

**Category**

**Metal-Catalyzed  
Asymmetric  
Synthesis and  
Stereoselective  
Reactions**

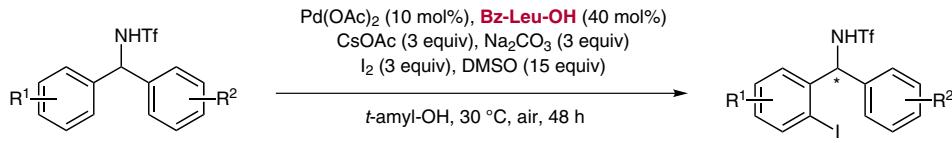
**Key words**

palladium  
C–H iodination  
desymmetrization  
diarylmethylamines

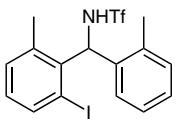
L. CHU, X.-C. WANG, C. E. MOORE, A. L. RHEINGOLD, J.-Q. YU\* (THE SCRIPPS RESEARCH INSTITUTE, LA JOLLA AND THE UNIVERSITY OF CALIFORNIA, SAN DIEGO, LA JOLLA, USA)

Pd-Catalyzed Enantioselective C–H Iodination: Asymmetric Synthesis of Chiral Diarylmethylamines  
*J. Am. Chem. Soc.* **2013**, *135*, 16344–16347.

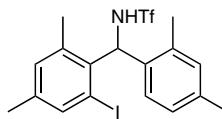
## Palladium-Catalyzed Enantioselective C–H Iodination



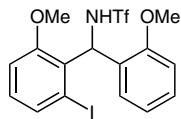
12 examples  
up to 85% yield  
up to 99% ee

**Selected examples:**

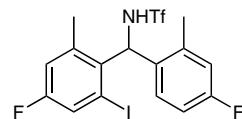
80% yield  
98% ee



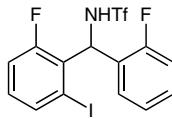
85% yield  
98% ee



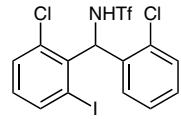
75% yield  
97% ee



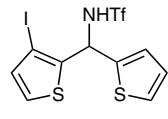
78% yield  
99% ee



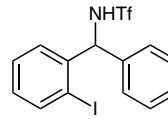
62% yield  
99% ee



54% yield  
99% ee



51% yield  
99% ee



66% yield  
mono/di = 1:2  
87% ee (mono)  
99% ee (di)

**Significance:** The diarylmethylamine motif is present in a range of biologically active compounds. Methods aimed at the enantioselective synthesis of diarylmethylamines include 1,2-addition of organometallic species to aldimines (see Review) and asymmetric hydrogenation of the corresponding imines (*J. Am. Chem. Soc.* **2010**, *132*, 2124). Here, the authors report the asymmetric synthesis of diarylmethylamines via palladium-catalyzed desymmetrizing C–H iodination. This report is the first example of an asymmetric C–H iodination in the absence of a chiral auxiliary.

**Comment:** The iodination of *ortho*-substituted substrates proceeds with good yields and excellent enantioselectivities. However, in the absence of *ortho* substituents, a significant amount of the diiodinated product is obtained. Interestingly, the enantioselectivity of the di-iodinated product remains consistently higher than that of the mono-iodinated product.

**Review:** M. T. Robak, M. A. Herbage, J. A. Ellman *Chem. Rev.* **2010**, *110*, 3600–3740.

**SYNFACTS Contributors:** Mark Lautens, Christine M. Le  
Synfacts 2014, 10(1), 0046 Published online: 13.12.2013  
**DOI:** 10.1055/s-0033-1340453; **Reg.-No.:** L16313SF