SL01 ZACA反応 －リパーゼ触媒下のアセチレーション－ Pd-またはCu-触媒を用いたクロスカップリングの組み合わせを利用した、極めて微弱にキラルな有機化合物の高度選択的（≥99% ee）合成

Highly Selective (≥99% ee) and Widely Applicable Synthesis of Feebly Chiral Alkanols via Zirconium-Catalyzed Asymmetric Carboalumination of Alkenes (ZACA) —Lipase-Catalyzed Acetylation— Pd- or Cu-Catalyzed Cross-Coupling

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The zirconium-catalyzed asymmetric carboalumination of alkenes (ZACA) was discovered in 1995 [1, 2] by overcoming three major pitfalls, namely (i) cyclic carbometallation, (ii) H-transfer hydrometallation, and (iii) Ziegler-Natta-type alkene polymerization. The ZACA reaction represents a prototypical example of catalytic enantioselective carbon–carbon bond forming reactions of alkenes of one-point binding without requiring any other functional groups, even though various functional groups may be present. Its subsequent development mainly over the past several years has made this ZACA reaction a practically satisfactory synthetic tool for the conversion of terminal alkenes of one-point binding into various 2-chiral 1-alcohols through which a wide range of chiral organic compounds can be efficiently and selectively prepared [3].

Some details of the discovery and development of the ZACA reaction will be discussed with emphasis on its application to efficient and selective synthesis of chiral natural products and feebly chiral compounds.

[1] D. Y. Kondakov and E. Negishi, J. Am. Chem. Soc. **117**, 10771–10772 (1995).
[2] D. Y. Kondakov and E. Negishi, J. Am. Chem. Soc. **118**, 1577–1578 (1996).
[3] E. Negishi, Arkivoc **viii,** 34–53 (2011).