Hydroamination of Alkynes Using Amphiphiles-Based Au@SiO₂

Significance: The porous Au@SiO₂ catalyst was prepared from a gold precursor and a TEOS solution in the presence of cinchonidine-based triazole amphiphiles. The hydroamination of alkynes was carried out with Au@SiO₂ to give the corresponding imine products 1a–n in up to 99% conversion.

Comment: The turnover number of Au@SiO₂ was 1604 for the formation of 1b. The catalyst was characterized by cryo-TEM, XPS, UV/Vis, zeta potential, and ICP-OES analyses.

\[ \text{R}^1 \text{C} = \equiv \text{N} + \text{NH}_2 \xrightarrow{\text{Au} @ \text{SiO}_2 \text{catalyst (61 mol%)}} \text{R}^1 \text{NH} - \text{R}^2 \]

\[ \text{R}^1 = \text{H}, 97\% \text{ conversion} \]
\[ \text{R}^2 = 4\text{-OMe}, 100\% \text{ conversion} \]
\[ \text{R}^2 = 4\text{-Me}, 88\% \text{ conversion} \]

\[ \text{R}^2 = \text{H}, 100\% \text{ conversion} \]
\[ \text{R}^2 = 4\text{-OMe}, 100\% \text{ conversion} \]
\[ \text{R}^2 = 4\text{-Me}, 92\% \text{ conversion} \]