Photodehydrogenation of N-Heterocycles with Hexagonal Boron Carbon Nitride

Results:

- 79% yield
- 91% yield
- 86% yield
- 85% yield
- 89% yield
- 95% yield
- 82% yield
- 41% yield
- 87% yield
- 85% yield

Significance: Hexagonal boron carbon nitride (h-BCN) catalyzed the acceptorless dehydrogenation of hydroquinolines, hydroisoquinolines, and indolines in water at room temperature under visible-light irradiation to give the corresponding aromatic N-heterocycles in 41–95% yield (14 examples).

Comment: The authors previously reported the preparation of h-BCN and its application to the oxidative dehydrogenation of ethylbenzene (Angew. Chem. Int. Ed. 2017, 56, 8231). Under dark conditions, the dehydrogenation with h-BCN did not proceed. In the dehydrogenation of 1,2,3,4-tetrahydroquinoline, the catalyst was recovered by simple filtration and reused four times with slight loss of its catalytic activity.