

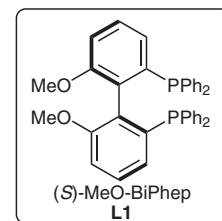
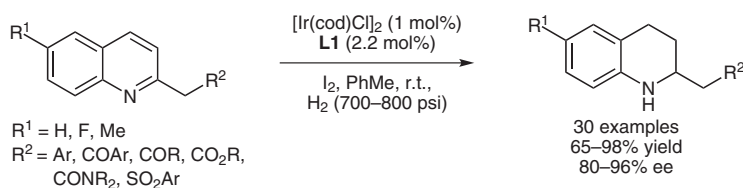
D.-W. WANG, X.-B. WANG, D.-S. WANG, S.-M. LU, Y.-G. ZHOU,\* Y.-X. LI\* (DALIAN INSTITUTE OF CHEMICAL PHYSICS AND SHANGHAI INSTITUTE OF ORGANIC CHEMISTRY, P. R. OF CHINA)

Highly Enantioselective Iridium-Catalyzed Hydrogenation of 2-Benzylquinolines and 2-Functionalized and 2,3-Disubstituted Quinolines

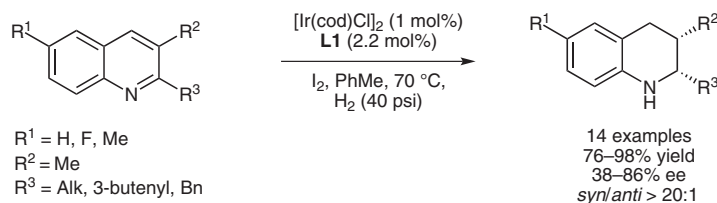
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## Iridium-Catalyzed Hydrogenation of Quinolines

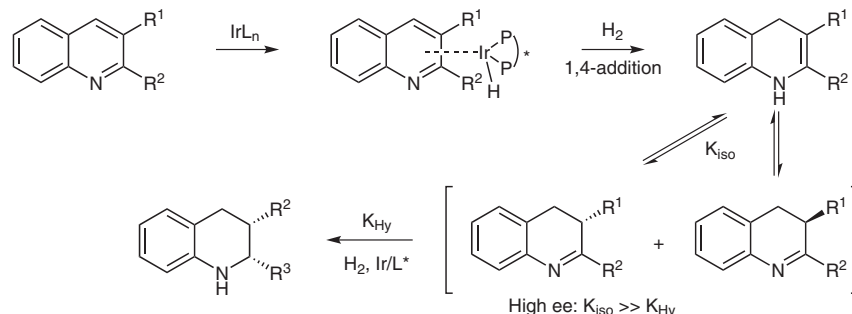
### Hydrogenation of 2-substituted quinolines:



### Hydrogenation of 2,3-disubstituted quinolines:



### Proposed mechanism – dynamic kinetic resolution:



**Significance:** In the past decade asymmetric hydrogenation reactions of various heteroaromatic compounds including quinoxaline, pyridine, indole, pyrrole, and furan have been achieved. In 2003 the authors reported the use of  $[\text{Ir}(\text{cod})\text{Cl}]_2\text{MeO-BiPhep}/\text{I}_2$  for enantioselective hydrogenations of quinoline derivatives (*J. Am. Chem. Soc.* **2003**, *125*, 10536). In the current report the authors disclose a full account of the generality of this method with a variety of functionalized quinolines.

**SYNFACTS Contributors:** Hisashi Yamamoto, Joshua N. Payette  
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**Comment:** The described catalyst system is quite general for 2-substituted quinolines containing a wide variety of benzylic, carbonyl, and sulfonyl functionalities. Furthermore, the authors propose the reaction to be occurring by initial 1,4-hydride addition to generate an enamine intermediate followed by isomerization and subsequent 1,2-addition. Based on this hypothesis 2,3-disubstituted quinolines could be efficiently hydrogenated through a dynamic kinetic resolution process.