Catalytic Asymmetric Synthesis of the endo-6-Aryl-8-oxabicyclo[3.2.1]oct-3-en-2-one Natural Product from *Ligusticum chuanxing* via 1,3-Dipolar Cycloaddition of a Formyl-Derived Carbonyl Ylide Using Rh$_2$(S-TCP$\text{TTL})_4$

N. SHIMADA, T. HANARI, Y. KUROSAKI, K. TAKEDA, M. ANADA, H. NAMBU, M. SHIRO, S. HASHIMOTO* (HOKKAIDO UNIVERSITY, SAPPORO AND RIGAKU CORPORATION, TOKYO, JAPAN)

**Synthesis of endo-6-Aryl-8-oxabicyclo[3.2.1]oct-3-en-2-one**

**Significance:** This is the first example of an enantioselective 1,3-dipolar cycloaddition of a cyclic formyl carbonyl ylide. This methodology was successfully applied to the synthesis of endo-6-aryl-8-oxabicyclo[3.2.1]oct-3-en-2-one, which was isolated from *Ligusticum chuanxing* Hort., a traditional Chinese medicine used to promote blood circulation.

**Comment:** The enantioselective 1,3-dipolar cycloaddition proceeds with impressive er (97.5:2.5) to form E. The reduced product F could then be recrystallized and the er upgraded to 99.5:0.5. The circular dichroism of the natural product differed from the synthetic sample, leading the authors to speculate that the natural product may be biosynthesized in racemic form.