The Development of Asymmetric Organocatalysis and Metallaphotoredox

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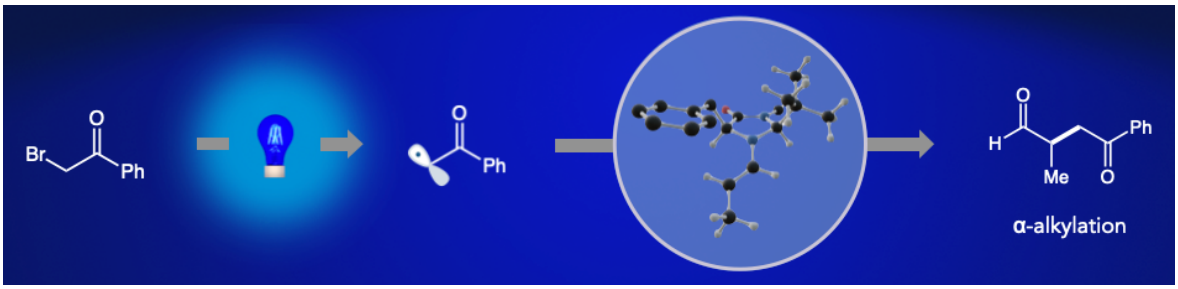
This lecture will first discuss the advent of organocatalysis in my laboratory. As part of this overview, we will highlight why organic catalysts have become widely explored in modern synthetic chemistry. This lecture will also discuss the application of visible light photocatalysis to the discovery or invention of transformations that will be conceptually or synthetically valuable (and sometimes, hopefully, both). We will describe why a healthy balance of reaction discovery and mechanistic understanding has been important to the development of a field of research that is now being widely adopted in both industrial and academic settings. In particular, we will discuss the application of photocatalysis to the development of new metallaphotoredox reactions involving copper, a development that we hope will have an impact on the discovery of new biologically relevant molecules. Finally, we will examine an exciting recent application of photoredox catalysis in my group; namely, the high-resolution µMap technology, which provides a powerful means to probe biological pathways at the subcellular level.



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