PREP 2003

16th International Symposium, Exhibit &

Workshops on

Preparative / Process Chromatography

Ion Exchange, Adsorption/Desorption Processes &

Related Separation Techniques

June 29 – July 2, 2003

San Francisco, CA, USA

Sponsored by the Washington Chromatography Discussion Group

Organized in Cooperation with the California Separation Science Society

Chaired by Professor Georges Guiochon

PREP - 2003 Symposium & Exhibit

Symposium Chairman

Dr. Georges Guiochon
University of Tennessee and Oak Ridge National Laboratory

Organizing Committee

Firoz Antia, Merck & Co., Inc.
Giorgio Carta, University of Virginia
John Frenz, Genentech
Georges Guiochon, University of Tennessee & ORNL
Anita Katti, Kennesaw State University
Harlene Marks, NovaSep
Joan Newburger, Johnson & Johnson Consumer Products Worldwide

Sponsors

We would like to acknowledge the following organizations for their support:
Eka Chemicals, Knauer, NovaSep, Rohm and Haas, TechniKrom

Symposium / Exhibit Manager

Ms. Janet Cunningham
BARR ENTERPRISES
P.O. Box 279
Walkersville, MD 21793 USA
Phone 301-668-6001 • FAX 301-668-4312 • Email Janetbarr@aol.com

Opinions expressed by individuals presenting abstracts & workshops are not necessarily the opinions of the PREP-2003 Symposium

TABLE OF CONTENTS

GENERAL INFORMATION

BADGES

A name badge must be worn by each registered participant and accompanying person in order to gain admittance to the meeting and social gatherings.

REGISTRATION

If you need assistance, please come to the Symposium Registration Desk.

PROGRAM

Lectures: Monday in the California Room; Tuesday in the California Room and Parallel Session #2 in the Colonial Room; Wednesday in the Colonial Room. Exhibits, Posters and Breaks will be located in the Grand Ballroom located next to the Colonial Room.

SPEAKER PREVIEW ROOM

For those who will give lecture presentations and wish to preview their material, they may do so in the Borgia Room located across from the Exhibit Hall.

FREE VENDOR WORKSHOPS

Free Vendor workshops are presented throughout the symposium. To attend, you must pre-register on-site at the booth of the sponsoring vendor as early as possible. Pre-registration required. Space is limited on a first-come, first-serve basis.

POSTER SESSIONS

- Posters are located in the Grand Ballroom (Exhibit Hall)
- Poster boards are labeled with the number corresponding to the abstract number in the Final Program Book (use Author Index on back of Final Program as reference)
- Posters with program numbers in the 100 series are displayed Monday only
- Posters with program numbers in the 200 series are displayed Tuesday only
- Authors presenting posters are requested to be in attendance at their poster board on the day of their poster presentation from 2:15pm to 3:30pm
- Monday poster presentations should be mounted on Monday between 8:30AM and 1PM, then removed between 3:45PM to 6PM
- Tuesday poster presentations should be mounted on Tuesday between 8:30AM and 1PM, then removed between 3:45PM to 6:00PM *(anything remaining after 6PM will be discarded)*

AUTHOR INDEX

The Author Index is located at the end of the Final Program Book

"L" preceding the abstract number = Lecture
"P" preceding the abstract number = Poster

EXHIBITS

The exhibition is an important component of the meeting, so please take the time to thank all the exhibitors for their support of the program. Exhibits are located in the Grand Ballroom. Exhibit hours: Sunday, 6:00 – 8:00 pm; Monday, 8:30 am – 6:30 pm; and Tuesday, 8:30 am – 7:00 pm.

SOCIAL PROGRAM

Sunday	Welcome Reception	Exhibit Hall	– complimentary to all registrants
Monday	RECEPTION (5:30PM)	Exhibit Hall	– sponsored by NovaSep complimentary to all registrants
Tuesday	RECEPTION (5:50PM)	Exhibit Hall	– complimentary to all registrants

PROCEEDINGS

The symposium proceedings will be published by Elsevier in the *Journal of Chromatography*. An original and three copies of the complete manuscript based on each lecture or poster presentation must be submitted to the journal representative during the meeting.

GENERAL INFORMATION

VENUE

Westin St. Francis Hotel
335 Powell Street
San Francisco, California 94102
Ph 415-397-7000 / Fax 415-774-0124 / Email stfra@westin.com

DIRECTIONS

Overlooking Union Square in the heart of downtown San Francisco is the historic Westin St. Francis Hotel located at 335 Powell Street (between Post and Geary). The hotel is surrounded by world class shopping, restaurants and theatres. Cable cars stop at the front door. Thirty minutes (12 miles) to San Francisco International Airport; 40 minutes (15 miles SE) to Oakland International Airport.

AIRPORT SHUTTLE

The SFO Airporter bus or van stops outside the Baggage Claim area at the median strip and at the hotel's Geary Street entrance. Busses/vans run from 5:00 a.m. to 10:30 p.m. and come at least once every half-hour, with additional vehicles running during peak periods. One-way charge is ~ $10. Allow 45-60 minutes total travel time. No reservations required.

TAXI

Taxis are available at the Airport Cab Stand, or outside the Powell Street entrance of the hotel. Approximate charge one-way: $35 excluding gratuity, for up to four people. Allow 30-45 minutes total travel time.

PARKING

The hotel offers valet, overnight parking at a rate of ~$39 per day, including in/out privileges. Nearby, several parking lots are located in the Union Square area. Average charge is $24 for overnight parking, with no in/out privileges.

FITNESS CENTER

St. Francis Health Club is located on the Arcade level in the main building. Offers specialty spa treatments, massages, manicures, pedicures and state-of-the-art fitness equipment in a luxurious surrounding. Locker rooms and top quality amenities including bath products, robes and slippers are available. Cost is $25 per stay or $10 per day.

MESSAGES/ NOTICES

Located near the Symposium Registration Desk will be a board for messages as well as for posting notices of positions available and positions wanted.

PHOTOGRAPHIC EQUIPMENT

The use of cameras is not permitted during program sessions. Cameras are permitted on the exhibit floor; however, permission from the exhibitors involved must be obtained before photographs can be taken.

CLIMATE

San Francisco enjoys a temperate marine climate and mild weather year-round. Temperatures seldom rise above 70°F (21°C) or fall below 40°F (5°C). Morning and evening fogs roll in during the summer months, but rarely persist. Visitors are most comfortable with a light jacket or coat handy, or in a suit. An all-weather coat will take the chill off cool evenings. Lightweight summer clothes are seldom practical in San Francisco.

FREE VENDOR WORKSHOPS

- To attend, Symposium registrants MUST PRE-REGISTER (see details below)
- Vendor booths are located in the Grand Ballroom on Monday & Tuesday
- Space is limited and pre-registration is required (first-come, first-serve)

MONDAY, JUNE 30

12:45-2:00pm

High Productivity Enantioselective Separations with Daicel Preparative HPLC Columns
Sponsored by Chiral Technologies / complimentary lunch provided
Meeting Room: Elizabethan A
Pre-registration at Chiral Technologies' booth required

— OR —

12:45-2:00pm

Integration of Separation Technologies for Global Process Optimization
Sponsored by NovaSep / complimentary lunch provided
Meeting Room: Elizabethan B
Pre-registration at NovaSep's booth required

— OR —

12:45-2:00pm

Novel Technologies to Facilitate the Expression and Purification of Recombinant Proteins at Process Scale: The ProteinChip System, Hydrophobic Charge Induction Chromatography and Immunoglobulin-Selective Mixed-Mode Chromatography
Sponsored by Ciphergen Biosystems / complimentary lunch provided
Meeting Room: Elizabethan C
Pre-registration at Ciphergen Biosystems' booth required

FREE VENDOR WORKSHOPS

TUESDAY, JULY 1

7:15-8:30am

Advances in Process Development
Sponsored by Amersham Biosciences Corporation / complimentary continental breakfast provided
Meeting Room: Elizabethan A
Pre-registration at Amersham Biosciences' booth required

— OR —

7:15-8:30am

Chiral Separations using Prep SFC
Sponsored by Thar Technologies / complimentary continental breakfast provided
Meeting Room: Elizabethan B
Pre-registration at Thar Technologies' booth required

— OR —

7:15-8:30am

Recent Developments in Preparative Chromatography
Sponsored by Waters / complimentary continental breakfast provided
Meeting Room: Elizabethan C
Pre-registration at Waters' booth required

— OR —

7:15-8:30am

Steady State Recycling (SSR), the SteadyCycle™
Sponsored by Hitachi High Technologies / complimentary continental breakfast provided
Meeting Room: Elizabethan D
Pre-registration at Hitachi High Technologies' booth required

12:45-2:00pm

New Generation of Portable Axial Compression Systems and Preparative Column Design
Sponsored by MODcol / complimentary lunch provided
Meeting Room: Elizabethan A
Pre-registration at MODcol's booth required

— OR —

12:45-2:00pm

New Large-Scale Applications for Optimum Preparative Purification Using the Kromasil High Performance Concept
Sponsored by Eka Chemicals / complimentary lunch provided
Meeting Room: Elizabethan B
Pre-registration at Eka Chemical's booth required

— OR —

12:45-2:00pm

Process Scale Liquid Chromatography Overview
Sponsored by TechniKrom / complimentary lunch provided
Meeting Room: Elizabethan C
Pre-registration at TechniKrom's booth required

— OR —

12:45-2:00pm

Introduction to Auto Prep - Automated Fraction Collection for Chiral and Achiral Chromatography Systems
Sponsored by PDR-Chiral / complimentary lunch provided
Meeting Room: Elizabethan D
Pre-registration at PDR Chiral's booth required

FREE VENDOR WORKSHOPS

WEDNESDAY, JULY 2

7:15-8:30am

Use of Advanced Concepts for the Design of the New QuikScale™ Column Line
Sponsored by Millipore / complimentary continental breakfast provided
Meeting Room: Elizabethan A
Pre-registration at Millipore's booth required

— OR —

CANCELLED

7:15-8:30am

Practical Out-Sourcing of Simulated Moving Bed (SMB) and Prep HPLC
Sponsored by Pharm-Eco / complimentary continental breakfast provided
Meeting Room: Elizabethan B
Pre-registration at Pharm-Eco's booth required

12:45-2:00pm

Bio-Rad Process Chromatography Media: UNOsphere™ Q and S Ion Exchange Supports; CHT™ Ceramic Hydroxyapatite Support
Sponsored by Bio-Rad Laboratories / complimentary lunch provided
Meeting Room: Elizabethan A
Pre-registration at Bio-Rad Laboratories' booth required

12:45-2:00pm
New

Analytical (the new Smartline), Preparative, and SMB Solutions
Sponsored by Knauer / complimentary lunch provided
Meeting Room: Elizabethan B
Pre-registration at Knauer's booth required

PREP-2003 Scientific Program

16th International Symposium, Exhibit & Workshops on
Preparative / Process Chromatography,
Ion Exchange, Adsorption / Desorption Processes
& Related Separation Techniques

Sunday, June 29, 2003

8:30am-5:30pm **Symposium Workshops (see below)**
must be pre-registered – $125 each

6:00-8:00pm **Symposium Registration & Welcome Reception**
(Location: Grand Ballroom-Exhibit Hall)

8:30-10:30am
Room: Elizabethan-A

Workshop 1: Gram to Kilogram Scale Preparative Chromatography
by Dr. Joan Newburger, Drug Development, Johnson & Johnson Consumer Products Worldwide

Parameters of Overloaded Elution Chromatography and the practical application of theory, Sample Self-Displacement, were well defined in the mid-1980's-mid 1990's. Current practical research in preparative chromatography is often focused on Simulated Moving Bed Chromatography and on up-stream and down-stream processing of biological compounds. These techniques do not address the needs of benchtop scale purification. With little attention to gram to kilogram separations at public forums, Overloaded Elution Chromatography has been relegated to the textbook and familiarity with the Sample Self-Displacement technique has declined. At recent symposia presentations, gram-kilogram applications have utilized less than optimal conditions for purification. This workshop will give step-by-step training in the development of a sample self-displacement separation. Two component and multicomponent mixtures will be discussed. The following topics will be included: what parameters are important, how to recognize a displacement effect, how to optimize throughput. After attending this workshop, the participant will be able to use the Sample Self-Displacement technique to produce milligrams to several kilos of purified materials. Special emphasis will be placed on the separation of enantiomers.

8:30-11:30am
Room: Elizabethan-B

Workshop 2: Mass Transfer in Liquid Chromatography
by Prof. Giorgio Carta, Dept. of Chemical Engineering, University of Virginia

This workshop covers the fundamentals of mass transfer and its effects in batch and column adsorption and ion exchange. The workshop begins with an overview of diffusion, boundary layer mass transfer, and transport in porous media, and proceeds through illustrations of the relationship between fundamental mass transfer properties and separation performance in process-scale chromatography. Engineering correlations to estimate the relevant physio-chemical parameters and modeling approaches for the design and optimization of chromatography processes are presented. Finally, spreadsheet-based simulation tools are provided to correlate and predict the effects of mass transfer in batch and column adsorption.

Sunday, June 29, 2003

1:00-3:00pm
Room: Elizabethan-A

Workshop 3: Preparative Chromatography, Drug Development Strategy, and Regulatory Requirements

by Dr. Joan Newburger, Drug Development, Johnson & Johnson Consumer Products Worldwide

While pharmaceutical synthetic processes generally incorporate crystallization techniques for purification, preparative chromatography can yield particular advantages, depending upon the stage of development. Modern synthetic strategies capitalize on the requirements for drug substance and intermediates at each phase of development and exploit chromatographic steps to achieve specific goals. This workshop will explore the different roles of preparative chromatography in Phases I, II and III of small molecule drug development. Emphasis will be placed on how regulatory requirements impact the ways in which chromatographic purification is employed. Toxicology implications of synthetic impurities will also be addressed. Additionally, FDA guidelines will be reviewed, in the context of producing tactical advantages or impediments to chromatographic usage. Registration requirements, with respect to validation and controls, will be addressed.

1:00-3:00pm
Room: Elizabethan-B

Workshop 4: Optimization of Preparative Separations

Instructors: Prof. Attila Felinger, University of Tennessee and Dr. Anita Katti, Kennesaw State University

Various strategies to optimize preparative separations are overviewed. The advantages of the different objective functions that take into account the production rate, recovery yield or solvent consumption to achieve both productive and economical separations are discussed. Guidelines are given how to select the essential column design and experimental parameters to be optimized. The performance of isocratic, gradient elution and displacement modes of chromatography are compared. It is demonstrated how beneficial the modeling of the separation processes is in order to save time and money when one tries to optimize preparative chromatography. Practical matters of selecting media, selecting columns and scale-up will also be presented.

3:30-5:30pm
Room: Elizabethan-A

Workshop 5: Determination and Modeling of Equilibrium Isotherm Data

Instructors: Alberto Cavazzini, Fabrice Gritti, Georges Guiochon, University of Tennessee, and Kathleen Mihlbachler, Pharmacia

An accurate set of competitive equilibrium isotherms is necessary for a correct prediction of the behavior of separation units using the chromatographic process, be it in overloaded elution chromatography, in displacement chromatography, or in simulated moving bed separations. Accordingly, in order to do computer-assisted optimization of separations, isotherm data must be measured accurately and modeled properly. Examples will be given that show that the use of incorrect isotherms would lead to failure. The three most useful methods of isotherm data acquisition will be described with emphasis on the sources of systematic and random errors and the means to avoid them. These methods are frontal analysis, the perturbation method, and the inverse method. Their advantages and inconvenients will be explained. Indications will be given on the best approaches available to model the data and to check the validity of the model obtained. The difficulties associated with the passage from a set of single-component isotherms to the corresponding set of competitive isotherms will be discussed.

Monday, June 30, 2003

Meeting Location: California Room

8:30am Registration & Exhibit Hall Open

8:55am Opening Remarks

CHAIR: PROFESSOR ATTILA FELINGER

9:00am (L-101) **A Family Approach for Evaluation Chromatography Performance Parameters During Extended Re-use** -- Yuan Xu, Genetech, Inc., South San Francisco, CA, USA; Kurt Brorson, Division of Monoclonal Antibodies, CBER, FDA, Bethesda, MD, USA; Janice Brown, Office of New Drug Chemistry, CDER, FDA, MD, USA

9:20am (L-102) **Multicomponent Protein Adsorption and Diffusion in Polyacrylamide-Based Hydrogels** -- Shawn Russell, Daniel Roper and Giorgio Carta, Department of Chemical Engineering, University of Virginia, Charlottesville, VA, USA

9:40am (L-103) **Assessment of Performance of Affinity Chromatography Adsorbents by Shallow Bed Experiments, Real Time Biosensors and Isothermal Titration Calorimetry** -- Alfred Zöchling[1], Rainer Hahn[1], Anne Tscheließnig[1], Manfred Schuster[2], Erich Wasserbauer[2] and Alois Jungbauer, [1]Institute of Applied Microbiology, University of Agricultural Sciences, Vienna, AUSTRIA; [2]IGENEON AG Krebs-Immuntheapie und –Forschungs AG, AUSTRIA

10:00am (L-104) **Relation of Microstructure of Chromatographic Adsorbents to Transport Rates** -- Yan Yao[1], Kirk Czymmek[2], Abraham Lenhoff[1], [1]Department of Chemical Engineering, University of Delaware, and [2]Delaware Biotechnology Institute, Newark, DE, USA

10:20am (L-105) **An Analysis of Non-Electrostatic Effects Associated with Protein Adsorption in Ion-Exchange Chromatography** -- Marvin E. Thrash, Jr. and Neville G. Pinto, Department of Chemical & Materials Engineering, University of Cincinnati, Cincinnati, OH, USA

10:40-11:10am **Pause / Exhibit / Posters** (Location: Grand Ballroom-Exhibit Hall)
Break co-sponsored by J.T. Baker, Division of Mallinckrodt Baker

Monday, June 30, 2003

Meeting Location: California Room

CHAIR: DR. ANITA M. KATTI

11:10am (L-106) **Modeling of Column Packing and Scale-Up** -- Ronald N. Keener, III, Erik J. Fernandez, University of Virginia, Department of Chemical Engineering, Charlottesville, VA, USA; Pedro Arduino, University of Washington, Department of Civil Engineering, Seattle, WA, USA

11:30am (L-107) **Using Simulations to Understand Flow Distribution in Large Chromatography Columns** -- Venkatesh Natarajan, Geoff Purdom, Millipore, Bedford, MA, USA

11:50am (L-108) **The Use of a 16 Transducer Ultrasound Array to Pack and Monitor the Compression of Media Throughout a Production Scale Chromatography Column** -- Martin Hofmann, David Johnson, Mary Cusack, Euroflow, Glos., UK

12:10pm (L-109) **Adsorption and Desorption Behavior of Plasmid DNA on Ion-Exchange Membranes** -- Mark A. Teeters, Thatcher W. Root, Edwin N. Lightfoot, Department of Chemical Engineering, University of Wisconsin-Madison, Madison, WI, USA

12:30-3:30pm **Pause / Workshops / Exhibits / Posters**

12:45-2:00pm **Free Vendor Workshop on High Productivity Enantioselective Separations with Daicel Preparative HPLC Columns**
Sponsored by Chiral Technologies / complimentary lunch provided
Meeting Room: Elizabethan A
Pre-registration at Chiral Technologies' booth required

12:45-2:00pm **Free Vendor Workshop on Integration of Separation Technologies for Global Process Optimization**
Sponsored by NovaSep / complimentary lunch provided
Meeting Room: Elizabethan B
Pre-registration at NovaSep's booth required

12:45-2:00pm **Free Vendor Workshop on Novel Technologies to Facilitate the Expression and Purification of Recombinant Proteins at Process Scale: The ProteinChip System, Hydrophobic Charge Induction Chromatography and Immunoglobulin-Selective Mixed-Mode Chromatography**
Sponsored by Ciphergen Biosystems / complimentary lunch provided
Meeting Room: Elizabethan C
Pre-registration at Ciphergen Biosystems' booth required

2:15-3:30pm **POSTER SESSION PRESENTATIONS**
Posters P-116 through P-148
Location: Grand Ballroom-Exhibit Hall

Monday, June 30, 2003

Meeting Location: California Room

CHAIR: PROFESSOR ANDREW SHALLIKER

3:30pm (L-110) **Adsorption of Monoclonal Antibodies to Cation Exchange Chromatography Media. A Study with Confocal Microscopy** -- Anders Ljunglöf[1], Anna Kjellgren[1], Chithkala Harinarayan[2], Jay Mueller[2], Robert Fahrner[2] and Robert van Reis[2], [1]Amersham Biosciences, Uppsala, SWEDEN; [2]Genentech, South San Francisco, CA, USA

3:50pm (L-111) **Comparison of Protein A Affinity Sorbents: Mass Transfer Properties, Sorption Equilibrium and Dynamic Capacity for Design of Optimal Scale** -- Rainer Hahn[1], Alfred Zöchling, Robert Schlegl[1,2], and Alois Jungbauer[1], [1]Institute for Applied Microbiology, University of Agricultural Sciences, Vienna, AUSTRIA; [2]Boehringer Ingelhein Austria, Vienna, AUSTRIA

4:10pm (L-112) **Novel Adsorbents and Columns for Expanded Bed Processes** -- Rolf Hjorth, Amersham Biosciences, Uppsala, SWEDEN

4:30pm (L-113) Talk cancelled and replaced with:

Revision **A Separation Nightmare: The Unusual Band Splitting of 4-tert-Butylphenol and Ethylbenzoate in RPLC** -- Fabrice Gritti, University of Tennessee, Knoxville, TN, USA

4:50pm (L-114) **Quantifying the Relationships Between Equilibrium Adsorption Capacity of Bovine Serum Albumin on Polypropyleneglycol-Sepharose and Salt Concentration, Ligand Type and Temperature** -- A. C. Dias-Cabral[a], A. S. Ferreira[a], J. Phillips[b], J. A. Queiroz[a] and N. G. Pinto[b], [a]Department of Chemistry, University of Beira Interior, Covilhã, PORTUGAL; [b]Department of Chemical & Materials Engineering, University of Cincinnati, Cincinnati, OH, USA

5:10pm (L-115) **Separation of Proteins on Affinity Polymeric Stationary Phase Prepared by Radiation-induced Graft Polymerization** -- Kwang-Pill Lee, Seong-Ho Choi and Young-Mi Hwang, Department of Chemistry Graduate School, Kyungpook National University, Daegu, SOUTH KOREA

5:30-6:30pm **RECEPTION - Sponsored by NovaSep** (Location: Grand Ballroom-Exhibit Hall)

Tuesday, July 1, 2003

7:15-8:30am	**Free Vendor Workshop on Advances in Process Development** Sponsored by Amersham Biosciences Corporation / complimentary continental breakfast provided Meeting Room: Elizabethan A Pre-registration at Amersham Biosciences' booth required
7:15-8:30am	**Free Vendor Workshop on Chiral Separations using Prep SFC** Sponsored by Thar Technologies / complimentary continental breakfast provided Meeting Room: Elizabethan B Pre-registration at Thar Technologies' booth required
7:15-8:30am	**Free Vendor Workshop on Recent Developments in Preparative Chromatography** Sponsored by Waters / complimentary continental breakfast provided Meeting Room: Elizabethan C Pre-registration at Waters' booth required
7:15-8:30am	**Free Vendor Workshop on Steady State Recycling (SSR), the SteadyCycle™** Sponsored by Hitachi High Technologies / complimentary continental breakfast provided Meeting Room: Elizabethan D Pre-registration at Hitachi High Technologies' booth required

Tuesday, July 1, 2003

Meeting Location: California Room

CHAIR: PROFESSOR GIORGIO CARTA

9:00am (L-201) **Impact of Periodically Modified Feed Concentrations During SMB Processes** -- H. Schramm[1], M. Kaspereit[1], A. Kienle[1,2], A. Seidel-Morgenstern[1,2], [1]Max-Planck-Institut Für Dynamik Komplexer Technischer Systeme, Magdeburg, GERMANY; [2]Otto-von-Guericke-Universität Magdeburg, Magdeburg, GERMANY

9:20am (L-202) **The Process Scale Separation of Enantiomers Exhibiting Non-Langmuirian Adsorption: A Comparison of the Simulated Moving Bed (SMB) and Steady State Recycling (SSR) Techniques** -- Charles M. Grill[1], Ming Zeng[1], Markus Juza[2], Kathleen Milhlbachler[1], [1]Pharmacia, Skokie, IL, USA; [2]CarboGen Laboratories (Aarau) AG, Aarau, SWITZERLAND

9:40am (L-203) **Real-Time Monitoring and Control of a Small-Scale SMB Unit from a Polarimeter-Derived Internal Profile** -- G. B. Cox, S. Khattabi and O. Dapremont[a], Chiral Technologies, Inc., Exton, PA, USA; [a]Aerojet Fine Chemicals, Sacramento, CA, USA

10:00am (L-204) **Enantioseparation and Experimental Optimization of Proprietary Pharmaceutical Compounds by SMB Chromatography** -- Kathleen Mihlbachler, Charles M. Grill, and Larry Miller, Pharmacia Corp., Skokie, IL, USA

10:20am (L-205) **Multi-Component Protein Separations by Size Exclusion SMB –** Joukje Houwing[2], Marcel Ottens[1], Ton van Baalen[3] and Luuk A.M. van der Wielen[1], [1]Kluyver Laboratory for Biotechnology, Delft University of Technology, Delft, NETHERLANDS; [2]Duphar Research, Weesp, NETHERLANDS; [3]Numico Research, Wageningen, NETHERLANDS

10:40-11:10am **Pause / Exhibit / Posters** (Location: Grand Ballroom-Exhibit Hall)
Break co-sponsored by J.T. Baker, Division of Mallinckrodt Baker

Tuesday, July 1, 2003

Meeting Location: California Room

CHAIR: PROFESSOR ABRAHAM LENHOFF

11:10am (L-206) **Isotherm Determination by the Inverse Method** -- Attila Felinger, Department of Chemistry, University of Tennessee, Knoxville, TN, USA

11:30am (L-207) **Comparison Between Adsorption Isotherm Determination Techniques and Overloaded Band Profiles on Four Batches of Monolithic Columns** -- Alberto Cavazzini, Department of Chemistry, University of Ferrara, Ferrara, ITALY; Attila Felinger, Department of Analytical Chemistry, University of Veszprem, Veszprem, HUNGARY

11:50am (L-208) **Preparative Loadability of Ionizable Compounds** -- Uwe D. Neue, Diane M. Diehl, Cecilia B. Mazza, Jie Y. Cavanaugh, Waters Corporation, Milford, MA, USA

12:10pm (L-209) **Un-Visible Zones and Fronts on Single and Binary LC Plateaus and Their Use for Competitive Isotherm Determination** -- Robert Arnell[1], Patrik Forssen[2], and Jörgen Samuelsson[1], Torgny Fornstedt[1], [1]Center for Surface Biotechnology, Uppsala, SWEDEN; [2]Dept. of Scient. Comp., Uppsala University, Uppsala, SWEDEN

12:30-3:30pm **Pause / Workshops / Exhibits / Posters**

12:45-2:00pm **Free Vendor Workshop on New Generation of Portable Axial Compression Systems and Preparative Column Design**
Sponsored by MODcol / complimentary lunch provided
Meeting Room: Elizabethan A
Pre-registration at MODcol's booth required

12:45-2:00pm **Free Vendor Workshop on New Large-Scale Applications for Optimum Preparative Purification Using the Kromasil High Performance Concept**
Sponsored by Eka Chemicals / complimentary lunch provided
Meeting Room: Elizabethan B
Pre-registration at Eka Chemical's booth required

12:45-2:00pm **Free Vendor Workshop on Process Scale Liquid Chromatography Overview**
Sponsored by TechniKrom / complimentary lunch provided
Meeting Room: Elizabethan C
Pre-registration at TechniKrom's booth required

12:45-2:00pm **Free Vendor Workshop on Introduction to Auto Prep - Automated Fraction Collection for Chiral and Achiral Chromatography Systems**
Sponsored by PDR-Chiral / complimentary lunch provided
Meeting Room: Elizabethan D
Pre-registration at PDR Chiral's booth required

2:15-3:30pm **POSTER SESSION PRESENTATIONS**
Posters P-223 through P-259
Location: Grand Ballroom-Exhibit Hall

Tuesday, July 1, 2003

Meeting Location: California Room

PARALLEL SESSION #1 (California Room)

CHAIR: DR. KATHLEEN MIHLBACHLER

3:30pm (L-210) **Large Scale Continuous Chromatography: What is the Best Batch Size?** -- O. Dapremont, Aerojet Fine Chemicals, Rancho Cordova, CA, USA

3:50pm (L-211) **New Techniques to Optimize the Eluent Consumption of the VARICOL Process** -- O. Ludemann-Hombourger[1], M. Bailly[2], R. M. Nicoud[1], P. Adam[1], [1]NOVASEP, Pompey, FRANCE; [2]Laboratoire des Sciences du Génie Chimique, Nancy, FRANCE

4:10pm (L-212) **A New Continuous Chromatography--Simulated Moving Bed Chromatographic Focusing** -- Qi-Feng Ma, Archidex, Torrance, CA, USA

4:30pm (L-213) **Optimization of the Number of Columns in a VARICOL Process –** Abdelaziz Toumi, University of Dortmund, Dortmund, GERMANY

4:50pm (L-214) **Chiral and Achiral Separations Using the New Novasep Supercritical Fluid Chromatograph** -- Manon S. Villeneuve, Pamela S. Williams, Analytical Science Department, GlaxoSmithKline, RTP, NC, USA

5:10pm (L-215) **A Closer Look at the Use of Supercritical Fluid in SFC –** Mohamed Shaimi, FRANCE

5:30pm (L-216) **Nutraceutical Purification: Preparative Scale Separation of Lipids using Supercritical Fluid Chromatography** -- Jose L. Martinez, Mayank Sahni, Thar Technologies, Pittsburgh, PA, USA

5:50-6:50pm **RECEPTION** (Exhibit Hall)

7:00pm **Exhibit Closed**

Tuesday, July 1, 2003

Meeting Location: Colonial Room, next to Grand Ballroom-Exhibit Hall

PARALLEL SESSION #2 (Colonial Room)

CHAIR: PROF. KANJI MIYABE

3:30pm (L-217) **The Isolation of the Active Constituents in Natural Materials Using 'Heart-cutting' Isocratic Reversed Phase-Reversed-Phase Two-Dimensional LC** -- R. A. Shalliker and V. Wong, School of Science Food and Horticulture, University of Western Sydney, NSW 1797, AUSTRALIA

3:50pm (L-218) **Ion Exchange Monoliths for Protein Polishing, Scale-Up Factors** -- Larry J. Cummings, Danni Wang, Bio-Rad Laboratories, Hercules, CA, USA

4:10pm (L-219) **UNOsphere Phenyl: High Productivity Bioseparation Media** -- Jia-li Liao, Bio-Rad Laboratories, Life Science Group, Hercules, CA, USA

4:30pm (L-220) **The Influence of Protein 3D Structure Properties on Mass Transfer Characteristics in Ion-Exchange Chromatography with Dextran Grafted Agarose Resins** -- Gunnar Malmquist and Karol Lacki, Protein Separations R&D, Amersham Biosciences, Uppsala, SWEDEN

4:50pm (L-221) **Scale Up of Bioseparation Using Swift Monolithic Columns –** Shaofeng Xie, Tao Jiang, Jason Kraska, Robert W. Allington, Isco, Inc., Lincoln, NE, USA

5:10pm (L-222) **Comparison and Optimization of Different Operating Principles for Capture Step on Protein A Resin** -- Karol Lacki[1] and Hans Johansson[2], [1] Amersham Biosciences, Uppsala, SWEDEN; [2]Amersham Biosciences, Piscataway, NJ, USA

5:30pm **Pause**

5:50-6:50pm **RECEPTION** (Exhibit Hall)

7:00pm **Exhibit Closed**

Wednesday, July 2, 2003

Meeting Location: Colonial Room

7:15-8:30am **Free Vendor Workshop on Use of Advanced Concepts for the Design of the New QuikScale™ Column Line**
Sponsored by Millipore / complimentary continental breakfast provided
Meeting Room: Elizabethan A
Pre-registration at Millipore's booth required

7:15-8:30am **Free Vendor Workshop on Practical Out-Sourcing of Simulated Moving Bed (SMB) and Prep HPLC**
CANCELLED
Sponsored by Pharm-Eco / complimentary continental breakfast provided
Meeting Room: Elizabethan B
Pre-registration at Pharm-Eco's booth required

CHAIR: PROFESSOR KRZYSZTOF KACZMARSKI

9:00am (L-301) **"State Of The Union" On Mass Directed Purification Of Compound Libraries. An Assessment Of The Technique: Past And Present And Future Prospects.** D. B. Kassel, Syrrx, Inc., San Diego, CA , USA

9:20am (L-302) **Physical Programming Based Multiobjective Optimization Strategies for Preparative Chromatography** -- Deepak Nagrath, Achille Messac#, B. Wayne Bequette and S. M. Cramer, Howard P. Isermann, Department of Chemical Engineering, Rensselaer Polytechnic Institute, Troy, NY, USA; #Department of Mechanical Engineering

9:40am (L-303) **Process Chromatography for Pharmaceutical Development and Manufacturing - Case Study of a Novel Chiral Drug Candidate** -- Olav Lyngberg, Zerene Clarin, Kurt Yanagimachi, Yeung Chan, Engineering Technology, Bristol-Myers Squibb, New Brunswick, NJ, USA

10:00am (L-304) **Application of Preparative Reversed-Phase Liquid Chromatography for the Isolation of a Pharmaceutical Process Intermediate** -- Leo Hsu, Tricia Hong, Michelle Buehrle, Gerald Terfloth and John Filan, GlaxoSmithKline Pharmaceuticals, King of Prussia, PA, USA

10:20am (L-305) **Large-Scale High Performance Liquid Chromatography of Pneumocandin B_0.** -- Joseph Nti-Gyabaah, Firoz D. Antia, Mary Ellen Dahlgren and Kent E. Göklen, Merck & Co. Inc., BioProcess R&D, Rahway, NJ, USA

10:40-11:10am **Pause**

Wednesday, July 2, 2003

Meeting Location: Colonial Room

CHAIR: ANDREAS SEIDEL-MORGENSTERN

11:10am (L-306) **Strategies, Technical and Economic Requirements in Large Scale Chromatography** -- Gregor Mann, SCHERING AG, Chemical Development, Department of Chemical Engineering, Berlin, GERMANY

11:30am (L-307) **Moment Equations of Chromatography Using Monolithic Stationary Phases** -- Kanji Miyabe, Nagoya Inst. of Technology, Nagoya, JAPAN

11:50am (L-308) **Replacing Protein A Sorbents for the Large-Scale Manufacture of Recombinant Antibodies: Hydrophobic Charge Induction Chromatography and Immunoglobulin-Selective Mixed-Mode Chromatography** -- Sylvio Bengio, Egisto Boschetti, Jim Spencer and Warren Schwartz, BioSepra, Process Division Ciphergen Biosystems, Inc., Fremont, CA, USA

12:10pm (L-309) **From Crude to Pure. The Chromatographic Purification of Standards - A Case Study** -- Elke Huthmann, Ernst Freund, Jan Priess, Markus Juza, CarboGen Laboratories AG, Aarau, SWITZERLAND

12:30pm-2:00pm **Pause**

12:45-2:00pm **Free Vendor Workshop on Bio-Rad Process Chromatography Media: UNOsphere™ Q and S Ion Exchange Supports; CHT™ Ceramic Hydroxyapatite Support**
Sponsored by Bio-Rad Laboratories / complimentary lunch provided
Meeting Room: Elizabethan A
Pre-registration at Bio-Rad Laboratories' booth required

12:45-2:00pm **Free Vendor Workshop on Analytical (the new Smartline), Preparative, and SMB Solutions**
Revision
Sponsored by Knauer / complimentary lunch provided
Meeting Room: Elizabethan B
Pre-registration at Knauer's booth required

Wednesday, July 2, 2003

Meeting Location: Colonial Room

CHAIR: PROFESSOR TORGNY FORNSTEDT

2:00pm (L-310) **Six Sigma and Liquid Chromatography: Reducing Purification Costs for High Value Products** -- Lou Bellafiore, Kevin Henretta and John Walker, TechniKrom Inc., Evanston, IL, USA; and Ed Monberg, ImmvaRx, Inc., Rockford, IL, USA

2:20pm (L-311) **Basic Studies to Support the Development of Preparative Chromatographic Separation Processes for Charged Biomolecules** - Vesela Malinova, Ruth Freitag, Christine Wandrey, Laboratory of Chemical Biotechnoloty, Institute of Chemical and Biological Process Science, Swiss Federal Institute of Technology, Lausanne, SWITZERLAND

2:40pm (L-312) **Recent Developments in Preparative-Scale Isoelectric Trapping Separations** -- Gyula Vigh, Evan Shave, Peniel Lim, Sanjuv Lalwani, Ann Hwang, Chemistry Department, Texas A&M University, College Station, TX, USA

3:00pm **Adjourn**

Poster Presentations --- Monday, June 30, 2003

Session Times: 2:15 - 3:30 p.m.

P-116 **Purification of Plasmid DNA on CHT Ceramic Hydroxyapatite Type II Support –** Cheryl Aberin, Bio-Rad Laboratories, Hercules, CA, USA

P-117 **Removal of Aggregate from an IgG4 Product Using CHTE Ceramic Hydroxyapatite Support** -- Samuel G. Franklin, Separation Technologies, Bio-Rad Laboratories, Hercules, CA, USA

P-118 **Solubility Considerations of Preparative SFC** -- Jennifer L. Lefler, Manon Villeneuve, CASS:Analytical Sciences, GlaxoSmithKline, Research Triangle Park, NC, USA

P-119 **Electrostatic Contributions to Retention and Selectivity of FGF-1 and FGF-2 on Cation Exchangers** -- Peter DePhillips[1], Yan Yao and Abraham Lenhoff, Department of Chemical Engineering, University of Delaware, Newark, DE, USA; [1]Merck and Co., West Point, PA, USA

P-120 **Downstream Processing of Supercoiled Plasmid DNA** -- Raf Lemmens, Lena M. Sandberg and Jozef Vasi, R&D Separations, Amersham Biosciences AB, Uppsala, SWEDEN

P-121 **The Application of ProteinChip® Technology to Protein Expression, Purification and Analysis** -- Warren Schwartz, Steve Cleverly, Patrick Santambien, and Egisto Boschetti, BioSepra, Process Division Ciphergen Biosystems, Inc., Fremont, CA, USA

P-122 **Rapid Protein Purification Using Large Swift Monolithic Columns** -- Shaofeng Xie, Tao Jiang, Jason Kraska, Robert W. Allington, Isco, Inc., Lincoln, NE, USA

P-123 **Mathematical Modelling of the Simulated Moving Bed Chromatography Including Solvent Adsorption-Desorption Processes** -- Tibor Szanya[a], Antal Aranyi[b], Sándor Kováts[b], Krisztina Temesvári[b], János Argyelán[a], László Hanák[a], Melinda Nagy[a], Zoltán Molnár[a], [a]University of Veszprém, Veszprém, HUNGARY; [b]Gedeon Richter Pharmaceutical Works Ltd., Budapest, HUNGARY

P-124 **Adsorption Separation of Terpene Lactones from Ginkgo Biloba L. Extract Using C18 Hydrophobic Membranes Prepared by Self-Assembled Monolayer Method** -- I-Fan Su, Shing-Yi Suen, Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan, R.O. CHINA; Li-Jen Chen, Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan, R.O. CHINA

P-125 **Separation and Purification of Proteins/Antibodies: Media Evaluation and Comparison** -- Nandu Deorkar, Joe Mladosich, Bob Buss, Paul Bouis, Mallinckrodt Baker, Inc., Phillipsburg, NJ, USA

P-126 **Model Development and Optimisation of an Ion Exchange Capture Step** -- Niklas Jakobsson, Guido Zacchi, Bernt Nilsson, Department of Chemical Engineering 1, Lund Institute of Technology, Lund, SWEDEN

P-127 **Model Based Determination of the Operating Condition of an Ion-Exchange Chromatography Step Using Different Elution Gradients** -- David Karlsson, Anders Axelsson, Bernt Nilsson, Department of Chemical Engineering 1, Lund Institute of Technology, Lund, SWEDEN

Poster Presentations --- Monday, June 30, 2003

Session Times: 2:15 - 3:30 p.m.

P-128 **BioSep Toolbox - A Set of Numerical Tools for Analysis, Optimization and Design of Chromatography Columns** -- Bernt Nilsson, Per Borgqvist, Fredrik Lintorp, Caroline Berg, Markus Svensson and Anna-Karin Nordin, Department of Chemical Engineering, Lund University, SWEDEN

P-129 **A Method for Characterisation of a Continuous Super Macro Porous Matrix** -- Patrik Persson[1], Fatima Plieva[2,3], Oxana Baybak[4], Igor Galaev[2], Anders Axelsson[1] and Bernt Nilsson[1], [1]Dept. of Chemical Engineering I, Lund Institute of Technology, Lund, SWEDEN; [2]Dept. of Biotechnology, Lund University, Lund, SWEDEN; [3]Protista International AB, Bjuv, SWEDEN; [4]Institute of Organoelement Compounds, Russian Academy of Sciences, Moscow, RUSSIA

P-130 **A Calorimetric Study of the Interactions of Homo-deoxyoligonucleotides with a Hydrophobic Interaction Support** -- Jessica Phillips and Neville G. Pinto, Department of Chemical & Materials Engineering, University of Cincinnati, Cincinnati,OH, USA

P-131 **Automated Downstream Preparation of Recombinant Proteins Produced in the Baculovirus System at the Lab-Scale Level** -- J.-M. Schlaeppi, E. Weber, B. Gunn, B. Kerins, A. Berner, Y. Pouliquen, S. Geisse, K. Memmert, H.P. Kocher, M. Mahnke, Novartis Pharma Research, Central Technologies, Basel, SWITZERLAND

P-132 **Hydrophobic Interaction Chromatography at Low Salt Concentration for the Capture of Monoclonal Antibodies** -- Yoshio Kato, Koji Nakamura, Takashi Kitamura, Masazuimi Hasegawa, Hiroo Sasaki, Nanyo Research Laboratory, Tosoh, Yamaguchi, JAPAN

P-133 **Characterization of Equilibrium Adsorption Behavior of Protein-Salt Systems Using the H-Root Method: Comparison Between Microseparators and Conventional Packed Columns** -- Blanca H. Lapizco-Encinas and Neville G. Pinto, Department of Chemical & Materials Engineering, University of Cincinnati, Cincinnati, OH, USA

P-134 **High Performance Chromatographic Resin for Peptides and Oligonucleotides** -- J. Fisher, J. Maikner, J. Bohling, W. Zabrodski, A. Gehris, M. Kinzey, and M. Vanderhoff, Rohm and Haas Company, Spring House, PA, USA

P-135 **Studies on Coagulation Factor VIIa Binding Charge to Different Anion Exchange Media** -- Thomas Budde Hansen, Department of Protein Separation, CMC Development, Novo Nordisk A/S, Gentofte, DENMARK

P-136 **Quantitative Study of Electrokinetic Transport in Porous Media by Confocal Laser Scanning Microscopy[1,2]** -- Ulrich Tallarek and Erdmann Rapp, Institut für Verfahrenstechnik, Otto-von-Guericke-Universität Magdeburg, Magdeburg, GERMANY

P-137 **Preconcentration of Proteins on Chip Using a Photoinitiated Polymer Monolith Containing Immobilized Tannic Acid** -- Louise M. Barrett[1], Frantisek Svec[2], Yolanda Fintschenko[3], [1]Loughborough University, Loughborough, Leicestershire, UK; [2]University of California, Berkeley, CA, USA; [3]Sandia National Laboratories, Livermore, CA, USA

Poster Presentations --- Monday, June 30, 2003

Session Times: 2:15 - 3:30 p.m.

P-138 **Enrichment of His-Tagged Proteins with a New UNOsphere IMAC Resin** -- Hong Chen, Xuemei He, and Lee Olech, BioMaterials Division, Life Science Group, Bio-Rad Laboratories, Hercules, CA, USA

P-139 **Purification of Immunoglobulins from Unclarified Rabbit Antiserum by High Gradient Magnetic Fishing** -- Cláudia S. G. Gomes, Inga Pakalnyte, Timothy J. Hobley and Owen R. T. Thomas, Center for Process Biotechnology, BioCentrum-DTU, Technical University of Denmark, Lyngby, DENMARK

P-140 **Effect of Support Characteristics on Protein A Affinity Media Performance –** Glen D. Kemp, Justin McCue, Duncan Low, Fred Mann and Amanda Turton, Millipore Corporation, Bedford, MA, USA

P-141 **Elimination of a Non-Specifically Bound Protein During Affinity Chromatography – A Case Study** -- Glen D. Kemp, Linda Taylor, Fred Mann and Amanda Turton, Millipore Corporation, Bedford, MA, USA

P-142 **A Single-step Purification of Recombinant VEGF-2 from Mammalian Culture Supernatant by Blue Sepharose Chromatography** -- Guihang Zhang, Raye Melka, Diana Chinchilla, and Yuling Li, Department of Process Development, Human Genome Sciences, Inc., Rockville, MD, USA

P-143 **Improved Monoclonal Antibody Separation from Its Degradation/Aggregation Products by a Fused Two-Step Elution Method in Large-Scale Liquid Chromatography** -- Guihang Zhang, Diana Chinchilla, Erik Blatter, Jilcia Henriquez, Jennifer Grason, Raye Melka, Olga Galperina, and Yuling Li, Department of Process Development, Human Genome Sciences, Inc., Rockville, MD, USA

P-144 **Particle Size Distribution Effects in Batch Adsorption** -- Antonio Ubiera, Giorgio Carta, Department of Chemical Engineering, University of Virginia, Charlottesville, VA, USA

P-145 **Mass-Based Fraction Collection - An Efficient Technique for the Purification of Synthetic Peptides** -- Ralf Moritz, Agilent Technologies, Waldbronn, GERMANY; Nicola O'Reilly, Cancer Research, London, UK

P-146 **The Bio-Rad Cation Exchange Resin UNO Sphere S Application with AAV Purification –** Jullia Zhen, Bio-Rad Laboratories, Hercules, CA, USA

P-147 **Novel Capture Steps in Large Scale Purifications** -- Jeffrey A. Kaster and Jack Liu, Biotage, Inc. A Dyax Corp. Company, Charlottesville, VA, USA

P-148 **Gel-Filtration on Sephadex G-25 Media** -- Victor V. Khassanov, Konstantyn A. Dychko, Tatyana T. Kuriaeva, Tomsk State University, Tomsk, RUSSIA

Poster Presentations --- Tuesday, July 1, 2003

Session Times: 2:15 - 3:30 p.m.

P-223 **Preparative Isolation of Natural or Synthetic Compounds by Centrifugal Partition Chromatography** -- Gaëlle Pamantung-Le Crouerour[1], Thomas N. Villaseñor[2], François de La Poype[1], Richard M. Devereaux[2], [1]Kromaton Technologies S.A., Angers, FRANCE; [2]Richard Scientific, Inc., Novato, CA, USA

P-224 **Flexibility in Mass-Based Fraction Collection: Optimizing Conditions for Maximum Purity and Recovery** -- Wayne P. Duncan, Douglas McIntyre, Patrick Perkins, Agilent Technologies, Palo Alto, CA, USA

P-225 **Fundamental Characteristics of Synthetic Adsorbents from the Aspect of Industrial Chromatographic Separation** -- Tadashi Adachi and Eiji Isobe, Separation Materials Laboratory, Specialty Chemicals Research Center, Mitsubishi Chemical Corporation, Yokohama, JAPAN

P-226 **High Performance Liquid Chromatographic Determination of Malathion with Molybdenum** -- G. M. Mastoi and M. Y. Khuhawar, Dr. M. A. Kazi Institute of Chemistry, University of Sindh, Sindh, PAKISTAN

P-227 **Optimization of a New SMB Technology Working as Single Column System Exemplary on Glucose Fructose** -- Peter Pötschacher, Vogelbusch GmbH, Vienna, AUSTRIA

P-228 **Effect on the Enantiomer Elution Profiles of the Heterogeneity of a Molecularly-Imprinted Polymer Used as a Stationary Phase in Affinity Chromatography** -- Brett J. Stanley, Department of Chemistry, California State University, San Bernardino, CA, USA; Yibai Chen, Fox Chase Cancer Center, Biotech Facility, Philadelphia, PA, USA; Borje Sellergren, Department of Inorganic Chemistry and Analytical Chemistry, Johannes Gutenberg University, Mainz, GERMANY; Georges Guiochon, Department of Chemistry, University of Tennessee, Knoxville TN and Division of Analytical Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, USA

P-229 **Quick Scheme Method Development for Pirkle-Type Chiral Stationary Phases** -- Ted Szczerba, Regis Technologies, Inc., Morton Grove, IL, USA

P-230 **Chiral Autoprep** -- Gary W. Yanik, PDR-Chiral Inc., Lake Park, FL, USA

P-231 **Semi-preparative and Preparative Reverse Phase HPLC Purification of Fluorescent Probes** -- Jan E. True, Brian Hoyland, Kyle Gee, Separations Department, Molecular Probes Inc., Eugene, OR, USA

P-232 **Supercritical Fluid VARICOL® Process** -- F. Denet, W. Majewski, O. Ludemann-Hombourger, NOVASEP, Pompey, FRANCE

P-233 **Intergration of Purification Techniques in the Process Development** -- Elias Ndzié, O. Ludemann-Hombourger, NOVASEP, Pompey, FRANCE

Poster Presentations --- Tuesday, July 1, 2003

Session Times: 2:15 - 3:30 p.m.

P-234 **Study of the Adsorption Process of Pesticides in Cork** -- V. Domingues[1], A. Alves[2], M. Cabral[3], C. Delerue Matos[1], [1]CEQUP/ Instituto Superior de Engenharia do Instituto Politécnico do Porto, Porto, PORTUGAL; [2]LEPÆ/ DEQ/ Faculdade de Engenharia da Universidade do Porto, Porto, PORTUGAL; [3]Investigação e Desenvolvimento, Amorim & Irmãos, Mozelos, PORTUGAL

P-235 **Investigation of Amylbenzene Adsorption in Different RP-HPLC Systems –** Magorzata Gubernak, Wojciech Zapaa, Krzysztof Kaczmarski, Faculty of Chemistry, Rzeszów University of Technology, Rzeszów, POLAND

P-236 **Mass-Directed Normal-Phase Preparative HPLC with APCI Detection of Drug-Like Compounds** -- Michael A. Chlenov, Michael Z. Kagan, Discovery Analytical Chemistry, Chemical Sciences, WYETH Research, Princeton, NJ, USA

P-237 **Development of a Chromatographic Separation for the Purification of a Pediatric Anesthetic** -- Anita M. Katti, T. Evers, J. Carpenter and H. Guerrero, Kennesaw State University Department of Chemistry and Biochemistry, Kennesaw, GA, USA

P-238 **Multiple Uses of Industrial Scale HPLC for Sequential Purification of CANCIDAS –** Tim Schimmel, John Parcells, Kevin Seibert and Firoz Antia, Merck Manufacturing Division and Merck Research Labs., Merck and Co., Inc., Whitehouse Station, NJ, USA

P-239 **Preparative Enantioselective Chromatographic Isolation of Readily Racemized Enantiomers --** Michael Breslav, Rosie Chang, Michael Greco, Yong Guo, Chan Ko, Bruce Maryanoff, Cynthia Maryanoff, Mitul Patel, Rekha Shah, Yun Qian, Johnson & Johnson Pharmaceutical Research and Development, Spring House, PA, USA

P-240 **Comparisons and Characteristics of Novel Adsorbents for Expanded Bed Processes** -- Johan Englund, Jean-Luc Maloisel, Nicolas Thevenin, Annika Näsman, Katarina Stenklo, Protein Separations R&D, Amersham Biosciences, Uppsala, SWEDEN

P-241 **Comparison of Monolithic and Particulate Stationary Phases: Hydrodynamics and Adsorption Capacity[1-3]** -- Ulrich Tallarek and Felix C. Leinweber, Institut für Verfahrenstechnik, Otto-von-Guericke-Universität Magdeburg, Magdeburg, GERMANY

P-242 **The Development of a New Platform Based Upon S.F.C. for High Throughput Purification** -- John Burnett[1], Elizabeth Farrant[1], Gregory Jonas[2], Andy Organ[2], Ajit Shah[2], [1]Technology Development-Chemistry, [2]Computational, Analytical and Structural Sciences, Discovery Research, GlaxoSmithKline Pharmaceuticals, Essex, UK; Krystyna Holden, Steve Jordan, Liz Wood, Analytical Sciences Department, Millenium Pharmaceuticals R&D Ltd, Cambridge, UK

P-243 **Cost Analysis of a Semi-Preparative SFC for the Support of both Enantiomeric Purification and Combichem on the 1-100 Gram Scale** -- Jennifer Smith, Terry Berger, Berger Instruments, Newark, DE, USA

P-244 **A New Mini-Preparative SFC** -- Jennifer Smith, Terry Berger, AutoChem Berger SFC, Newark, DE, USA

Poster Presentations --- Tuesday, July 1, 2003

Session Times: 2:15 - 3:30 p.m.

P-245 **SPME-GC-MS Analysis of Garlic Oil Obtained by Hydrodistillation**. M.G. Lopez, O. Calvo-Gomez, and J. Morales-Lopez, Unidad de Biotecnologia e Ingenieria Genetica del Centro de Investigacion y de Estudios Avanzados, Unidad Irapuato, Gto. MEXICO

P-246 **Comparative Study of Spherical Silica Vs. Granular Silica** -- Kazunori Nobuhara, Itaru Suzuki, Fuji Silysia Chemical Ltd, Lausanne, SWITZERLAND; Lucien Charles, Timothy O'Mara, Fuji Silysia Chemical SA

P-247 **Fast Automated Screening for Preparative Chromatographic Enantiomer Separations** -- E. Freund[1], E. Huthmann[1], M. Juza[1], A. Vasella[2], [1]Carbogen AG, Aarau, SWITZERLAND; [2]Laboratorium für Organische Chemie, Zürich, SWITZERLAND

P-248 **A High Throughput Purification Process Unencumbered by Limitations of Technique** -- Manuel C. Ventura, William P. Farrell, Kathleen L. Tivel, Raylyn DeGuzman, David Dalesandro, Christine M. Aurigemma, Phuong Tran, Kimberly Sasher, Alex Yanovsky, Jeffrey Wheatley, Charlie Koch, Pfizer Global R & D-La Jolla, San Diego, CA, USA

P-249 **Solid Phase Microextraction Coupled to GC-MS was Used to Investigate Flavor Volatiles Changes on Avocado Puree After Microwave Processing** -- M.G. Lopez, G.R. Guzman, and A.L. Dorantes, Unidad de Biotecnologia e Ingenieria Genetica del Centro de Investigacion y de Estudios Avanzados, Unidad Irapuato and Instituto Politecnico Nacional de Mexico, MEXICO

P-250 **A New Continuous Chromatography---Simulated Moving Bed Chromatographic Focusing** -- Qi-Feng Ma, Archidex, Torrance, CA, USA

P-251 **Heterogeneous Adsorption of 1-Indanol on Cellulose Tribenzoate and Adsorption Energy Distribution of the Two Enantiomers** -- Gustaf Götmar[1], Dongmei Zhou[1], Brett J. Stanley[3] and Georges Guiochon[1,2], [1]Department of Chemistry, The University of Tennessee, Knoxville, TN, USA; [2]Division of Chemical and Analytical Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, USA; [3]Department of Chemistry, California State University, San Bernardino, CA, USA

P-252 **Cost-Effective Chiral Separation by Preparative HPLC** -- Akio Ichikawa, Katsunori Taniguchi, Naohiro Kuriyama, YMC Co., LTD, Ishikawa, JAPAN

P-253 **Practical Aspects of Scale-up in Reverse-Phase Chromatography** -- Paul M. Lubas, et al., Amersham Biosciences, Piscataway, NJ, USA

P-254 **A Totally Automated Solution for Normal and RP Preparative HPLC with Analytical Purification Determination** -- Joan M. Stevens, Applications, Gilson, Inc., Middleton, WI, USA (presented by C. Johnson)

P-255 **A Media Overview: The Types, Coverages, Modes Of Operation And Some Of Its Dirty Little Secrets.** Paul A. Bouis, Nandu Deorkar, Research and Technology, Mallinckrodt Baker, Inc., Phillipsburg, NJ, USA

Poster Presentations --- Tuesday, July 1, 2003

Session Times: 2:15 - 3:30 p.m.

P-256 **Competitive Multilayer Adsorption Equilibria. Adsorption Model and Chromatographic Process Dynamics** -- Wojciech Piatkowski[#a], Dorota Antos[#], Fabrice Gritti[a] and Georges Guiochon[a*], [a]Department of Chemistry, The University of Tennessee, Knoxville, TN, USA, and Division of Chemical and Analytical Sciences, Oak Ridge National Laboratory, Oak Ridge, TN; [#]Faculty of Chemistry, Rzeszów University of Technology, Rzeszów, POLAND

P-257 **A Novel Clay-Based Chiral Stationary Phase for Preparative and Process Enantiomeric Separations** -- Takashi Ogawa, Isao Tanaka, Chromatographic Science Labs., Shiseido Research Center, Yokohama, JAPAN; Fujihiro Kanda, Shiseido Co., Ltd., Tokyo, JAPAN

P-258 **Extraction Dibenzo-24 Kraun-8 by the Method of Preparative Liquid Chromatography** -- Sayfullo I. Dustov, Nurali Q. Mukhamadiev, Shuhrat M. Sayitkulov, Hudoykul F. Hafisov, Department of Chemistry, Samarkand State University, Samarkand, UZBEKISTAN

P-259 **Fat-acid and Triglyceride Composition of Oils Extracted from Various Sorts of Cotton** -- Nurali Q. Mukhamadiev, Sayfullo I. Dustov, Shuhrat M. Sayitkulov, Ismoil M. Ergashev, Department of Chemistry, Samarkand State University, Samarkand, UZBEKISTAN

EXHIBITORS

AEROJET FINE CHEMICALS
P.O. Box 13222, Sacramento, CA 95813, USA
Phone: 916-351-8620 / Fax: 916-355-2459
Web: www.aerojetfinechemicals.com
Exhibiting: Aerojet Fine Chemicals, specializing in chromatographic separations, high containment production, and energetic chemistry; manufactures APIs and registered intermediates--all in our modern cGMP facilities. Aerojet Fine Chemicals operates the largest MCC unit in the USA and provides separations services at all scales. From gram to multi-ton quantities, we deliver.

AMERICAN LEWA, INC.
132 Hopping Brook Road, Holliston, MA 01746, USA
Phone: 1-888-LEWA123/ Fax: 508-429-8615
Web: www.americanlewa.com
Exhibiting: A leading manufacturer of sanitary, hermetically sealed diaphragm pumps. Featuring a hygienic product for accurate metering and gentle transfer applications in the biopharmaceutical, cosmetic, and food industries. Pumps meet 3-A sanitary, ASME BPE 1997, FDA requirements and 3rd party testing for cleanability.

AMERSHAM BIOSCIENCES CORP.
800 Centennial Avenue, P.O. Box 1327, Piscataway, NJ 08855-1327, USA
Phone: 800-526-3593 or 732-457-8000 / Fax: 877-295-8102
Web: www.amershambiosciences.com
Exhibiting: Amersham Biosciences Corp, the life science business of Amersham plc (LSE, NYSE, OSE: AHM), is a world leader in developing and providing integrated systems and solutions for disease research, drug development and manufacture. Featured at the booth will be ÄKTA™pilot, a sanitary system for rapid process development and small scale production.

ARTISAN INDUSTRIES INC.
73 Pond Street, Waltham, MA 02451-4594, USA
Phone: 781-893-6800 / Fax: 781-647-0143
Web: www.artisanind.com
Exhibiting: Artisan will again exhibit its proprietary product recovery, product purification and solvent management technologies for prep, pilot and commercial liquid and SMB chromatography operations. Technologies range from the portable, thin film ProTherm* 50 evaporator, an alternative to large rotary evaporators, to the family of larger, horizontal, thin film Rototherm* evaporators.

BIO-RAD LABORATORIES, INC.
2000 Alfred Nobel Drive, Hercules, CA 94547, USA
Phone: 1-800-4BIORAD / Fax: 510-741-5800
Web: www.discover.bio-rad.com
Exhibiting: Bio-Rad's chromatography business is built on long-term customer relationships. We provide columns, media and hardware for all scales of chromatography. Through innovative technologies, quality products, and striving to satisfy our customers, Bio-Rad has built its reputation over more than 45 years and become the # 2 supplier of process chromatography media.

EXHIBITORS

CARBOGEN LABORATORIES, a part of Solutia's Pharmaceutical Services
Schachenallee 29, 5001 Aarau, SWITZERLAND
Phone: 011-41-62-836 4800 / Fax: 011-41-62-836 4810
Web: www.psd-solutia.com
Exhibiting: Specializes in providing research-based pharmaceutical companies with process R&D, analytical development and the rapid synthesis of API supplies prepared to cGMP. Our chromatographic center of excellence offers a flexible and customized service for the separation and purification of lead compounds and intermediates. The group specializes in developing and scaling up chromatographic separations to multi-kg quantities using Medium Pressure and High Pressure Liquid Chromatography (MPLC/HPLC) and Simulated Moving Bed Chromatography (SMB) all within a cGMP environment. The recent acquisition of a second SMB unit and the installation of a 20 cm ID HPLC system signify the growth of chromatography in the pharmaceutical industry and our dedication to the incorporation of chromatographic purifications into the reaction sequence when necessary.

CHIRAL TECHNOLOGIES, INC.
730 Springdale Drive, P.O. Box 564, Exton, PA 19341, USA
Phone: 610-594-2100 / Fax: 610-594-2325
Web: www.chiraltech.com
Exhibiting: Chiral Technologies, Inc., specializes in enantiomeric separation products and services for the pharmaceutical and related industries. Products offered are Daicel HPLC, chiral columns and bulk chiral chromatography media. Prep chromatography services are available at Technical Centers in Philadelphia and Strasbourg, France for chiral resolutions from gram to multi-KG scale.

CIPHERGEN BIOSYSTEMS, BIOSEPRA PROCESS DIVISION
6611 Dumbarton Circle, Fremont, CA 94555, USA
Phone: 510-505-2100 / Fax: 510-505-2101
Web: www.ciphergen.com
Exhibiting: Ciphergen Biosystems develops, manufactures and markets products designed to facilitate biopharmaceutical process development and improve protein manufacturing productivity. Ciphergen will present their newest tools for antibody purification - Hydrophobic Charge Induction Chromatography sorbents. In addition, Ciphergen will present its ProteinChip(r) System, a tool to accelerate protein expression optimizing, protein purification and in-process analysis during protein manufacturing.

DAISO CO., LTD., Fine Chemicals Division
10-8, Edobori 1-chome, Nishi-Ku, Osaka 550-0002, JAPAN
Phone: 011-81-6-6443-5996 / Fax: 011-81-6-6445-5787
E-mail: tmukai@daiso.co.jp
Web: www.daiso.co.jp
Exhibiting: NEW DAISOGEL High Surface Area Series Superior Retentivity and Extraodinary Loadability with Surface area:450m2/g, Pore diameter:100 angstrom, Pore colume:1.10 ml/g.

EKA CHEMICALS – AKZO NOBEL
204 Spring Hill Road, Trumbull, CT 06611, USA
Phone: 203-459-4376 / Fax: 203-452-0904
Web: www.kromasil.com
Exhibiting: Kromasil® is a spherical silica-based HPLC packing developed for analytical to process-scale applications. It is offered as Bulk and slurry-packed columns. Kromasil® has superior mechanical and chemical stability together with high available surface area. Product offerings include Kromasil® 100Å - silica, C4, C8, C18 and NH_2; Kromasil 60Å - silica and CN; Kromasil® Chiral phases.

EXHIBITORS

EMD CHEMICALS
480 South Democrat Road, Gibbstown, NJ 08061, USA
Phone: 856-423-6300 / Fax: 856-224-0742
Web: www.emdchemicals.com
Exhibiting: EMD Chemicals is the US associate of Merck KGaA Darmstadt Germany. We offer the full range of Merck Chromatography products for process and research applications. The range includes irregular standardized Silicas, TLC Silicas, high performance spherical silicas, Fractogel® resins for biochromatography and Benzonase® Endonuclease enzyme for DNA/RNA removal applications. Also available is the highly successful preparative column packing system for preparative columns of 25, 50 and 100mm internal diameters.

ESSENTIAL LIFE SOLUTIONS LTD.
1415 Hyde Park Avenue, Boston, MA 02136-2699, USA
Phone: 617-326-0444 / Fax: 617-326-0443
Web: www.essential-life.net
Exhibiting: HPLC chromatography columns in glass and acrylic. Our goal is to provide innovative products, services and support. The product lines have been developed to maximize process reliability, ease of use, low maintenance, safety, and economics. Our product lines include: Econoline® Lab Columns, Media-Flex® Lab Columns, Upscale® Process Columns.

EUROFLOW GROUP
Brimscombe Port Business Park, Stroud, Gloucester GL5 2QN, UK
Phone: 011-44-1453-885774 / Fax: 011-44-1453-883323
Web: www.euroflow.net
Exhibiting: Euroflow's new range of Resolute™ chromatography columns for contained operation provide an excellent platform for process chromatography from pilot to manufacturing scale. Resolute columns maintain a common design from 180 to 2000 mm diameter and exhibit identical Pressure Flow curves, linear up to 1000cm/hr at which the pressure is 0.1 bar. A range of engineered solutions incorporates hydraulic actuation for axial packing techniques and easier column maintenance. Resolute columns support true linear scale-up of both the purification performance and column packing methods and are suitable for use at high linear velocities.

GILSON, INC.
3000 W. Beltline Highway, P.O. Box 620027, Middleton, WI 53562-0027, USA
Phone: 800-445-7661 / Fax: 608-831-4451
Email: sales@gilson.com
Web: www.gilson.com
Exhibiting: Gilson, Inc. is a leading manufacturer of high-quality, dependable liquid chromatography and automated liquid handling instruments for the pharmaceutical and biotechnology industries. Product lines include a full range of HPLC systems—from nano to preparative—along with high-throughput robotic workstations and protein crystallography workstations designed for high-throughput screening for hanging, sitting, and microbatch crystallography.

EXHIBITORS

GRACE VYDAC
7500 Grace Drive, Columbia, MD 21044, USA
Phone: 800-247-0924 / Fax: 888-244-6610
Web: www.gracevydac.com
Exhibiting: Grace Vydac – A global standard for HPLC columns and media, has recently acquired MODcol Corporation a manufacturer of preparative chromatography columns and provider of custom column packing services. This acquisition reaffirms Grace Vydac's commitment to the preparative chromatographer and improves our capabilities to deliver high-performance separation products, from analytical scale through process purification. Products include EVEREST™ columns and media for ultra high resolution of proteins and peptides, DENALI™ columns and media for small molecule separations of basic and acidic compounds, MODcol's spring loaded dynamic axial compression (DAC) columns and traditional preparative and process scale columns up to 100mm inner diameter, MOCcol's versatile Multipacker Packing Station, as well as bulk media for large scale production. Nano to process scale offerings enable complete scale-up with one product line.

HITACHI HIGH TECHNOLOGIES AMERICA
3100 North First Street, San Jose, CA 95134, USA
Phone: 408-432-0520
Web: www.hitachi-hta.com
Exhibiting: Hitachi product offering includes analytical and The LaChrom Elite, Amino Acid Analyzer, LC/MS spectrometers, High Throughput Purification systems. Hitachi's Separation Systems Group is a full solution vendor with regional offices strategically located across the United States with fully capable labs for customer support and training.

IRIS TECHNOLOGIES
3008 Oxford Road, Lawrence, KS 66049, USA
Phone: 785-842-8499 / Fax: 785-842-8499
Web: www.iristechnologies.net
Exhibiting: IRIS HPLC systems for analytical and preparative chromatography called IPro™ Series. ChromSword interfaces with Agilent 1100/ Chemstation and other LC systems to perform automated method development. Put mixture in autosampler, define parameters using a wizard, click GO and go home. Chiris™-QN and Chiris™-QD – chiral separations of acidic compounds in analytical and preparative scale.

ITOCHU SPECIALTY CHEMICALS
660 White Plains Road, Tarrytown, NY 10591, USA
Phone: 1-800-423-6870 or 914-333-7800 / Fax: 914-333-7848
www:Diaion.com, Itochu-sc.com
Exhibiting: Itochu Specialty Chemicals (ISC) is a worldwide distributor of specialty products and chemicals. As of April 1st 2003, ISC became the distributor of Mitsubishi Chemical Ion exchange Resins and Adsorbents in North, Central, and South America. With the recognized name brands such as Diaion, Sepabeads, and MCI Gel, ISC and Mitsubishi Chemical will work together in providing high quality resin and technical support to our valued customers. Our resin selection varies from the analytical (3 µm to 15 µm), to the preperative (15 µm to 150 µm), to the industrial (> 150 µm) in such applications as Ion Exchange, Reverse Phase, Hydrophobic Interaction, and Gel Filtration. Stop by our booth #37 to meet some of our ISC technical staff to discuss resin selection and do not miss the Mitsubishi Chemical Poster Presentation titled "Fundamental Characteristics of Synthetic Adsorbents from the Aspect of Industrial Chromatographic Separation".

EXHIBITORS

KNAUER
ASI Advanced Scientific Instruments
38 Hegauer Weg, 14163 Berlin, GERMANY
Phone: 011 49 30 809727 0 / Fax: 011 49 30 8015010
Email: info@knauer.net / Web: www.knauer.net
Exhibiting: We proudly introduce our completely new line of instruments for HPLC entitled "Smartline". Furthermore, we exhibit a WellChrom Prep HPLC system and one of our SMB (Simulated Moving Bed) systems.

MILLIPORE CORPORATION
290 Concord Road, Billerica, MA 01821, USA
Phone: 1-800-645-5476 / Fax: 1-800-645-5439
Web: www.millipore.com/biopharm
Exhibiting: From drug development to production, Millipore delivers solutions and services for primary recovery, purification, viral clearance, aseptic processing, sterile filling, QA/QC, and water purification. We offer expertise in processing biologics and classical pharmaceuticals, including recombinants, MAbs, vaccines, plasma, gene medicines, and synthetic drugs. Visit us at booth # 9 or at www.millipore.com/biopharm to Discover the More in Millipore™.

MODCOL CORPORATION
155 East Main Avenue, Suite 150, Morgan Hill, CA 95037-7521, USA
Phone: 408-782-5844 / Fax: 408-782-2336
Web: www.modcol.com / www.gracevydac.com
Exhibiting: MODcol Corporation -- A manufacturer of preparative chromatography columns and provider of custom column packing services has recently been acquired by Grace Vydac, a global standard for HPLC columns and media. This acquisition reaffirms Grace Vydac's commitment to the preparative chromatographer and improves our capabilities to deliver high-performance separation products, from analytical scale through process purification. Products include EVEREST™ columns and media for ultra high resolution of proteins and peptides, DENALI™ columns and media for small molecule separations of basic and acidic compounds, MODcol's spring loaded dynamic axial compression (DAC) columns and traditional preparative and process scale columns up to 100mm inner diameter, MOCcol's versatile Multipacker Packing Station, as well as bulk media for large scale production. Nano to process scale offerings enable complete scale-up with one product line.

NOVASEP, INC.
23 Creek Circle, Boothwyn, PA 19061, USA
Phone: 610-494-0447
Site Eiffel, Boulevard de la Moselle, BP50 – F-54340 Pompey, FRANCE
Phone: 011-33(0)3 383 49 70 00
Web: www.novasep.com
Exhibiting: NOVA*SEP* is a world leader in large-scale chromatography services and equipment for the pharmaceutical, biotech and fine chemical industries. Information on Batch Liquid Chromatography, Multi-column Chromatography Systems (Varicol and Simulated Moving Bed), GC and SFC equipment and services will be available at the conference.

PALL LIFE SCIENCES
2200 Northern Blvd., East Hills, NY 11548, USA
Phone: 516-484-3600 / Fax: 516-484-3877
Web: www.pall.com
Exhibiting: Pall offers the broadest line of separation and purification products and services for Biopharmaceutical manufacturers. Featured products include Pall's NEW Aseptic Connection Device, T-style Kleenpak™ Nova filter capsules, Ultipor® VF virus filters, Mustang® membrane chromatography

units, Prosette™, Minimate™, and Microza™ TFF units, Palltronic™ integrity test instruments for 21 CFR Part II-compliant users, Palltronic Filter Manager for filterability tests, and expanded Technical Services.

PDR-CHIRAL INC.
1331A South Killian Drive, Lake Park, FL 33403, USA
Phone: 561-841-4195 / Fax: 561-841-4196
Web: www.pdr-chiral.com
Exhibiting: PDR-Chiral manufactures the Advanced Laser Polarimeter(ALP), with more sensitivity and linear dynamic range than any other polarimeter. Flow cells are available for HPLC, SFC, analytical, prep, SMB and Process applications. Other products include: AutoCalc, AutoPrep and AutoSMB software (automate chiral calculations and control purifications automatically); complete Method Development Systems (MDS) – SFC & HPLC; Prep systems for chiral and non-chiral applications; and Contract Services, including chiral method development, purification, and consulting.

PEEKE SCIENTIFIC
570 El Camino Real PMB 441
Redwood City, CA 94063, USA
Phone: 888-440-4752 / Fax: 650-651-1638
Web: www.peekescientific.com
Exhibiting: Peeke Scientific manufactures/distributes preparative chromatography products as follows: Columns--HPLC/MPLC steel, glass and acrylic construction for small molecules/peptides/proteins. Packing Media--silica/polymer/zirconia-based materials for reversed phase, normal phase, and ion-exchange of small molecules/peptides/proteins. Instrumentation--HPLC/MPLC in both modular and Skid construction. Accessories--column heaters, splitters, switching valves, and fluid transfer fittings.

PHARM-ECO, A JOHNSON MATTHEY COMPANY
25 Patton Road, Devens, MA 01432, USA
Phone: 978-784-5000 / Fax: 978-784-5500
Web: www.pharmeco.com
Exhibiting: Pharm-Eco, A Johnson Matthey Company provides API development and manufacturing services to the pharmaceutical industry (benchtop through commercialization). By combining our asymmetric synthesis and full range of chromatographic separations capabilities (lab scale to metric ton) with Johnson Matthey's chiral catalysis expertise, we are able to provide the total chiral solution.

PHENOMENEX, INC.
411 Madrid Avenue, Torrance, CA 90501-1430, USA
Phone: 310-212-0555 / Fax: 310-328-7768
Email: info@phenomenex.com
Web: www.phenomenex.com
Exhibiting: Achieve exceptional loadability with up to 20% less media. Luna 100Å, Synergi 80Å and Jupiter 300Å medias exceed the demands of any reversed phase or normal phase purification of small molecules or intact proteins. Unique silica and bonding technologies provide increased loadability, 1.5 to 10 pH stability, superior mechanical strength and exceptional resistance to particle sheering for long column lifetimes and to withstand multiple axial compression packings.

POLYMER LABORATORIES, INC.
Amherst Fields Research Park, 160 Old Farm Rd., Amherst, MA 01002, USA
Phone: 413-253-9554 / Fax: 413-253-2476
Web: www.polymerlabs.com
Exhibiting: Polymer Laboratories manufactures a range of polymeric HPLC materials for analysis/purification of peptides, oligonucleotides and proteins. PLRP-S reversed phase and cation/anion exchange materials are available in a range of particle and pore sizes, as packed columns and loose media, chemically stable pH 1-14, IM CIP compatible.

EXHIBITORS

REGIS TECHNOLOGIES, INC.
8210 Austin Avenue, Morton Grove, IL 60053, USA
Phone: 800-323-8144 / Fax: 847-967-1214
Web: www.registech.com
Exhibiting: An FDA-inspected, cGMP-compliant API manufacturer with over forty years of experience in custom synthesis of pharmaceutical ingredients and chromatography products. Manufacturer of specialty HPLC columns, Chiral HPLC columns and packings, ion-pairing reagents, and GC derivatization reagents. A leader in chiral chromatography since the 1980's. We manufacturer a full line of Pirkle-type CSP's and offer a free chiral screening service. A full customer service, technical, and sales staff is available to assist you. Our support staff is dedicated to assisting customers with method development and column or reagent selection.

RICHARD SCIENTIFIC, INC.
285 Bel Marin Keys Blvd., P.O. Box 5249, Novato, CA 94948, USA
Phone: 415-883-2888 / Fax: 415-382-1922
Web: www.richardscientific.com
Exhibiting: New EasiFlash and JumboFlash flash chromatography systems and components, featuring gradient gear pumps with flow rates from 25-750 mL/minute. No gas pressure or compression chambers required! Also featuring the Kromaton Fast Centrifugal partition Chromatography (FCPCT) system: no solid phase required, 100% sample recovery (material balance) guaranteed.

ROHM AND HAAS ADVANCED BIOSCIENCES
100 Independence Mall West, Philadelphia, PA 19106-2399, USA
Phone: 215-592 2503 / Fax: 215-409 4534
Web: www.amberchrom.com
Exhibiting: Rohm and Haas Advanced Biosciences is introducing its new Amberchrom® XT polymeric reverse phase polishing resins. Designed for high value protein, peptide, and oligonucleotide polishing applications, Amberchrom XT resins provide higher pressure stability than Amberchrom® CG resins. Single step product purifications in excess of 95% purity have been demonstrated while retaining the high capacity characteristics of the Amberchrom CG resins.

SSI/LABALLIANCE
349 N. Science Park Rd., State College, PA 16803, USA
Phone: 800-441-4752 or 814-234-7311 / Fax 814-238-6072
Web: www.laballiance.com
Exhibiting: Prep 250 is the first in a series of high performance preparative chromatography pumps featuring a compact triplex pumping design. The use of three pistons and a linear stroke profile gives low pulsation at all flows and minimizes refill rates. Flow rates are from 1 mL/min. to 250 mL/min.

TECHNIKROM, INC.
1801 Maple Avenue, Evanston, IL 60201, USA
Phone: 800-865-4100 / Fax: 800-293-5059
Web: www.technikrom.com
Exhibiting:TechniKrom is a fully U.S. owned corporation providing technologically advanced products and services for LC purification in the pharmaceutical, biotech and fine chemicals industries. TechniKrom® products include: a full line of columns and automated systems for HPLC, MPLC, LPLC, UF and SMB applications; ancillary LC equipment such as automated buffer/solvent preparation systems, fraction collection vessels and tanks; and custom made bulk LC packing medias and pre-packed columns. TechniKrom's services include equipment start-up and IQ/OQ validation, LC process development and contract GLP and cGMP purifications.

EXHIBITORS

THAR TECHNOLOGIES, INC.
100 Beta Drive, Pittsburgh, PA 15238, USA
Phone: 412-967-5665 / Fax: 412-967-9446
Web: www.thartech.com
Exhibiting: As "The leaders in Supercritical Fluids" Thar provides instrumentation and services in the areas of SFC, SFE, and particle formation. Thar also offers cost-effective components such as new syringe pumps, reciprocating pumps and reaction system for high pressure and supercritical applications.

VARIAN, INC.
2700 Mitchell Drive, Walnut Creek, CA 94598, USA
Phone: 800-926-3000 / Fax: 925-945-2206
Email: cust.serv@varianinc.com
Web: www.varianinc.com
Exhibiting: Varian, Inc. offers a broad range of instrumentation and related equipment for diverse applications. We will display a comprehensive array of HPLC products and a full line of consumable sample preparation products, including solid phase extraction devices for a variety of applications. Varian systems are uniquely suited for scale-up as well as dedicated preparative HPLC.

WATERS CORPORATION
34 Maple Street, Milford, MA 01757, USA
Phone: 508-478-2000 / Fax: 508-482-2614
Web: www.waters.com
Exhibiting: The Waters Autopurification™ System, featuring FractionLynx™ UV software is designed for analytical to prep scale chromatography. Based on the high-performance Waters 1525EF binary HPLC pump, Waters 2996 Photodiode Array Detector, Waters Fraction Collector III and XTerra® Prep Columns this system is a complete end to end solution for purification.

WHATMAN
9 Bridewell Place, Clifton, NJ 07014, USA
Phone: 973-773-5800 / Fax: 973-773-2231
Web: www.whatman.com
Exhibiting: Whatman manufactures chromatography media designed for capture and purification of commercially important biomolecules. Recent advances include Express-Ion ion exchange media, which has been shown to be effective for Suspended Bed chromatography – a novel technique which combines batch adsorption with column elution.

YMC CO., LTD.
YMC Karasuma-Gojo Bld., 284 Daigo-cho, Karasuma Nishiiru Gojo-dori Shimogyo-ku, Kyoto 600-8106, JAPAN
Japan Phone: 011-81-75-342-4567 / Fax: 011-81-75-342-4568
US Phone: 610-392-5067 / Fax 610-882-0812
Europe: Phone: 011-49-02586-9192 0 / Fax: 011-49-02856-919222
Web: www.ymc.co.jp
Exhibiting: YMC is a leading supplier of chromatographic materials and columns for preparative HPLC. YMC also provides contract synthesis and purification services. Leading chromatography products include the production and sale of silica based separations media for chromatography for the separation of chiral and achiral molecules. Products are available in a variety of phases, pore and particle sizes, and are media is sold in 100 gram to multi-ton quantities. Durability, low cost, and product reproducibility are a few of the features of YMC products that allow cost effective separations for our customers. Please visit our booth for a complete listing of products and services.