SYNTHESIS AND FUNCTIONALIZATION OF SMALL RINGS VIA PHOTOCHEMICAL METHODS

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In this presentation I will discuss recent reports from my group on the photochemical construction and functionalisation of oxetanes[1], azetidines[2] and cyclobutanes[3]. These studies show how visible light can drive the selective formation of strained small-ring systems and enable their controlled transformation into complex molecular architectures. I will focus on the underlying reaction mechanisms and on the nature of the key radical intermediates that define reactivity and selectivity.

I will then show how the design and development of new organic photocatalysts can unlock reaction pathways that were previously inaccessible.

By combining mechanistic understanding with catalysts development, we have opened new opportunities for molecular synthesis and gained access to structural motifs that were beyond reach using conventional methods[4].

Looking ahead, we aim to further expand the scope of light-driven chemistry by exploring new photocatalyst families and reactivity modes that can transform the way we build and modify small, strained molecules[5].

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