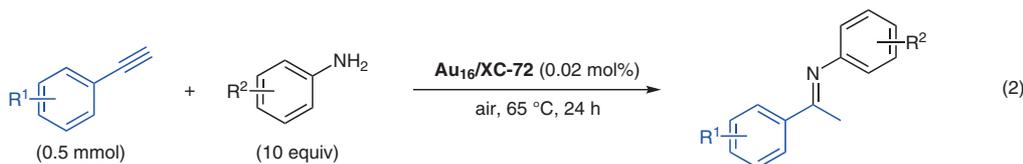
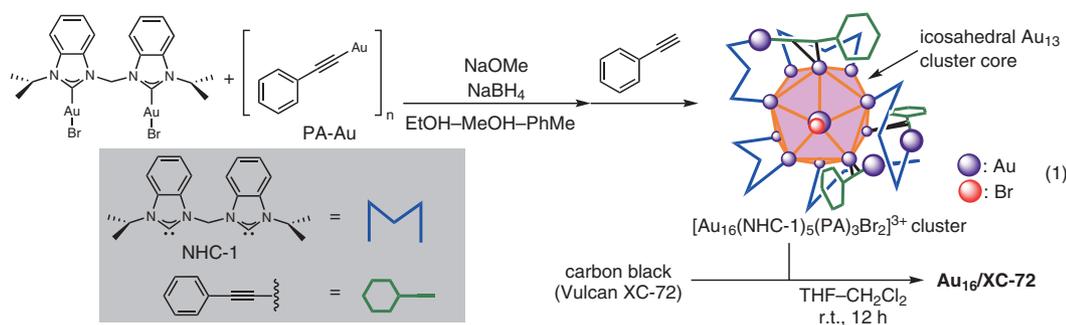
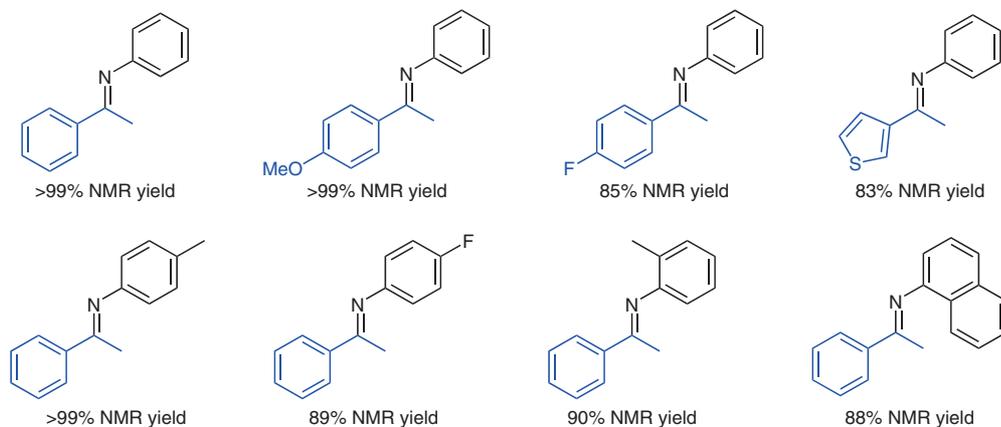


H. SHEN, Q. WU, S. MALOLA, Y.-Z. HAN, Z. XU, R. QIN, X. TANG, Y.-B. CHEN, B. K. TEO, H. HÄKKINEN*, N. ZHENG* (UNIVERSITY OF JYVÄSKYLÄ, FINLAND; XIAMEN UNIVERSITY AND INNOVATION LABORATORY FOR SCIENCES AND TECHNOLOGIES OF ENERGY MATERIALS OF FUJIAN PROVINCE (IKKEM), XIAMEN, P. R. OF CHINA)
 N-Heterocyclic Carbene-Stabilized Gold Nanoclusters with Organometallic Motifs for Promoting Catalysis
J. Am. Chem. Soc. **2022**, *144*, 10844–10853, DOI: 10.1021/jacs.2c02669.

Hydroamination of Arylacetylenes by Gold Nanoclusters Immobilized on Carbon



Selected examples:



Significance: An N-heterocyclic-carbene-stabilized gold nanocluster $[\text{Au}_{16}(\text{NHC-1})_5(\text{PA})_3\text{Br}_2]^{3+}$ (Au_{16} cluster) immobilized on carbon ($\text{Au}_{16}/\text{XC-72}$) was prepared according to Equation 1. $\text{Au}_{16}/\text{XC-72}$ catalyzed the hydroamination of arylacetylenes with anilines to give the corresponding ketimines in up to >99% NMR yield (eq. 2).

Comment: The Au_{16} cluster was characterized by means of XRD, ^1H NMR, ^{13}C NMR, HRESI-MS, UV/Vis, DPV, XANES, EXAFS, and IR analyses. $\text{Au}_{16}/\text{XC-72}$ had similar XANES, EXAFS, and IR profiles to a Au_{16} cluster. The reaction of phenylacetylene with aniline catalyzed by 0.002 mol% of $\text{Au}_{16}/\text{XC-72}$ proceeded with a high turnover number of 50,000.

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