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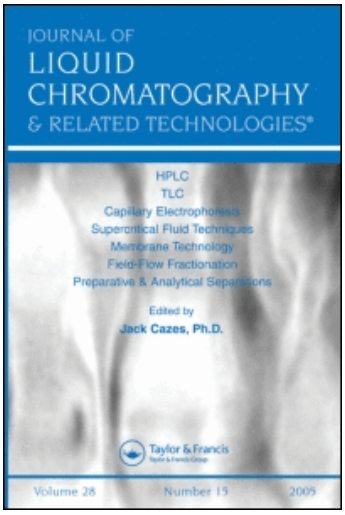

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Editorial

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EDITORIAL

The word "chiral" comes from a Greek word "cheir" which means a "hand". A pair of isomers holding mutual mirror reflexions must have a handedness, thus they are chiral and assigned to 'enantiomers'. Enantiomers have identical physical properties except for a plus or minus sign of the optical rotation. A mixture consisting of equal amounts of enantiomers, called a 'racemate', is obtained experimentally by chemical reactions carried out under a non-chiral environment. Therefore, the separation of an enantiomeric mixture --optical resolution-- is necessary for yielding optically pure specimens.

For optical resolution, chromatographic methods have been considered to be the most useful technique. Pre-derivatization of a given enantiomeric mixture with a chiral reagent, leading to a pair of diastereomers (so called 'indirect' method) enables one to separate samples by chromatography. On the other hand, using the chiral stationary or mobile phase systems in chromatography (so called 'direct' method) is an alternative procedure that has recently come into use. This approach has been examined rather extensively by many research scientists. Early successful results did not attract much interest; the technique remained relatively dormant and little was done to develop this approach into a generally applicable method. It was a decade ago that the systematic research started towards the design of chiral stationary phases functioning to separate enantiomers by gas chromatography. Molecular design and preparation of the chiral phase systems for liquid chromatography have been examined since then. More recently, efforts were directed to finding new types of chiral stationary and mobile phases on the basis of the stereo-

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chemical view point and the technical evolution of modern liquid chromatography.

In the meantime, we published a special issue of this journal, entitled "Liquid Chromatographic Separation of Enantiomers, Diastereomers, and Configurational Isomers". This was only a few years ago (1). In continuation of this issue, we planned to edit a new special issue dedicated to enantiomer separations by liquid chromatography. Prominent scientists involved in this research field were invited to disclose their ideas and discuss recent experimental results in the interest of promoting this area of separation science.

Direct optical resolution by liquid chromatography is associated with diastereomeric interactions between two chiral molecules as a recognizer and a solute. Molecular complexes dynamically formed in chromatographic columns serve to produce a means for expressing enantioselectivity of the system. In this aspect, the mechanistic consideration seems to be indispensable for developing chiral recognition systems. It should be stressed that the elucidation of a chiral recognition phenomenon must be of central interest in stereochemistry.

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In order to calculate the optical yield in an asymmetric synthesis for instance, and to examine the optical purity of the enantiomeric mixtures for control of preparative processes, construction of a reliable analytical method is required. A kinetic study of the metabolism of chiral drugs in the biological systems also demands a versatile, sometimes specific, and sensitive procedure. The preparative separation of enantiomers is essential in the chemical industries.

We feel and hope that the review articles and the original contributions published in this issue will serve to providing useful information and to stimulate further progress in a new frontier of science.

Shoji HARA and Jack CAZES

(1) S. Hara and J. Cazes (eds.), J. Liq. Chromatogr., 2 (8), 1063-1250 (1979).