K. KIKUSHIMA, J. C. HOLDER, M. GATTI, B. M. STOLTZ* (CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA, USA)

Palladium-Catalyzed Asymmetric Conjugate Addition of Arylboronic Acids to Five-, Six-, and Seven-Membered β -Substituted Cyclic Enones: Enantioselective Construction of All-Carbon Quaternary Stereocenters
J. Am. Chem. Soc. **2011**, *133*, 6902-6905.

Pd-Catalyzed Asymmetric Conjugate Addition of Arylboronic Acids to Cyclic Enones

Significance: The authors report the first asymmetric palladium-catalyzed 1,4-addition of phenylboronic acids to β -substituted cyclic enones to construct quaternary centers in high yields and generally good enantioselectivities. The method is general for five-, six-, and seven-membered enones. Furthermore, a variety of electronically rich and poor arylboronic acids can be employed with moderate to excellent yields and fair to excellent asymmetric induction. Various substitution patterns at the β -position of the cyclic enones are tolerated without substantial loss of yield or enantioselectivity.

Comment: Although there are many related transformations, this is the first palladium-catalyzed variant for the construction of quaternary stereocenters in high yields and enantioselectivities. The ease with which the ligand can be synthesized is also noteworthy [the (S) - t -BuPyOX ligand can be prepared in two synthetic steps from commercially available materials]. The methodology exhibits broad functional group tolerance and can be performed in the presence of both air and water. This could prove to be a very useful contribution to the field.

SYNFACTS Contributors: Mark Lautens, Hasnain A. Malik
Synfacts 2011, 7, 0739-0739 Published online: 17.06.2011
DOI: 10.1055/s-0030-1260641; Reg-No.: L06311SF