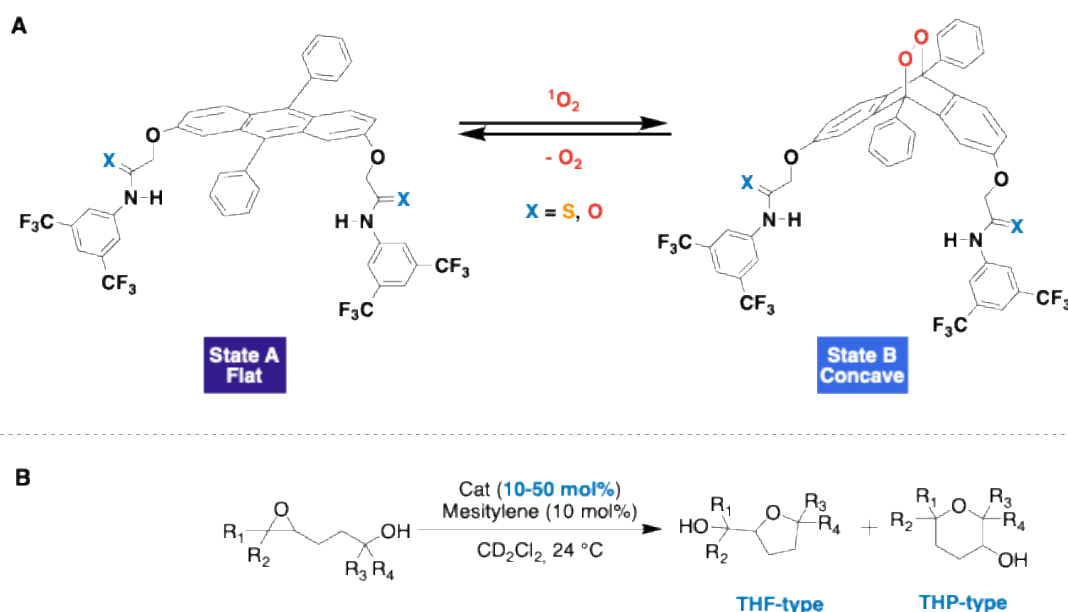


Figure: **A** Chemical structures of organocatalyst with state A (anthracene) and state B (endoperoxide) ; **B** Benchmark reaction for catalytic study: the intramolecular ring-opening epoxides

References:

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