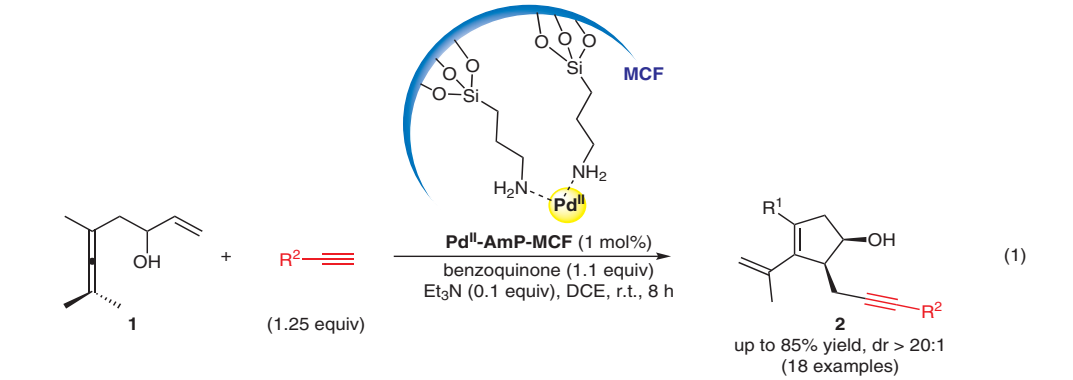
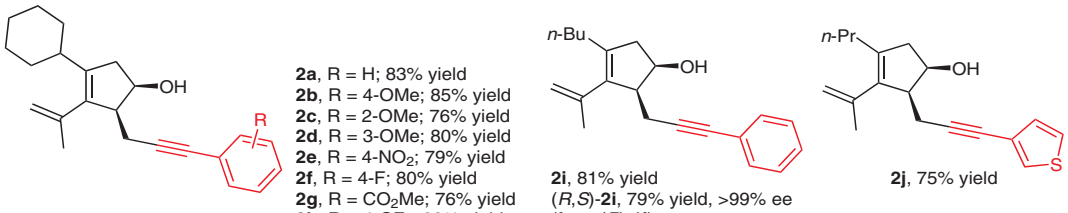
M.-B. LI*, J. YANG, Y. YANG, G.-Y. XU, G. LUO, J. YANG, J.-E. BÄCKVALL* (ANHUI UNIVERSITY, HEFEI, P. R. OF CHINA; STOCKHOLM UNIVERSITY AND MID SWEDEN UNIVERSITY, SUNDSVALL, SWEDEN)

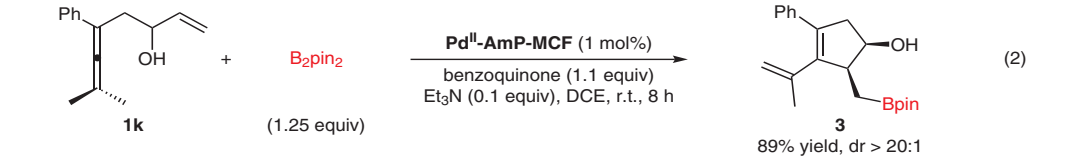
Amino-Supported Palladium Catalyst for Chemo- and Stereoselective Domino Reactions
Angew. Chem. Int. Ed. **2021**, *60*, 670–674, DOI: 10.1002/anie.202011708.

Synthesis of Alkynylcyclopentenols on a Foam-Supported Palladium Catalyst



Selected results:





Significance: Palladium(II) immobilized on an aminopropyl-functionalized siliceous mesocellular foam (**Pd^{II}-AmP-MCF**) catalyzed the oxidative carbocyclization/alkynylation reaction of enallenes **1** with terminal alkynes in the presence of benzoquinone and triethylamine in DCE to give the corresponding alkynylcyclopentenols **2** in up to 85% yield with >20:1 diastereoselectivity and >99% ee (eq. 1; 19 examples). **Pd^{II}-AmP-MCF** also promoted the oxidative carbocyclization/borylation of enallene **1k** with bis(pinacolato)diboron to afford enol **3** in 89% yield (eq. 2).

Comment: In the reaction of **1a** with ethynylbenzene, the catalyst was recovered by centrifugation and reused six times without loss of its activity. The authors have previously reported the preparation of **Pd^{II}-AmP-MCF** and its application in oxidative cascade reactions for the formation of cyclobutenols, γ-lactones and γ-lactams, and furans (*Chem. Eur. J.* **2019**, *25*, 210; *J. Am. Chem. Soc.* **2018**, *140*, 14604; *Angew. Chem. Int. Ed.* **2020**, *59*, 1992).

SYNFACTS Contributors: Yasuhiro Uozumi, Aya Tazawa
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Category
Polymer-Supported Synthesis

Key words
palladium catalysis
domino reaction
enallenes
carbocyclization
alkynylation
cyclopentenols

Synfact of the Month