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Enantioselective Palladium-Catalyzed Direct Arylations at Ambient Temperature: Access to Indanes with Quaternary Stereocenters

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## Synthesis of Indanes by Enantioselective Direct Arylation

**Significance:** Transition-metal-catalyzed C–H functionalization reactions are becoming increasingly practical; however, highly enantioselective variants are rare (see Review below). The authors have identified a catalytic system which allows for the desymmetrization of enantiotopic aryl C–H bonds using a palladium-catalyzed direct arylation.

**Review:** R. Giri, B.-F. Shi, K. M. Engle, N. Mangel, J.-Q. Yu *Chem. Soc. Rev.* **2009**, *38*, 3242-3272.

**Comment:** The key step in the catalytic cycle is proposed to involve a concerted metalation—deprotonation (CMD) reaction. The use of a chiral monodentate ligand is required to induce enantioselectivity, and bulky taddol-based phosphoramidite ligands were optimal. The reaction is performed at room temperature using NaHCO<sub>3</sub> as a base, making the process exceptionally mild.

 $\begin{array}{lll} \textbf{SYNFACTS Contributors:} \ Mark \ Lautens, Stephen \ G. \ Newman \\ Synfacts \ 2010, \ 2, \ 0179-0179 & Published \ online: \ 21.01.2010 \\ \textbf{D0I:} \ 10.1055/s-0029-1219217; \ \textbf{Reg-No.:} \ L17809SF \\ \end{array}$ 

Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions

Key words

direct arylation
palladium
desymmetrization

