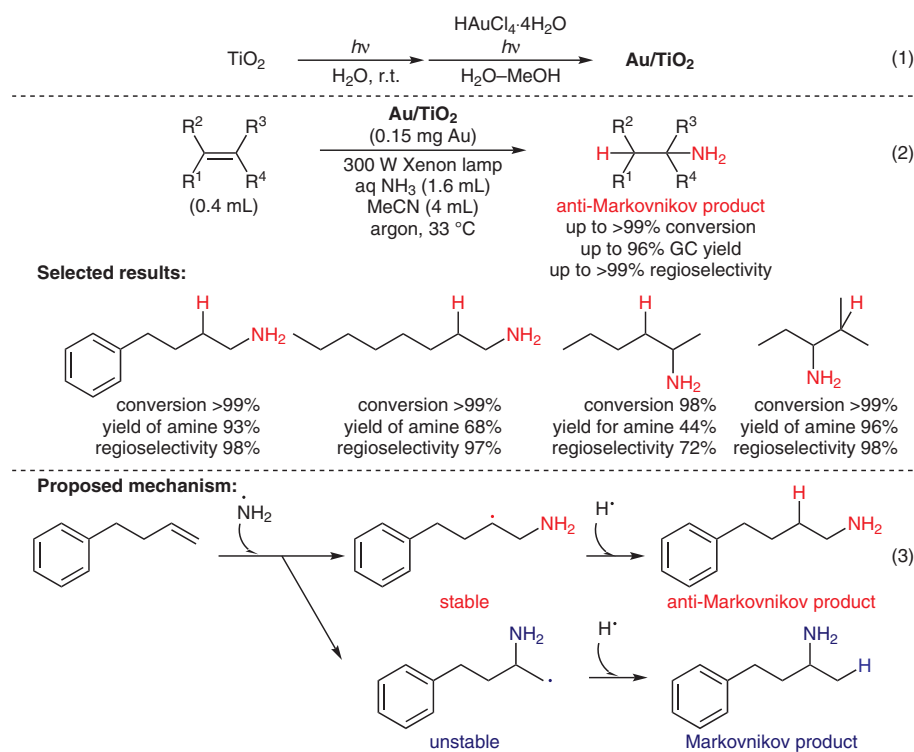


S. PARK, J. JEONG, K. FUJITA, A. YAMAMOTO, H. YOSHIDA* (KYOTO UNIVERSITY, JAPAN)
Anti-Markovnikov Hydroamination of Alkenes with Aqueous Ammonia by Metal-Loaded Titanium Oxide Photocatalyst
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Anti-Markovnikov Regioselective Hydroamination of Alkenes with Aqueous NH₃ on a Au/TiO₂ Photocatalyst



Significance: A gold-loaded titanium oxide photocatalyst (Au/TiO₂), 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/TiO₂ 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/TiO₂ was superior to that of Pt/TiO₂ or Pd/TiO₂.

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