

Y. CAI, Y. TANG, L. FAN, Q. LEFEBVRE, H. HOU, M. RUEPING\* (RWTH AACHEN UNIVERSITY, GERMANY; KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, THUWAL, SAUDI ARABIA; CHONGQING UNIVERSITY, P. R. OF CHINA)

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

ACS Catal. 2018, 8, 9471–9476.

## Desilylative or Decarboxylative Photoadditions with Graphitic Carbon Nitride

Category

Polymer-Supported Synthesis

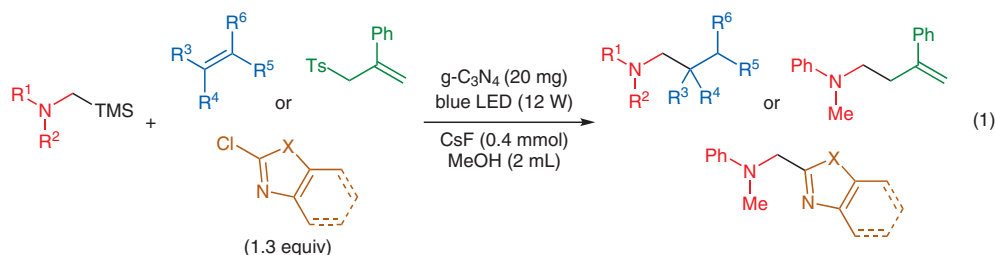
Key words

photocatalysis

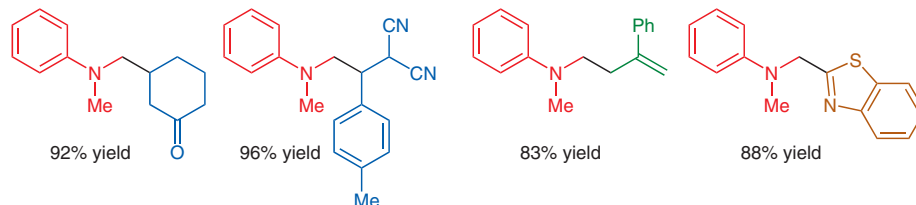
aminoalkyl radical addition

carbon nitride

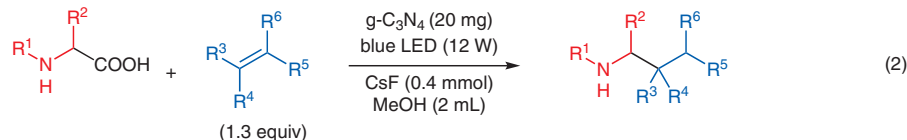
Desilylative additions:



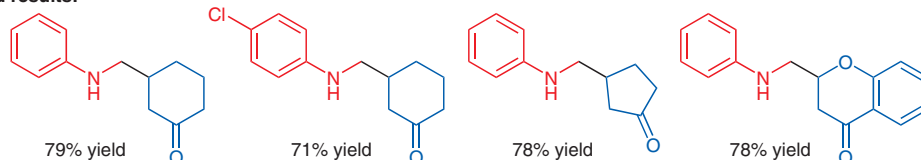
Selected results:



Decarboxylative additions:



Selected results:



**Significance:** A graphitic carbon nitride ( $g\text{-C}_3\text{N}_4$ ) catalyzed the desilylative addition of  $\alpha$ -silylamines to alkenes or heteroaryl chlorides under visible-light irradiation to give the corresponding adducts in up to 96% yield (eq. 1).  $g\text{-C}_3\text{N}_4$  also promoted the decarboxylative additions of  $\alpha$ -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-dicyanoethyl)toluene,  $g\text{-C}_3\text{N}_4$  was reused eight times without significant loss of its catalytic activity.  $g\text{-C}_3\text{N}_4$  was applied for the continuous-flow reaction of  $N$ -methyl- $N$ -[(trimethylsilyl)methyl]aniline with cyclohexanone to afford the desired amine in 85% yield.