

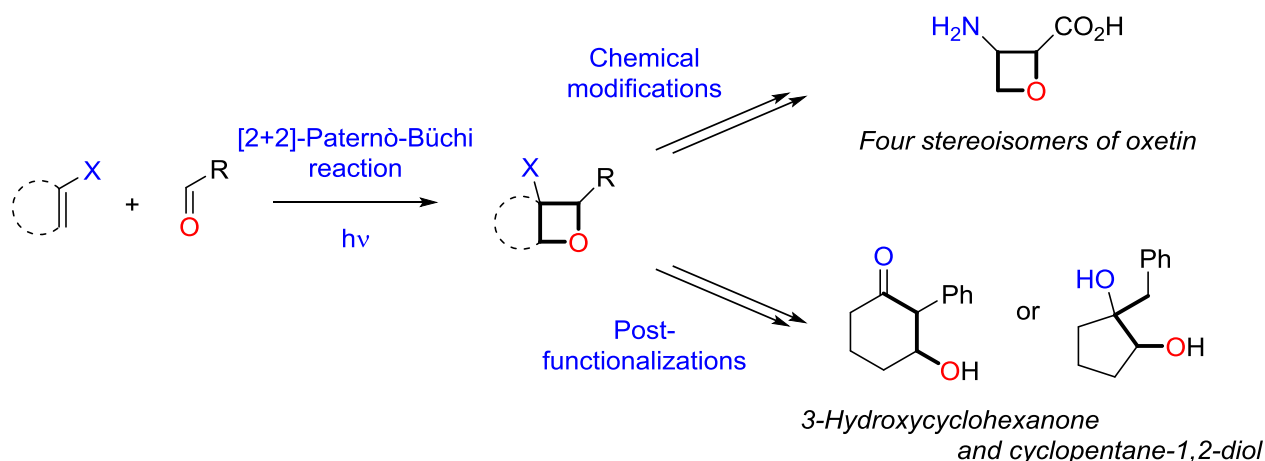
# Oxetane core: a versatile photoadduct intermediate for chemical diversity

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The oxetane ring is a notable structural feature in natural products and is present in a large panel of synthetic molecules used in drug discovery.<sup>1</sup> Interestingly, this oxygenated four-membered ring scaffold is also a high-value intermediate in organic synthesis for further chemical modifications due to its inherent ring strain. Among the different approaches for its preparation, the photochemical [2+2]-Paternò-Büchi reaction is arguably the most useful synthetic method.<sup>2</sup>

Inspired by our own research on photochemical transformations,<sup>3</sup> we decided to study this photochemical [2+2]-cycloaddition reaction between electron-rich alkenes and photo excited carbonyl derivatives in two parallel objectives. The first one focuses on the total synthesis of a natural product with the development of an efficient gram-scale preparation of the all four stereoisomers of oxetin.<sup>4</sup> The second project involving an oxetane intermediate concerns the synthesis of fused bicyclic oxetanol scaffolds and investigations of their post-functionalizations, such as hydrogenolysis and acid-rearrangements.<sup>5</sup>



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