Making "Difficult-to-Make" Molecules: Photochemistry as an Enabling Tool

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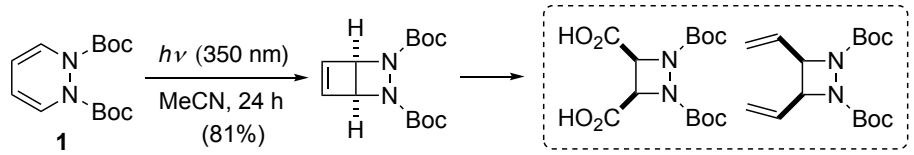
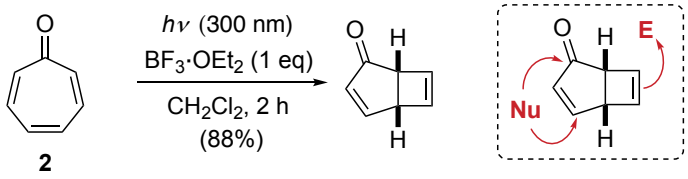
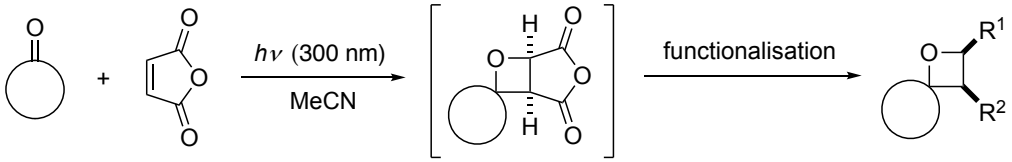
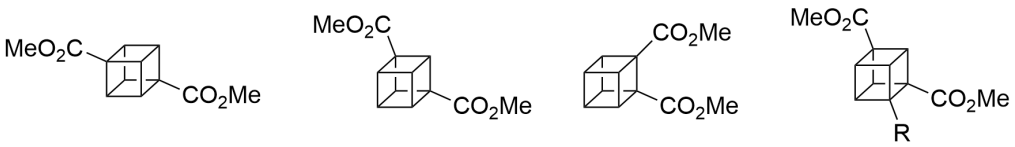
Converting simple starting materials into complex products using only a light source is especially attractive to organic chemists, particularly from the point of view of green chemistry: waste is minimized, and light is readily available. Moreover, photochemical routes often allow efficient access to complex frameworks (especially strained molecules and intermediates) that cannot be generated using ground-state chemistry.

We are particularly interested in the synthesis of four-membered rings, with recent focus on 4-π-photocyclisations[1] of dihydropyrdazines **1**[2] and tropone **2**[3] to produce versatile cyclobutene products, Paternò-Büchi reactions of cyclic ketones with maleic anhydride to produce spirocyclic oxetane derivatives,[4] as well as the synthesis and applications of a wide range of cubane derivatives.[5,6]









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