Category

Synthesis

Key words

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 $Heterogeneous\ Visible-Light\ Photoredox\ Catalysis\ with\ Graphitic\ Carbon\ Nitride\ for\ \alpha-Aminoalkyl\ Radical\ Additions,\ Allylations,\ and\ Heteroarylations$

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Desilylative or Decarboxylative Photoadditions with Graphitic Carbon Nitride

Desilylative additions: g-C₃N₄ (20 mg) blue LED (12 W) TMS (1) CsF (0.4 mmol) MeOH (2 mL) (1.3 equiv) Selected results: Мe Me 96% yield 92% yield 83% yield 88% yield Decarboxylative additions: g-C₃N₄ (20 mg) blue LED (12 W) (2) CsF (0.4 mmol) MeOH (2 mL) (1.3 equiv) Selected results: 79% yield 78% yield 71% yield 78% yield

Significance: A graphitic carbon nitride (g- C_3N_4) catalyzed the desilylative addition of α -silylamines to alkenes or heteroaryl chlorides under visible-light irradiation to give the corresponding adducts in up to 96% yield (eq. 1). g- C_3N_4 also promoted the decarboxylative additions of α -amino acids to alkenes under similar conditions to afford the corresponding products in up to 79% yield (eq. 2).

Comment: In the desilylative addition of *N*-methyl-*N*-[(trimethylsilyl)methyl]aniline to 4-(2,2-dicyanoethenyl)toluene, g-C₃N₄ was reused eight times without significant loss of its catalytic activity. g-C₃N₄ was applied for the continuous-flow reaction of *N*-methyl-*N*-[(trimethylsilyl)methyl]aniline with cyclohexanone to afford the desired amine in 85% yield.

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