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In Situ Generated Gold Nanoparticles on Active Carbon as Reusable Highly Efficient Catalysts for a C(sp^3)–C(sp^3) Stille Coupling
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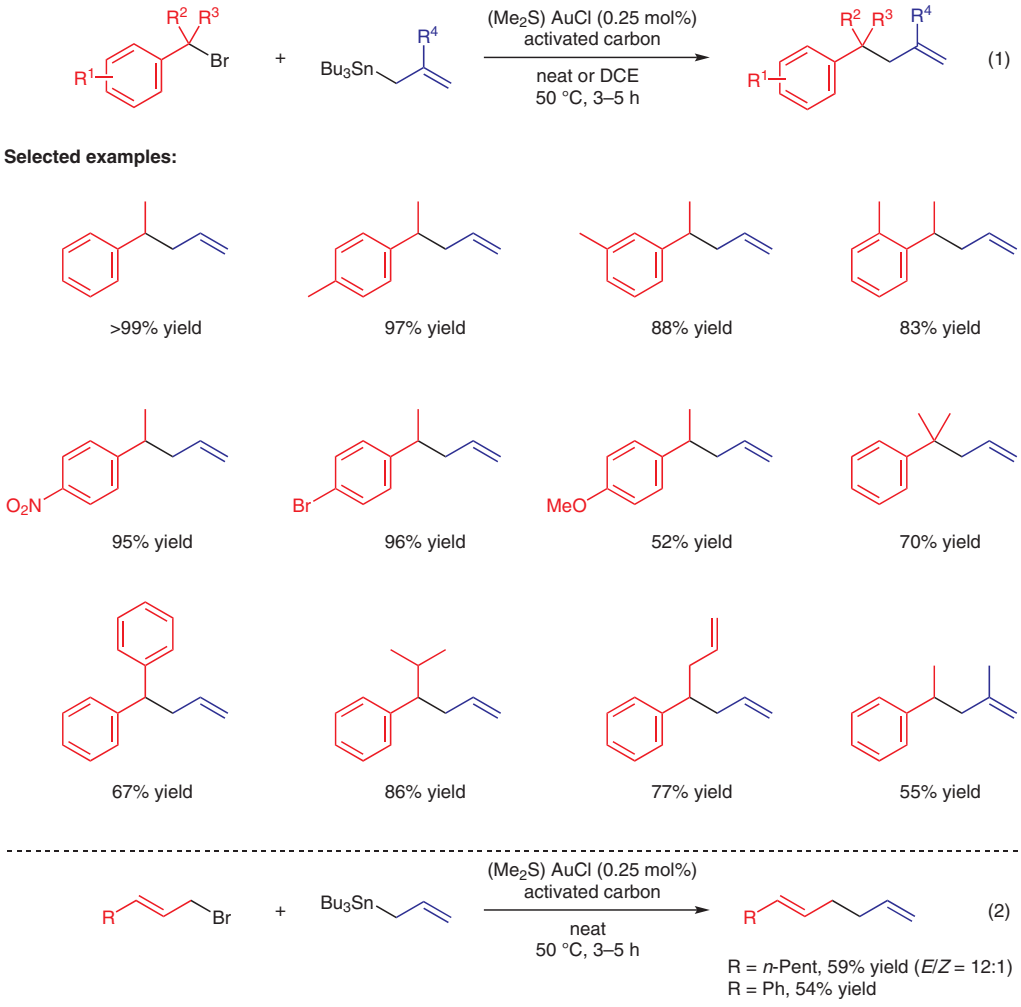
Stille Coupling Catalyzed by Gold Nanoparticles Formed In Situ on Active Carbon



Significance: Activated-carbon-adsorbed gold nanoparticles formed in situ catalyzed the C(sp^3)–C(sp^3) coupling reaction of benzylic bromides with allyl(tributyl)stannanes to give the corresponding homoallylic benzenes in up to >99% yield (eq.1). This catalyst was also applicable on an allyl–allyl coupling reaction to furnish 1,5-dienes in yields of 54–59% (eq. 2).

Comment: The coupling of (2-bromoethyl)benzene with allyl(tributyl)stannane proceeded in the presence of a 0.001 mol% loading of the gold nanoparticles to give the coupling product in 29% yield with a total turnover number of up to 29000. The catalyst was recovered by centrifugation and recycled four times without a loss of its catalytic activity.

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Category
Polymer-Supported Synthesis

Key words
gold catalysis
nanoparticles
Stille coupling
benzyl halides
allylstannanes
dienes

Synfact of the Month