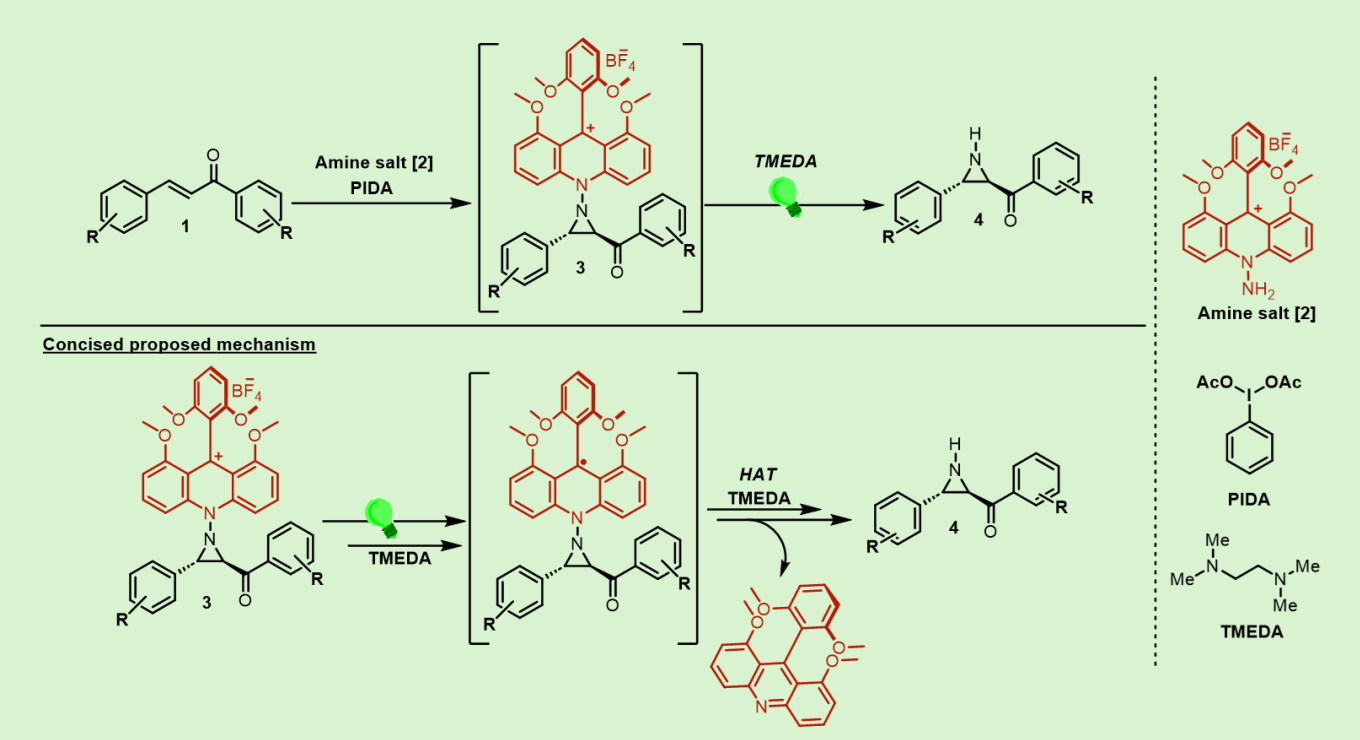
Photochemical reductive N-H aziridination using N-aminoacridinium salts as nitrogen source: Synthesis and mechanistic studies.

Pownthurai Balasubramaniam,[a] Antoine Wallabregue,[a] Pau Moneva Lorente,[a] Nidal Saleh,[a] Johannes Wega,[b] Svetlana Kucher,[b] Christina Elsner,[b] Céline Besnard,[c] Enrica Bordignon,[b] Eric Vauthey,[b] Jérôme Lacour*[a]

[a]Department of Organic Chemistry, [b]Department of Physical Chemistry, & [c]Laboratory of Crystallography, University of Geneva, Switzerland.

email: balasubramaniam.pownthurai@unige.ch

Aziridines, three-membered saturated nitrogen heterocycles, are sometimes described as ‘‘epoxide’s ugly cousins,’’ [1] due to a certain lack of synthetic access and often tricky manipulations. Yet, this scaffold is of importance and can be found in many active pharmaceutical ingredients and polymers. Direct access to N-H aziridines is still underdeveloped.[2] Herein, stereospecific transformation of olefins, mainly chalcones **1**[3], into unprotected products[4] are reported using tandem (a) PIDA-mediated[5] aziridination **3** of N-acridinium amine **2**[6] and (b) photoreductive cleavage (green light) of the aromatic antenna. 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, the aromatic deprotection follows a more complex mechanistic pathway. During the presentation, experimental and theoretical information from detailed transient spectroscopy and EPR studies will be provided and discussed.



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