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Reagent of the Year 1994

14715 (R,R)-(-)-N,N'-Bis(3,5-di-tert.butylsalicylidene)-1,2-cyclohexane-diaminomanganese chloride, [(R,R)-Jacobsen Catalyst I].

Package sizes: 1 and 5 g

14717 (S,S)-(+)-N,N'-Bis(3,5-di-tert.butylsalicylidene)-1,2-cyclohexane-diaminomanganese chloride; [(S,S)-Jacobsen Catalyst I]

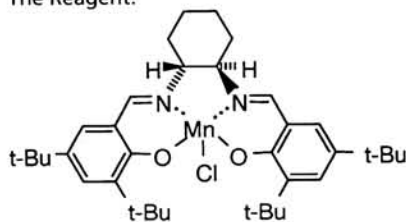
Package sizes: 1 and 5 g

The Prize Winner 1994:
Prof. Dr. E.N. Jacobsen



E.N. Jacobsen, born 1960, completed his studies at the University of California, Berkeley under the direction of Prof. R.G. Bergman. After joining the group of Prof. K.B. Sharpless (MIT, postdoctoral fellow), he moved to the University of Illinois, Urbana-Champaign (assistant and then associate professor). In 1993 he was appointed Professor at Harvard University, Cambridge, MA.

The Reagent:



1994 and ent-1994

Enantiomerically highly enriched epoxides from unfunctionalized alkenes have been made easily available now – this is the message of Reagent of the year 1994 or ent-1994, a chiral non racemic, catalytically active transition metal complex.

The reagent has been proven with a broad spectrum of substrates; enantiomeric excesses regularly reaching 90% and sometimes exceeding 98% [1,2]. The whole potential of the concept is being explored just now: ligand tuning and optimization [3] is under investigation, as well as the testing of conjugated dienes [3,4] and enynes [4] as substrates, the enantioselective oxidation of sulfides to sulfones [5], and aziridinations [6].

The reagent is a recent highlight of intensive research on enantioselective atom or group transfer to unfunctionalized alkenes [7]. Via the synthetically versatile epoxy function, the reagent opens up extremely short pathways

to enantiomerically pure pharmacologically active substances: first applications include the elaboration of dimethylchromenes to enantiomerically pure antihypertensive agents [8] and a synthesis of the taxol side chain [9].

The jury with this year's award lauds an important accomplishment in a key area of today's synthetic organic chemistry. Noteworthy, that with Reagent of the Year 1994 the prize committee not only distinguishes a reagent, but also a method: the ready availability of both the enantiomeric catalysts, combined with a reaction that can be run easily by use of the stoichiometric oxygen source sodium hypochlorite, make the process ideal for production on a multi-kg-scale. So the process will find its place among the still very small group of enantioselectively guided, catalytic reactions of industrial importance.

References:

[1] W. Zhang, J.L. Loebach, S.R. Wilson, E.N. Jacobsen, *J. Am. Chem. Soc.* 1990, **112**, 2801. [2] (a) W. Zhang, E.N. Jacobsen, *J. Org. Chem.* 1991, **56**, 2296; (b) E.N. Jacobsen, W. Zhang, A.R. Muci, J.R. Ecker, L. Deng, *J. Am. Chem. Soc.* 1991, **113**, 7063. [3] S. Chang, R.M. Heid, E.N. Jacobsen, *Tetrahedron Letters*, 1994, **35**, 669. [4] N.H. Lee, E.N. Jacobsen,

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The Fluka Prize:

Since 1987, the Fluka Prize "Reagent of the Year" has been awarded annually to a research project, in which a new compound has been shown to be a reagent of prime importance, useful in organic chemistry, biochemistry or analytical chemistry. The winner will be awarded the sum of sFr. 10'000.-. He will be free

of any obligations whatsoever. Nominations for the Fluka Prize "Reagent of the Year" should be submitted to the Fluka Prize Committee c/o Fluka Chemie AG, CH-9470 Buchs/Switzerland no later than September 30th. Full details regarding the Fluka Prize are available upon request.

Fluka

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