Photochemical reductive N-H aziridination using N-aminoacridinium salts as nitrogen source: Synthesis and mechanistic studies.

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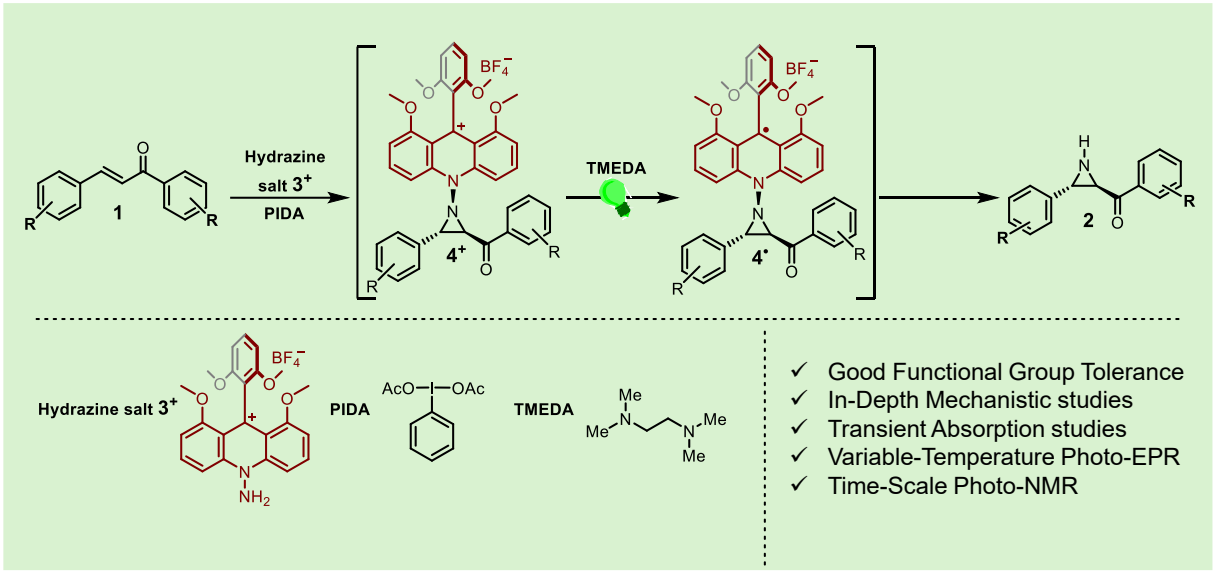
Aziridines, *i.e.* saturated three-membered nitrogen heterocycles, are sometimes described as ‘‘epoxide’s ugly cousins’’,[1] due to a certain lack of access routes and often tricky synthetic manipulations. This important scaffold can be found in many active pharmaceutical ingredients and polymer precursors. Yet, direct access to N-H aziridines is still underdeveloped.[2] Herein, stereospecific transformation of olefins **1** [3] into unprotected aziridines **2** [4] are reported using tandem (a) PIDA-mediated [5] addition of N-acridinium hydrazine (**1**+**3**$^{+}$→**4**$^{+}$) [6] and (b) photoreductive cleavage of the aromatic antenna under green light (**4**$^{+}$→**4**$^{\bullet}$→**2**). Stepwise or one-pot processes are both possible. Good functional group tolerance is noted for substrate and product alike. While the aziridination step abides by a well-established protocol,[5] the aromatic deprotection follows a multistep mechanistic pathway. In this regard, experimental and theoretical information from detailed transient spectroscopy to photo-EPR and photo-NMR studies will be provided and discussed.



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