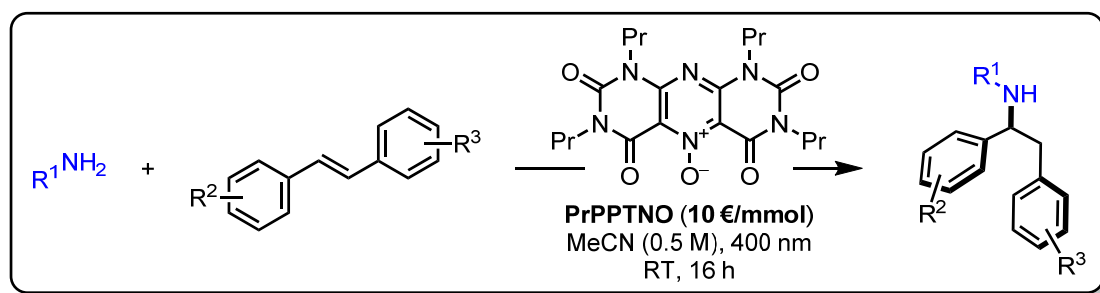


PHOTO-MEDIATED INTERMOLECULAR HYDROAMINATION OF ACTIVATED OLEFINS USING UNPROTECTED PRIMARY AMINES

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Carbon-nitrogen bonds are ubiquitous in pharmaceuticals, fine chemicals, dyes, and agrochemicals.[1] In this regard, the direct addition of an amine to an alkene to form this C–N bond represents the most attractive access to these value-added building blocks. However, the intermolecular hydroamination of alkenes with simple primary amines remains a formidable challenge using conventional ground-state catalysts.[2]



Herein, we report a catalytic protocol for the efficient addition of primary alkyl, allyl and benzyl amines to a wide range of unsymmetric stilbenes. In this process, carbon-nitrogen bond formation putatively proceeds through a key aminium radical cation intermediate, generated via single electron transfer between an excited-state organic pyrimidopteridine photocatalyst and a primary amine substrate.[3] Pyrimidopteridine photocatalysts show high excited state reduction potentials and low fluorescence quantum yields, making them comparable to acridinium based catalysts. Additionally, they offer advantages like recyclability, bench stability and a low lying ground state reduction potential, which facilitates catalyst turn-over without the necessity of additional co-catalysts.[4] These reactions are redox-neutral and completely atom-economical, exhibit broad functional group tolerance, and occur readily at room temperature under irradiation at 400 nm.

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