Anti-Markovnikov Regioselective Hydroamination of Alkenes with Aqueous NH$_3$ on a Au/TiO$_2$ Photocatalyst

**Significance:** A gold-loaded titanium oxide photocatalyst (Au/TiO$_2$), prepared according to Equation 1, promoted the hydroamination of alkenes with aqueous ammonia under xenon-lamp irradiation ($\lambda \geq 300$ nm) to afford the corresponding amines in $\leq 96\%$ yield with $>99\%$ anti-Markovnikov regioselectivity (eq. 2; 9 examples).

**Comment:** The authors have previously reported the preparation of the Pt/TiO$_2$ photocatalyst, and its application to the aromatic ring amination of benzenes with aqueous ammonia (J. Phys. Chem. C 2013, 117, 11047) and the anti-Markovnikov hydration of alkenes (Catal. Sci. Technol. 2013, 3, 1739). They propose that the thermodynamic stability of the radical intermediate generated from alkene and amide radical determine the anti-Markovnikov regioselectivity (eq. 3). In the hydroamination of 4-phenylbut-1-ene, the catalytic activity of Au/TiO$_2$ was superior to that of Pt/TiO$_2$ or Pd/TiO$_2$.