

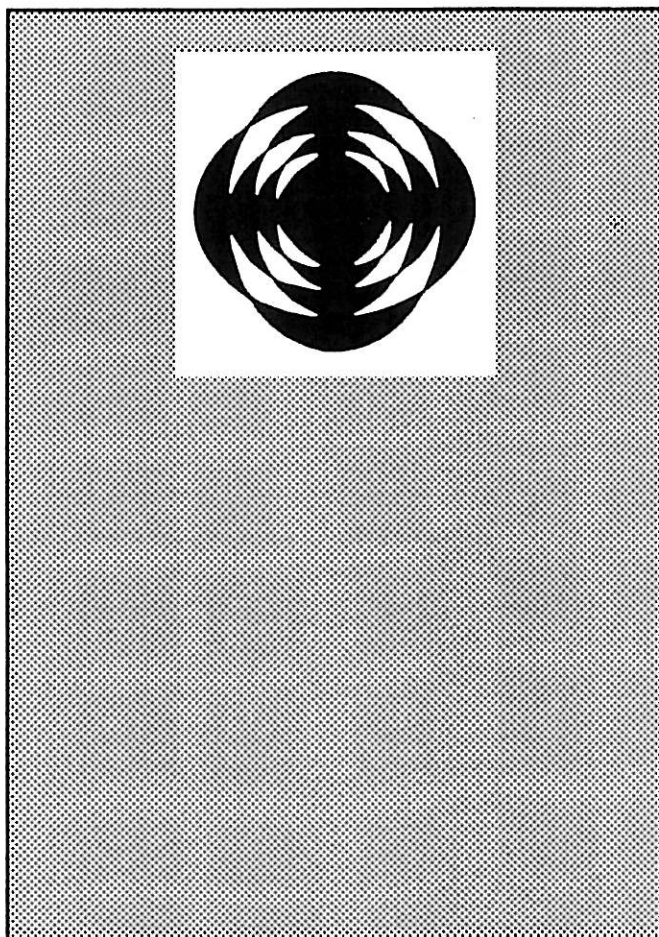
Pais, L.S., and Rodrigues, A.E.

Enantioseparation by SMB Chromatography

in *EUROTECH'98 Preparative and Process Scale Separations*, Cambridge, UK,
April 1-3, 1998. (*comunicação oral*)

EUROTECH '98
Preparative and Process Scale
Separations

1 - 3 April 1998



ORGANISER Dr. G. SUBRAMANIAN

WEDNESDAY 1st

- 12.00 - 01.30 Registration**
- 01.45 - 02.00 Welcome**
- 02.00 - 02.30 KEY NOTE LECTURE: Past, Present and Future in Chromatographic Separations**
Ken Jones, President, Affinity Chromatography, UK.
- 02.30 - 03.00 High Performance Silica for Preparative Chromatography: Important Characteristics and Some New Applications.**
Per Moller, Eka Chemicals, Bohus, Sweden.
- 03.00 - 03.30 Contained Packing and Unpacking of Process Scale Chromatography Columns .**
Fred Mann, Millipore(UK), Bioprocess Division, Glos. UK.
- 03.30 - 04.00 Refreshments**
- 04.00 - 04.30 Novel Packing Methods for Pilot and Production Size Columns.**
Martin Hofmann, Scientific Director, Euroflow (UK) Ltd, Glos. UK.
- 04.30 - 05.00 Understanding and Enhancing Gradient Formation in Process Scale Chromatography.**
Geoff Purdom. Millipore(UK), Bioprocess Division, Glos. UK

- 05.00 - 05.30** Manufacturing Issues in Large Scale
Biopharmaceutical Chromatography.
Christopher. J.A. Davis, Delta
Biotechnology Ltd, Nottingham, UK.
- 05.30 - 06.00** Design and Optimization of Simulated
Moving Bed (SMB) Chromatography.
Jochen Strube, University of Dortmund,
Germany.
- 07.30** Reception
- 08.00** Gala Dinner

THURSDAY 2nd

*Cyclospirine
A*

08.30 - 09.00 Comparison of Optimised Batch and Simulated Moving Bed (SMB) Chromatographic Processes
Jochen Strube, University of Dortmund, Germany.

*5.5 g/l
5.3 ml/L
8 100x5*

✓ **09.00 - 09.30 Qualification and Validation of a Pilot Plant Chromatography Installation.**
Hans K. Peter, GMP Engineering, Switzerland and Jose Garcia, Novartis, Switzerland.

09.30 - 10.00 New Applications of Radial Flow Technology to Industrial Purification.
Denise Wallworth, Managing Director, BASTechnicol, UK.

✓ **10.00 - 10.30 New Adsorbents and Applications for Preparative SMB and Batch Chromatography.**
Micheal Schulte, Merck KGaA, Darmstadt, Germany.

History

1941

*Martin-Kiel
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may be sep
mandelic acid*

10.30 - 11.00 Refreshments

✓ **11.00 - 11.30 Enantioseparation by SMB Chromatography.**
Prof. Alirio Rodrigues, University of Porto, Portugal.

*α-5 Trans
lythol*

✓ **11.30 - 12.00 Semi-Preparative and Preparative L.C. Separation of Enantiomers in the Development of Pharmaceutical Compound.**
Shalini Andersson. Astra Hassle AB. Sweden.

*19.7.61, sep
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8 x 200-15

Blechat

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1957-58 5 487-492
Schulz et al*

- ✓ 12.00 - 12.30 **Enantioselective Chromatography: A Real Alternative to Enantioselective Synthesis.**
Eric Francote, Novartis, Switzerland.
- ✓ 12.30 - 01.00 **Recent Developments in Preparative Scale Chromatographic Separation.**
Christopher J. Welch, Director of Research, Regis Technologies Inc, USA.
- 01.00 - 02.00 **Lunch**
- ✓ 02.00 - 02.30 **Preparative Enantioselective Chromatography using Polysaccharide Media.**
Geoffery B. Cox, Chiral Technologies Europe, France.
- ✓ 02.30 - 03.00 **Continuous Bed Chromatography: Principles and Applications.**
Rolf Frey, Bio-Rad Laboratories, GmbH, Germany.
- 03.00 - 03.30 **Cost Minimisation of Initial Recovery Process: Comparison of a Single Step expanded adsorption vs. a Multistep Traditional Process Scheme.**
Per Hedman. Amersham Pharmacia Biotech, Sweden.
- 03.30 - 04.00 **Refreshments.**
- 04.00 - 06.30 **Demonstrations/Exhibition.**
- 07.30 **Dinner**

FRIDAY 3rd

09.00 - 9.30 Increasing Performance in Tangential Flow Filtration.

**Charles Christy, Millipore (Europe).
France.**

✓ **09.30 - 10.00 New Methodology for the Purification of Amino Acids and Peptides.**

**Thomas E. Beesley, President,
Advanced Separation Technologies Inc,
USA.**

**10.00 - 10.30 Membrane Chromatography from Analysis to Purification of Biopolymers.
Prof.Hanfa Zou, Dalian Institute,
China.**

10.30 - 11.00 Refreshments

**11.00 - 11.30 Membrane and their Applications:
Innovative Membrane Technique for
Protein Purification's.**

Ian Sellick, Pall Europe Ltd, UK.

**11.30 - 12.00 Novel Anion-Exchanger in Rapid and
Scaleable Process Purification of
Plasmids for Gene Theraphy.**

**Rama Bhikhabhai, Amersham
Pharmacia Biotech, Sweden.**

**12.00 - 12.30 Design of Resins for High Throughput
Purification of Antibodies.**

**Duncan Whitney, Senior Director,
PerSeptive Biosystems, Inc. USA.**

- 12.30 - 01.00 Benzonase - An Unique Endonuclease for Industrial-Scale Application in the Bioprocessing of Recombinant Proteins. Frank Morsberger, Merck KGaA. Darmstadt, Germany.**
- 01.00 - 02.00 Lunch**
- 02.00 - 02.30 The Optimal Bioprocessing Chromatography Media - Do Affinity Technologies Approach this Ideal. John MacLennan, Director of Marketing. Dyax Corp. USA.**
- 02.30 - 03.00 Characterisation and Application of A Novel Grafted Polymer Resin for Size Exclusion Chromatography of Proteins. Lothar Britsch, Merck KGaA, Darmstadt, Germany.**
- 03.00 - 03.30 Validation Issues Related to Process Validations: Validation and operation of a Process for Virus Removal. Alison West, Pall Europe Ltd, UK.**

Enantioseparation by SMB chromatography

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The paper deals with chiral separations by Simulated Moving Bed chromatography. The literature in the field is first reviewed in terms of selectivity, inventory of stationary phase, purity and productivity.

A methodology for obtaining basic data (adsorption equilibrium isotherms and mass transfer coefficient) is first discussed. Two systems, the separation of *Sandoz* epoxide and binaphthol enantiomers, are used as illustrative examples.

Modeling strategies for chromatographic separations using TMB and SMB approaches are compared. A package for SMB simulation taking into account multicomponent adsorption equilibria, dispersion and intraparticle mass transfer is described. The package allows the prediction of regions for complete separation.

The operation of a pilot unit of SMB, *Licosep 12-26 (Novasep, France)*, is carried out for both chiral separations described above. Experimental internal concentration profiles are compared with model predictions.