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Oxidative Cycloaddition of 1,1,3,3-Tetramethyldisiloxane to Alkynes Catalyzed by Supported Gold Nanoparticles

Cycloaddition of Tetramethyldisiloxane to Alkynes with [Au]/TiO₂

Significance: TiO₂-supported gold nanoparticles ([Au]/TiO₂) catalyzed the oxidative cycloaddition of 1,1,3,3-tetramethyldisiloxane (TMDS) to alkynes 1 to give the corresponding cycloadducts 2 in up to 99% isolated yield (22 examples, eq. 1).

Comment: The authors proposed a reaction pathway for the present oxidative cycloaddition as follows (eq. 2): (1) oxidative addition of TMDS to [Au] giving H-[Au]-Me₂SiOSiMe₂ (A); (2) insertion of alkynes 1 into the Si–Au bond forming gold adducts B; (3) intramolecular elimination of H₂ and [Au] to give cycloadducts 2.

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