

This article was downloaded by:

On: 25 January 2011

Access details: *Access Details: Free Access*

Publisher *Taylor & Francis*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Journal of Liquid Chromatography & Related Technologies

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713597273>

### Preface

Sadao Mori

**To cite this Article** Mori, Sadao(1994) 'Preface', Journal of Liquid Chromatography & Related Technologies, 17: 14, vii – viii

**To link to this Article:** DOI: 10.1080/10826079408013187

**URL:** <http://dx.doi.org/10.1080/10826079408013187>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

## PREFACE

Most synthetic polymers have a molecular weight distribution (MWD) which can be measured by size exclusion chromatography (SEC) rapidly and precisely. Copolymers have a chemical composition distribution (CCD) in addition to MWD, and CCD of the copolymers has mostly been measured by SEC - a dual detector system or SEC-IR. Although size exclusion chromatography has established itself as an indispensable analytical method for measuring molecular weight averages and MWD of polymers, accurate information on both MWD and CCD of copolymers cannot be obtained by SEC alone.

Because separation in SEC is considered, in principle, to be achieved according to the effective sizes of molecules in solution, and because molecular weights of copolymers are not proportional to molecular size unless compositional variation is negligible and the chemical structure is constant across the whole range of molecular weights.

There are other parameters which control the properties of polymers besides MWD and CCD. A functionality distribution of end groups of polymers influences the properties of polymers, especially low-molecular-weight-polymers and oligomers. *Blending of polymers of different structures frequently occurs as a technique of polymer reforming.* Degree of branching of polymers affects the crystallization of polymers. Characterization of such complex structures of polymers cannot be achieved only by SEC or by hyphenated techniques such as SEC-IR and SEC-NMR. Non-exclusion liquid chromatography (NELC), e.g., liquid adsorption chromatography (LAC), precipitation liquid chromatography, normal- and reversed-phase liquid chromatography, LAC at critical condition, orthogonal chromatography, field-flow fractionation (FFF), temperature rising elution fractionation (TREF) must be used, either separately or coupled with SEC.

Recent advances in NELC in the past decade for polymer characterization are remarkable and we have entered a phase of consolidation. From this point of view, the special issue on "Polymer Separation by Non-Exclusion Liquid Chromatography" has been planned and edited in this volume. Leading experts in this field have contributed and seventeen papers have been compiled in this issue: three papers dealing with copolymer separation according to composition; one on polymer separation according to functionality; three on the separation of polyethers; four on retention behavior of

homopolymers; one on TREF; two on FFF; and two on the separation of ionic polymers. One paper is a review on alternatives to SEC.

As guest editor of this special issue, I wish to thank all contributors to this issue. I hope this special issue provides significant impact to great development of polymer liquid chromatography.

Tsu (Japan)

Sadao Mori