

CHIRALITY 2009

21st International Symposium on Chirality

Preliminary Scientific Program

Sunday, July 12, 2009

Educational Training / Short Courses

– Must pre-register in order to attend –

Short Course 1: Chiroptical Spectroscopy of Pharmaceuticals and Biomolecules

Times: 8:30am – 12:00 pm
Location: Peak Meeting Room 1 (third floor)
Instructors: Prof. Prasad Polavarapu, Vanderbilt University
Prof. Nina Berova, Columbia University

Chiral molecules have become invaluable components for drug development and in understanding drug-DNA interactions. To understand these interactions, it is necessary to know the absolute configuration and predominant conformation that a chiral molecule has in its interaction with DNA. To facilitate the structural analysis, pharmaceutical companies have invested, in recent years, a large amount of resources in establishing a facility often termed as “Chiral Tool Box”. This “Tool Box” contains chiroptical spectroscopic equipment and concomitant computational methods for analyzing the chiroptical spectra. Biochemists and synthetic chemists have in the past depended on X-ray crystal structural analysis for determining the absolute configurations of proteins and chiral organic/inorganic molecules synthesized in their labs. However, not all proteins or chiral organic/inorganic molecules can be crystallized, so these chemists are forced to find laborious alternate methods. Chiroptical spectroscopic methods provide a convenient solution to these problems. As chiroptical spectroscopic methods are used for investigating the substances in solution phase, the need for crystallization is completely avoided. As a result, Chiroptical spectroscopy represents the latest trend that is being used increasingly by pharmaceutical companies, biochemists and synthetic chemists. This short course provides the necessary background and practical details for using chiroptical spectroscopic methods. Four chiroptical methods that will be discussed in this short course are: Vibrational circular dichroism (VCD), Vibrational Raman optical activity (VROA), Electronic circular dichroism (ECD/FDGD) and Optical rotatory dispersion (ORD). For each of these methods the experimental methods for measurements will be discussed first. Then the computational methods for analyzing the experimental data will be introduced. Emphasis will be placed on literature examples from pharmaceutical and biological chemistry illustrating the applications of these methods on molecular and supramolecular levels. The advantages (sometimes necessity) of using simultaneously more than one chiroptical method will also be pointed out.

Short Course 2: Introduction to Chiral Separations

Times: 8:30 am – 12:00 pm
Location: Peak Meeting Room 2 (third floor)
Instructor: Prof. Daniel W. Armstrong, University of Texas at Arlington

This introductory short course is designed for researchers faced with separation or analysis of enantiomeric compounds. The goal of the course is to familiarize the participants with the best available options when confronted with the need for chiral separations. The first part of the material to be covered will include a review of the terminology of chirality and a brief overview of the theory behind enantiomeric separations. In addition, new products and techniques will be discussed. Participants should have a basic knowledge of organic chemistry and chromatography and have previous experience with routine HPLC (reverse phase and normal phase).

Sunday, July 12, 2009

Educational Training / Short Courses

– Must pre-register in order to attend –

Short Course 3: Supramolecular Stereochemistry in Liquid Crystals

Times: 1:00 – 4:30 pm
Location: Peak Meeting Room 1 (third floor)
Instructor: Prof. David M. Walba, University of Colorado, Boulder

Stereochemistry in soft materials (liquid crystals, polymers, and gels) is extremely rich, and maintains an aura of complexity due, in part, to the highly “flexible” nature of their structure. With regard to issues of chirality, thermotropic liquid crystals (LCs), which are typically global free energy minima occurring in a large ensemble of small organic molecules, have until recently been quite simple. LCs formed from achiral molecules or racemic mixtures are achiral, while all LCs formed from enantiomerically enriched compounds must be chiral. The latter fact of symmetry (i.e. an ensemble, or phase, of unichiral molecules cannot possess reflection symmetry) led to the theoretical proposal, then experimental realization, of LC phases with polar symmetry driven by chirality combined with layering and tilt. This, in turn, provides measurable and useful, macroscopic electric dipoles in the absence of applied fields. The situation became even more interesting in the late 1990s with the discovery of spontaneous reflection symmetry breaking (and nonpolar symmetry breaking) in LCs – a complex but satisfying story. In this short course, stereochemistry in highly “flexible” systems will be introduced in the context of molecular topological stereoisomerism, (e.g. molecular Mobius strips, knots and links). The basics of LC phase structure, and current thinking about the key free energy terms driving these structures, will then be discussed, followed by a description of the phenomenology and applications of electrically polar LCs, including prospects for utilization of polarity in LCs for high throughput measurement of enantiomeric excess. Finally, the rich stereoisomerism occurring in bent-core, or banana phase materials, including spontaneous reflection symmetry breaking will be discussed. The soft materials community is still divided with regard to the physical reasons for this novel conglomerate formation in fluid phases; models will be explored.

Short Course 4: Preparative Chiral Separations

Times: 1:00 – 4:30 pm
Location: Peak Meeting Room 2 (third floor)
Instructor: Dr. Christopher J. Welch, Merck & Co., Inc.

This course will present an introduction to modern preparative chiral chromatography. A general introduction to tools and techniques will provide practical background on how to approach small, intermediate, and large scale preparative chromatographic resolutions. Several practical case studies from the pharmaceutical industry will be presented, and general strategies for approaching chromatographic resolutions will be discussed. Attendees are encouraged to bring problems or situations for classroom discussion.

Sunday, July 12, 2009

4:00 pm **Symposium Registration Open**

5:30 pm **OPENING REMARKS & PRESENTATION OF CHIRALITY MEDAL**
Location: Peak Meeting Room 5 (third floor)

5:50–6:50 pm **Chirality Medal Award Lecture**

A Chiral Space Odyssey. Ben L. Feringa, Stratingh Institute for Chemistry, Zernike Institute for Advanced Materials & Center for Systems Chemistry, University of Groningen, Nijenborgh 4, 9747 AG Groningen, THE NETHERLANDS

7:00–9:00 pm **Chirality Medal Reception**
Location: Coppertop II (second floor)

Monday, July 13, 2009

8:00 am Symposium Registration Open

8:30 am – 5:00 pm EXPOSITION

Session 1. SPECTROSCOPY

Location: Peak Meeting Room 5 (third floor)

Chair: Nina Berova, Columbia University

8:30 am **Raman Optical Activity and its Applications in Chiral Molecular, Supramolecular and Biomolecular Science.** Laurence D. Barron, Christian Johannessen, Josef Kapitán, Lutz Hecht, WestCHEM, Department of Chemistry, University of Glasgow, Glasgow G12 8QQ, UK [PLENARY LECTURE]

9:10 am **The Application of Vibrational Circular Dichroism (VCD) Spectroscopy to the Determination of the Stereochemistries of Chiral Molecules.** Phillip J. Stephens, University of Southern California, Los Angeles, CA, USA [PLENARY LECTURE]

9:50 am **Coffee Break in the Blue River Room, exhibit/poster area**

Session 1A. SPECTROSCOPY

Location: Peak Meeting Room 5 (third floor)

Chair: Nina Berova, Columbia University

- 10:10 am **Links, Crosslinks, and Tangles on the Way to DNA-Directed Assembly of Organic Materials.** James W. Canary, Department of Chemistry, New York University, New York, NY 10003, USA [KEYNOTE LECTURE]
- 10:40 am **Conformational Sensitivity of Chiroptical Spectroscopic Methods.** Prasad L. Polavarapu, Department of Chemistry, Vanderbilt University, Nashville, TN 37235, USA [KEYNOTE LECTURE]
- 11:10 am **Pause**
- 11:20 am **Robust Modes In Vibrational Circular Dichroism Spectra.** Valentin Paul Nicu, Evert Jan Baerends, Theoretical Chemistry, Vrije Universiteit Amsterdam, De Boelelaan 1083, 1081 HV Amsterdam, THE NETHERLANDS
- 11:40 am **Chiroptical Analysis of Lipids & Glycolipids by Vibrational Circular Dichroism.** Kenji Monde, Masataka Shibata, Atsufumi Nakahashi, Masumi Fukuzawa, Tohru Taniguchi, Nobuaki Miura, Shin-Ichiro Nishimura, Laboratory of Chemical Biology, Graduate School of Advanced Life Science, Frontier Research Center for Post-genome Science and Technology, Hokkaido University, Kita 21 Nishi 11, Sapporo 001-0021, JAPAN
- 12:00 pm **Two-Photon Circular Dichroism: The Experimental Demonstration.** Carlos Toro¹, Leonardo de Boni¹, Na Lin², Fabrizio Santoro³, Antonio Rizzo³, Florencio E. Hernandez^{1,4}, ¹Department of Chemistry, University of Central Florida, P. O. Box 162366, Orlando, FL 32816-2366, USA; ²Department of Theoretical Chemistry, Royal Institute of Technology, AlbaNova, S-106 91 Stockholm, SWEDEN; ³Istituto per i Processi Chimico-Fisici del Consiglio Nazionale delle Ricerche (IPCF-CNR), Area della Ricerca, Via G. Moruzzi 1, I-56124 Pisa, ITALY; ⁴The College of Optics and Photonics, CREOL, University of Central Florida, P.O. Box 162366, Orlando, FL 32816-2366, USA
- 12:20 pm **PAUSE, EXHIBITS, POSTERS, VENDOR SEMINARS** (lunch on own)
Exhibits and Posters are located in the Blue River Room
- 12:30–1:30 pm **FREE VENDOR SEMINAR Sponsored by Phenomenex**
“A Welcome Change to the Chiral Industry. How Phenomenex corporate capabilities in chiral solutions can impact your work.” (20 mins)
“Reversed-Phase vs. Normal Phase: Which Should Be the Primary Separation Mode Screened in Chiral Method Development?” (25 mins)
Location: Peak Meeting Room 1 (third floor)
- 1:30–3:00 pm **POSTER PRESENTATIONS – Blue River Room**

Monday, July 13, 2009

Session 1B. SURFACE – SUPRAMOLECULAR

Location: Peak Meeting Room 4 (third floor)

Chair: Dan Armstrong, University of Texas at Arlington

- 10:10 am **Aspects of Chirality in Molecular Monolayers.** Karl-Heinz Ernst, Molecular Surface Science, Nanoscale Materials Science Laboratory, Empa – Swiss Federal Laboratories for Materials Testing and Research, Dübendorf, SWITZERLAND [KEYNOTE LECTURE]
- 10:40 am **Molecule by Molecule Tracking of Chiral Recognition and Self Assembly: A Submolecular Insight by Scanning Tunnelling Microscopy.** Magali Lingenfelder¹, G. Tomba², G. Costantini¹, Y. Wang¹, A. De Vita², K. Kern¹, ¹Max-Planck-Institute for Solid State Research, Heisenbergstr. 1 D-70569 Stuttgart, GERMANY; ²Physics Department, King's College London, Strand, London WC2R 2LS, UK [KEYNOTE LECTURE]
- 11:10 am **Pause**
- 11:20 am **Synthesis and Structure of Optically Active pi-Stacked Polymers.** Tamaki Nakano, Takeshi Sakamoto, Division of Biotechnology and Macromolecular Chemistry, Graduate School of Engineering, Hokkaido University, Kita 13, Nishi 8, Kita-ku, Sapporo 060-8628, JAPAN
- 11:40 am **Large Effects of Chirality on Deslipping Reactions of Diastereomeric Rotaxanes and Relevant Mechanism Involving Pre-equilibrium.** Keiji Hirose, Yamato Nakamura, Yoshito Tobe, Division of Frontier Materials Science, Graduate School of Engineering Science, Osaka University, 1-3 Machikaneyama, Toyonaka, Osaka 560-8531, JAPAN
- 12:00 pm **Polarity Influence on the Self-assembly of Benzene-1,3,5-tricarboxamides and on Their Role as Physical Crosslinkers in Polymeric Systems.** Tristan Mes, Anja R. A. Palmans, E. W. Meijer, Laboratory of Molecular Science and Technology, Eindhoven University of Technology, P.O Box 513, NL-5600 MB Eindhoven, THE NETHERLANDS
- 12:20 pm **PAUSE, EXHIBITS, POSTERS, VENDOR SEMINARS** (lunch on own)
Exhibits and Posters are located in the Blue River Room
- 12:30–1:30 pm **FREE VENDOR SEMINAR Sponsored by Phenomenex**
“A Welcome Change to the Chiral Industry. How Phenomenex corporate capabilities in chiral solutions can impact your work.” (20 mins)
“Reversed-Phase vs. Normal Phase: Which Should Be the Primary Separation Mode Screened in Chiral Method Development?” (25 mins)
Location: Peak Meeting Room 1 (third floor)
- 1:30–3:00 pm **POSTER PRESENTATIONS – Blue River Room**

Session 2. ORIGINS

Location: Peak Meeting Room 5 (third floor)
Chair: Kurt Mislow, Princeton University

Featured Attraction: *The Plenary Lectures, and Keynotes and Orals of session 2/2B will probe the latest thinking on nonbiological enantioenrichment and the origins of life. The session, with a special concluding discussion/round table, will be moderated by Professor Kurt Mislow, and promises to be controversial and entertaining.*

3:00 pm **Asymmetric Autocatalysis and its Role in the Origins of Homochirality.** Kenso Soai, Department of Applied Chemistry, and Chiral Material Research Center, Research Institute of Science and Technology, Tokyo University of Science, Kagurazaka, Shinjuku-ku, Tokyo 162-8601, JAPAN [PLENARY LECTURE]

3:40 pm **Did Life Grind to a Start?**
Michael McBride, Yale University, New Haven, CT, USA [PLENARY LECTURE]

4:20 pm **Pause**

Session 2A. RESOLUTIONS

Location: Peak Meeting Room 4 (third floor)
Chair: Eiji Yashima, Nagoya University

4:30 pm **Preparative Chiral Chromatography in Support of Pharmaceutical Discovery and Development: Recent Progress and Future Directions.** Christopher J. Welch, Merck & Co., Inc., Rahway, NJ 07065, USA [KEYNOTE LECTURE]

5:00 pm **Separation of Chiral Objects in Achiral Media: What is the Size Limit?**
Michal Tencer, Roman Bielski, School of Information Technology and Engineering, University of Ottawa, Ottawa, CANADA

5:20 pm **Production of an Enantiopure Compound 'At Will' From the Corresponding Multi-chiral Racemate by Combining HPLC and Racemisation.**
Alexander L.L. Duchateau, Jan van der Lee, Gerard Verzijl, Lyrelle Stacey-Lloyd, DSM Pharmaceutical Products – Innovative Synthesis & Catalysis, P.O. Box 18, 6160 MD Geleen, THE NETHERLANDS

5:40 pm **A Fluorescent Amino Acid-based Chiral Ionic Liquid for Enantiomeric Discrimination.** David K. Bwambok, Santhosh K. Challa, Mark Lowry, Isiah M. Warner, Department of Chemistry, Louisiana State University, Baton Rouge, LA 70803, USA

6:00 pm **"Green Chemistry" in Chiral Resolution.** Niteen Vaidya, ChiroSolve, Inc., 2065 Martin Avenue, Suite 107, Santa Clara, CA 95050, USA

6:20 pm **Pause**

Monday, July 13, 2009

Session 2B. NONBIOLOGICAL ENANTIOENRICHMENT

Location: Peak Meeting Room 5 (third floor)

Chair: Kurt Mislow, Princeton University

- 4:30 pm **Thermodynamics of Chiral Asymmetry.** Dilip Kondepudi, Department of Chemistry, Wake Forest University, Winston-Salem, NC 27103, USA [KEYNOTE LECTURE]
- 5:00 pm **Applications of Attrition Induced Grinding of Racemizable Conglomerates as a Route to Enantiopure Materials.** Richard M. Kellogg^a, M. Leeman^a, M. van der Meijden^a, W. Noorduin^b, H. Meekes^b, W.J.P. van Enkevort^b, B. Kaptein^c, Syncom BV, Kadijk 3, 9747 AT Groningen, THE NETHERLANDS; ^bIMM Solid State Chemistry, Radboud University Nijmegen, Heyendaalseweg 135, 6525 AJ Nijmegen, THE NETHERLANDS; ^cInnovative Synthesis & Catalysis, DSM Pharmaceutical Products, PO Box 18, 6160 MD Geleen, THE NETHERLANDS
- 5:20 pm **Studies on the Origin of Homochirality of Peptides.** Meir Lahav¹, R.A. Illois¹, I. Weissbuch¹, G. Bolbach², ¹Weizmann Institute of Science, Rehovot, ISRAEL; ²Université Pierre and Marie Curie, Paris, FRANCE [KEYNOTE LECTURE]
- 5:50 pm **TBD.** Christopher Welch, David Walba
- 6:10 pm **Pause**
- 6:20 pm **Concluding Remarks and Discussion/Round Table.** Kurt Mislow, Department of Chemistry, Frick Lab, Princeton University, Princeton, NJ 08544, USA

Tuesday, July 14, 2009

7:15–8:15 am **FREE VENDOR SEMINAR Sponsored by TharSFC**
“SFC: New Developments in Isomeric Separation and Purifications”
Location: Peak Meeting Room 1 (third floor)

8:00 am Symposium Registration Open

8:30 am – 5:00 pm EXPOSITION

Session 3A. TIDES

Location: Peak Meeting Room 5 (third floor)

Chair: James Canary, New York University

8:30 am **Constructing Complex Nanostructures with DNA.**
Marvin Caruthers, University of Colorado, Boulder, CO, USA
[PLENARY LECTURE]

Sesson 3B. SYNTHESIS

Location: Peak Meeting Room 5 (third floor)

Chair: James Canary, New York University

9:10 am **Enantioselective Synthesis in China - Past, Present, and Future.**
Albert S. C. Chan, The Hong Kong Polytechnic University [PLENARY LECTURE]

9:50 am **Coffee Break in the Blue River Room, Exhibit/Poster area**

Session 3A. TIDES

Location: Peak Meeting Room 5 (third floor)
Chair: James Canary, New York University

- 10:10 am **Chiral Peptide Nucleic Acids: Biological Tools and Bio-inspired Materials.** Roberto Corradini, Tullia Tedeschi, Stefano Sforza, Rosangela Marchelli, Dipartimento di Chimica Organica e Industriale-University of Parma-Viale G.P. Usberti 17/A, I-43100 Parma, ITALY [KEYNOTE LECTURE]
- 10:40 am **Detecting and Following Chirality in Computer Simulations of Liquid Crystals and Biomolecules.** Claudio Zannoni, Dipartimento di Chimica Fisica ed Inorganica, Università, 40136 Bologna, ITALY [KEYNOTE LECTURE]
- 11:10 am **Pause**
- 11:20 am **Control of Dynamic Property and Helicity in a Helically Folded Achiral Peptide Through a Side-chain Bridge.** Reiko Kuroda^{a,b}, N. Ousaka^b, N. Tani^a, T. Sato^b,
^aGraduate School of Arts and Sciences, The University of Tokyo, Komaba, Meguro-ku, Tokyo, 153-8902, JAPAN; ^bJapan Science and Technology Agency, ERATO-SORST Kuroda Chirormorphology Team, 4-7-6 Komaba, Meguro-ku, Tokyo, 153-0041, JAPAN
- 11:40 am **Folded Biomimetic Oligomers For Enantioselective Catalysis.** Galia Maayan, Michael D. Ward, Kent Kirshenbaum, Dept. of Chemistry and Molecular Design Institute, New York University, 100 Washington Square East, New York, NY 10003-6688, USA
- 12:00 pm **L-Oligonucleotide Therapeutics in a D-World. Spiegelmers[®]: From Concept to Realization.** John Turner, NOXXON Pharma AG, Max-Dohrn-Str. 8-10, 10589 Berlin, GERMANY
- 12:20 pm **PAUSE, EXHIBITS, POSTERS, VENDOR SEMINARS** (lunch on own)
Exhibits and Posters are located in the Blue River Room
- 12:30–1:30 pm **FREE VENDOR SEMINAR Sponsored by Supelco/Sigma-Aldrich**
"Strategies for Chiral HPLC Method Development"
Location: Peak Meeting Room 1 (third floor)
- 12:30–1:30 pm **FREE VENDOR SEMINAR Sponsored by Chiral Technologies**
"Comprehensive Solutions for Enantioselective Chromatography"
Location: Peak Meeting Room 2 (third floor)
- 1:30–3:00 pm **POSTER PRESENTATIONS – Blue River Room**

Tuesday, July 14, 2009

Session 3B. SYNTHESIS

Location: Peak Meeting Room 4 (third floor)

Chair: Jerome LaCour, University of Geneva

- 10:10 am **Synthesis of Stereochemically Complex Natural Products.** Andrew Phillips, University of Colorado, Boulder, CO, USA [KEYNOTE LECTURE]
- 10:40 am **Organocatalytic Epoxidation and Metallocatalytic Diamination of Olefins.** Yian Shi, Department of Chemistry, Colorado State University, Fort Collins, CO 80523, USA [KEYNOTE LECTURE]
- 11:10 am **Pause**
- 11:20 am **Recent Advances in Enantioselective Phase Transfer Catalysis.** Paul Bulger, Merck & Co., Inc., One Merck Drive, Whitehouse Station, New Jersey 08889, USA
- 11:40 am **A New Approach to Enantioselective Organic Synthesis: Absolute Asymmetric Synthesis of Organometallic Reagents.** Anders Lennartson, Susanne Olsson, Jonas Sundberg, Mikael Hakansson, Department of Chemistry, University of Gothenburg, SE-412 96 Gothenburg, SWEDEN
- 12:00 pm **Synthesis of Cyclophane-type Imidazolium Salts with Planar Chirality and Chirality-Induction Ability of Their Derivative N-Heterocyclic Carbenes.** Kazuhiko Saigo, Yasuhiro Ishida, Yuki Matsuoka, Daisuke Sasaki, Department of Chemistry and Biotechnology, Graduate School of Engineering, The University of Tokyo, Hongo, Bunkyo-ku, Tokyo 113-8656, JAPAN
- 12:20 pm **PAUSE, EXHIBITS, POSTERS, VENDOR SEMINARS** (lunch on own)
Exhibits and Posters are located in the Blue River Room
- 12:30–1:30 pm **FREE VENDOR SEMINAR Sponsored by Supelco/Sigma-Aldrich**
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"Comprehensive Solutions for Enantioselective Chromatography"
Location: Peak Meeting Room 2 (third floor)
- 1:30–3:00 pm **POSTER PRESENTATIONS – Blue River Room**

Tuesday, July 14, 2009

Session 4A. ANALYTICAL

Location: Peak Meeting Room 5 (third floor)

Chair: David Walba, University of Colorado, Boulder

3:00 pm

New Directions in Enantioselective Analyses. Daniel W. Armstrong,
R. A. Welch Professor, University of Texas at Arlington, Arlington, TX, USA
[PLENARY LECTURE]

Session 4B. NANO

Location: Peak Meeting Room 5 (third floor)

Chair: David Walba, University of Colorado, Boulder

3:40 pm

The B4 and the Dark Conglomerate: Topologically Disordered Spontaneously Chiral Liquid Crystal Phases Stabilized by Frustrated Intralayer Correlations.
Noel A. Clark¹, L. E. Hough¹, M.-S. Heberling¹, M. Spannuth¹, M. Nakata¹, M. Glaser¹,
D. Krüerke², C. D. Jones¹, C. Zhu¹, G. Heppke², H. Jung³, J. Zasadzinski³, J. Rabe⁴,
W. Stocker⁴, E. Körblova⁵, D. Walba⁵, ¹Department of Physics and Liquid Crystal
Materials Research Center, University of Colorado, Boulder, CO, USA; ²Institute of
Inorganic and Analytic Chemistry, TU of Berlin, Berlin, GERMANY; ³Department of
Chemical Engineering, University of California, Santa Barbara, CA, USA; ⁴Institute for
Physics, Humboldt University, Humboldt, GERMANY; ⁵Department of Chemistry and
Biochemistry and Liquid Crystal Materials Research Center, University of Colorado,
Boulder, CO, USA [PLENARY LECTURE]

4:20 pm

Pause

Session 4A. ANALYTICAL

Location: Peak Meeting Room 5 (third floor)

Chair: Christopher Welch, Merck & Co., Inc.

- 4:30 pm **TBD.**
- 5:00 pm **The Changing Landscape of Chiral Separation and Purification.** Tivadar Farkas, Liming Peng, Swapna Jayapalan, Bezhana Chankvetadze¹, Phenomenex, Inc., 411 Madrid Avenue, Torrance, CA, USA; ¹Institute of Physical and Analytical Chemistry, Tbilisi State University, Tbilisi, GEORGIA
- 5:20 pm **Reversed-Phase Multichannel Microflow Chiral LC Method Development of Compounds of Pharmaceutical Interest.** Don W. Arnold^a, David Emlyn Hughes^b, Phillip H. Pau^a, ^aEksigent Technologies, LLC, 5875 Arnold Road, Suite 300, Dublin, CA 94568, USA; ^bChromatographic Excellence, LLC, 419 Reading Street, Pennington, NJ 08534, USA
- 5:40 pm **High-throughput Multiplexing Gas Chromatography for Super High-throughput Measurements of Enantiomeric Excesses.** Oliver Trapp, Organisch-Chemisches Institut, Ruprecht-Karls-Universität Heidelberg, Im Neuenheimer Feld 270, 69120 Heidelberg, GERMANY
- 6:00 pm **Substituent Effects on Chiral Recognition: Chiral HPLC and SFC Separation of Substituted Meldrum's Acid on Amylose and Cellulose Chiral Stationary Phase.** Hong-Xun Guo, Jenny Chen, David Semin, Janet Cheetham, AR&D, Amgen Inc., One Amgen Center Drive, Thousand Oaks, CA 91320, USA
- 6:20 pm **Pause**

Tuesday, July 14, 2009

Session 4B. NANO

Location: Peak Meeting Room 4 (third floor)

Chair: David Walba, University of Colorado, Boulder

- 4:30 pm **Bernauer's Bands.** Bart Kahr, Erica Gunn, John Freudenthal, Department of Chemistry, University of Washington, Box 351700, Seattle WA 98195-1700, USA [KEYNOTE LECTURE]
- 5:00 pm **Multi-Stranded Helical Polymers and Oligomers.** Eiji Yashima, Department of Molecular Design and Engineering, Graduate School of Engineering, Nagoya University, Chikusa-ku, Nagoya 464-8603, JAPAN [KEYNOTE LECTURE]
- 5:30 pm **Liquid Chromatographic Separation of Enantiomers with Topologically Chiral Amide-Type Trefoil Knots: Chiral Recognition Mediated by a Molecular Scaffold Devoid of Conventional Chirality Elements.** Norbert M Maier^{a,b}, Wolfgang Lindner^b, Jens Brueggemann^c, Fritz Voegtle^c, ^aChiral Technologies, Inc., 800 N. Five Points Road, West Chester, PA 19380, USA; ^bUniversity of Vienna, Institute of Analytical and Food Chemistry, Waehringerstrasse 38, A-1090 Vienna, AUSTRIA; Kekule Institute for Organic Chemistry and Biochemistry, ^cUniversity of Bonn, Gerhard-Domagk-Strasse 1, 53121 Bonn, GERMANY
- 5:50 pm **Structural Change of Polyacetylene Main Chain Cased by Pendant Rotaxane Mobility.** Toshikazu Takata, Fumitaka Ishiwari, Kei-ichiro Fukasawa, Yasuhito Koyama, Tokyo Institute of Technology, Department of Organic and Polymeric Materials, Ookayama, Meguro, Tokyo 152-8552, JAPAN
- 6:10 pm **Pause**
- 7:00 pm **CONFERENCE BANQUET (ticket required)**
Join us for a BBQ bash at the foot of the Beaver Run ski lift
(includes dinner, music, and open bar)

Session 5. NANO – 2

Location: Peak Meeting Room 5 (third floor)
Chair: Eiji Yashima, Nagoya University

- 8:30 am **Twofold Helix Inversion in the Chiral Smectic C Phase in Optically Active Material Derived from (R)-(+)-1-(1-phenyl)ethylamine.** Muto Masakane, Hideyuki Suzuki, Kaoru Fukuda, Seng Kue Lee, Sungmin Kang, Masatoshi Tokita, Junji Watanabe, Department of Organic and Polymeric Materials, Tokyo Institute of Technology, Ookayama, Meguro-ku, Tokyo 152-8552, JAPAN [PLENARY LECTURE]
- 9:10 am **The Detection of Chiral Perturbations in Ferroelectric Liquid Crystals.** Robert P. Lemieux, Chemistry Department, Queen's University, Kingston, Ontario K7L 3N6, CANADA [PLENARY LECTURE]
- 9:50 am **Coffee Break**

Session 5A. NANO – 2

Location: Peak Meeting Room 5 (third floor)
Chair: Noel Clark, University of Colorado, Boulder

- 10:20 am **New Chiral Geometries.** Elisabetta A. Matsumoto, Gareth P. Alexander, Randall D. Kamien, University of Pennsylvania, Philadelphia, PA, USA [KEYNOTE LECTURE]
- 10:50 am **Isotropic Ordering and Fast Fluctuation Mode in Isotropic Smectic Blue Phase.** Jun Yamamoto¹, Isa Nishiyama², ¹Department of Physics, Graduate School of Science, Kyoto University, Kitashirakawa, Sakyo, Kyoto, 606-8502, JAPAN; ²DIC, Tokyo, JAPAN [KEYNOTE LECTURE]
- 11:20 am **Chirality in Mesoporous Materials: The Sergeants and Soldiers Effect in Solid Materials.** Stephanie MacQuarrie, Thomas Blackburn, Steven Dickson, Nicholas Mosey, Robert Lemieux, Cathleen Crudden, Department of Chemistry, Queen's University, 90 Bader Lane, Kingston, Ontario, K7L 3N6 CANADA
- 11:40 am **Chiral Amplification in a Dynamic Supramolecular Polymer.** Maarten M. J. Smulders^a, Paul van der Schoot^b, Anja R. A. Palmans^a, Albertus P. H. J. Schenning^a, E. W. Meijer^a, ^aLaboratory of Molecular Science & Technology, Eindhoven University of Technology, P.O. Box 513, 5600 MB Eindhoven, THE NETHERLANDS; ^bTheoretical and Polymer Physics Group, Eindhoven University of Technology, P.O. Box 513, 5600 MB Eindhoven, THE NETHERLANDS
- 12:00 pm **Scanning Tunneling Microscopy Study of a Chiral Amphiphile at a Solid-Liquid Interface: Observation of Packing Frustration Leading to Chirality Alternation in a Lamellar Structure.** Wojciech J. Saletra^a, David B. Amabilino^a, Hong Xu^b, Steven De Feyter^b, ^aInstitut de Ciència de Materials de Barcelona (CSIC), Campus Universitari, 08193-Bellaterra, SPAIN; ^bDepartment of Molecular and Nanomaterials, Katholieke Universiteit Leuven, Celestijnenlaan 200-F, 3001 Leuven, BELGIUM
- 12:20–1:30 pm **Pause** (lunch on own)

Wednesday, July 15, 2009

Session 5B. BIO

Location: Peak Meeting Room 4 (third floor)

Chair: John Caldwell, University of Liverpool

- 10:20 am **Stereoselective Microbial Transformation of Triadimefon to Triadimenol in Soils: Varying Production Rates of Triadimenol Stereoisomers Could Impact Risk Assessment.** Arthur W. Garrison, Jimmy K. Avants, W. Jack Jones, U.S. Environmental Protection Agency, National Exposure Research Laboratory, Ecosystems Research Division, Athens, GA, USA [KEYNOTE LECTURE]
- 10:50 am **Investigations to Elucidate the Enantioselective Biomolecular Recognition Mechanism of Antimony Tartrate.** Kevin A. Schug, Aruna B. Wijeratne, Sandra E. Spencer, Jose Gracia, Peter Kroll, Daniel W. Armstrong, Department of Chemistry and Biochemistry, The University of Texas at Arlington, Arlington, TX 76019, USA [KEYNOTE LECTURE]
- 11:20 am **TBD**
- 11:40 am **Chiral Gas Chromatography – Mass Spectrometry as a Tool for Investigations into Illicitly Produced Ephedrine and Methamphetamine.** Calum Morrison¹, F. Smith¹, K. Stawiarski², T. Tomaszewski², M. Biziuk², ¹School of Engineering and Science, University of the West of Scotland, Paisley PA1 2BE, UK; ²Faculty of Chemistry, Gdansk University of Technology, POLAND
- 12:00 pm **Enantiomer Selective Sorption at Mineral Surfaces. A Case Study with the Organophosphorus Pesticide Acephate.** Joe Wilkinson, Martin Preston, Department of Ocean and Earth Sciences, 4 Brownlow Street, University of Liverpool, Liverpool L69 3GP, UK
- 12:20–1:30 pm **Pause** (lunch on own)

Session 6. BIO, NANO, AND PASTEUR

Location: Peak Meeting Room 5 (third floor)

Chair: David Walba, University of Colorado, Boulder

- 1:30 pm **On the Tiles That Decorate the Exocuticle of Iridescent Beetle *Chrysinia Gloriosa*.** Mohan Srinivasarao, Jung Ok Park, Matija Crne, Vivek Sharma, School of Polymer, Textile and Fiber Engineering, School of Chemistry and Biochemistry, Center for Advanced Research on Optical Microscopy (CAROM), Georgia Institute of Technology, 801, Ferst Drive, Atlanta, GA 30332-0295, USA [PLENARY LECTURE]
- 2:10 pm **Does More Stereogenic Centres Mean “More Chiral”?** David B. Amabilino¹, Patrizia Iavicoli¹, Hong Xu², Steven De Feyter², ¹Institut de Ciència de Materials de Barcelona (CSIC), Campus Universitari, 08193-Bellaterra, SPAIN; ²Laboratory of Photochemistry and Spectroscopy, Molecular and Nano Materials, Department of Chemistry, and Institute for Nanoscale Physics and Chemistry, Katholieke Universiteit Leuven, Celestijnenlaan 200-F, 3001 Leuven, BELGIUM [KEYNOTE LECTURE]
- 2:40 pm **Louis Pasteur and the Language of Chirality.** Joseph Gal, University of Colorado Denver, School Of Medicine, Division of Clinical Pharmacology and Toxicology, Aurora, CO, USA [KEYNOTE LECTURE]
- 3:10 pm **Chirality 2009 Closing**

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P-M A Tiered Approach to Rapid Chiral Method Development for Supercritical Fluid Chromatography in Drug Discovery. Wesley Barnhart, Kyung H. Gahm, Zheng Hua, Samuel Thomas, Molecular Structure, Discovery Analytical Sciences, Amgen Inc., One Amgen Center Dr., Thousand Oaks, CA 91320, USA

P-M Significant Improvements in Chiral Method Development Using an LC-MS-Based Screening Approach. David S. Bell, Jennifer E. Claus, Jay M. Jones, Supelco, Division of Sigma-Aldrich, Bellefonte, PA 16823, USA

P-M Enzyme Stereospecificity as a Tool for Searching of New Enzymes. Vladimir Wsol^a, Lucie Skarydova^a, Adam Skarka^a, Petr Solich^b, ^aDepartment of Biochemical Sciences and ^bDepartment of Analytical Chemistry, Faculty of Pharmacy, Charles University, Heyrovského 1203, 500 05 Hradec Králové, CZECH REPUBLIC

P-M Chiral Properties of a New Human Membrane-bound Carbonyl Reductase Playing a Role in Deactivation of Anticancer Drugs. Vladimir Wsol^a, Lucie Skarydova^a, Adam Skarka^a, Petr Solich^b, ^aDepartment of Biochemical Sciences and ^bDepartment of Analytical Chemistry, Faculty of Pharmacy, Charles University, Heyrovského 1203, 500 05 Hradec Králové, CZECH REPUBLIC

P-M Highly Efficient Enantioresolution of 2,2-Dimethyl-3-hexanol with Cholamide Crystals on the Basis of Intercalation and Bilayer Inversion on the Basis of Intercalation and Bilayer Inversion. Taketoshi Murai, K. Aburaya, I. Hisaki, N. Tohnai, M. Miyata, Department of Material and Life Science, Graduate School of Engineering, Osaka University, 2-1 Yamadaoka, Suita, Osaka, 565-0871, JAPAN

P-M Evaluating Memory Effects of Mobile Phase Additives on the Whelk-O[®]1 Chiral Stationary Phase (CSP). Ted Szczerba, Regis Technologies, Inc., 8210 Austin Avenue, Morton Grove, IL 60053, USA

P-M Advanced Solutions for Preparative SFC (pSFC) Multi-Column Scale-up. Zahid Ali, Regis Technologies, Inc., 8210 Austin Avenue, Morton Grove, IL 60053, USA

P-M Creating a Solvent Strength Scale for the Prediction of Sample Retentions on the Whelk-O[®]1 Chiral Stationary Phase. Ted Szczerba, Regis Technologies, Inc., 8210 Austin Avenue, Morton Grove, IL 60053, USA

P-M An Experimental and Theoretical Investigation of the Vibrational Spectra of Eu(tfc)₃ and its Complexes with Chiral Amines. Are shifts Seen in NMR Spectra Also Seen in the VA and VCD Spectra? Christian Merten^a, Karl J. Jalkanen^b, Andreas Hartwig^a, ^aFraunhofer Institute for Manufacturing Technology and Applied Materials Research, Wiener Strasse 12, D-28359 Bremen, GERMANY; ^bBremen Center for Computational Materials Science, University of Bremen, Am Fallturm 1, D-28359 Bremen, GERMANY

P-M What can be Learned From the Thousands of Chiral Chromatographic Data in the 2008 Literature? Christian Roussel, Patrick Piras, Nicolas Vanthuyne, UMR 6263, ISM2 Chirosciences, Université Paul Cézanne Aix-Marseille III, 13397 Marseille Cedex 20, FRANCE

P-M Stereochemical Studies of Hexylitaconic Acid, An Inhibitor of p53-HDM2 Interaction. Atsufumi Nakahashi^a, Nobuaki Miura^a, Kenji Monde^a, Sachiko Tsukamoto^b, ^aGraduate School of Advanced Life Science, Frontier Research Center for Post-Genome Science and Technology, Hokkaido University, Kita-ku, Sapporo 001-0021, JAPAN; ^bGraduate School of Science, Chiba University, 1-33 Yayoi-cho, Inage-ku, Chiba 263-8522, JAPAN

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P-M Stereochemical Study of Chiral Tautomeric Flavorous Furanones by Vibrational Circular Dichroism. Atsufumi Nakahashi^a, Nobuaki Miura^a, Kenji Monde^a, Makoto Emura^b, Yoshihiro Yaguchi^b, Daisuke Sugimoto^b, ^aGraduate School of Advanced Life Science, Frontier Research Center for Post-Genome Science and Technology, Hokkaido University, Kita-ku, Sapporo 001-0021, JAPAN, ^bCorporate Research and Development Division, Takasago International Corporation, 4-11, 1-Chome, Nishi-yawata, Hiratsuka city, Kanagawa 254-0073, JAPAN

P-M Discrimination of Cryptochirality in Isotactic Polystyrene by Asymmetric Autocatalysis. Tsuneomi Kawasaki^{1,2}, Yuko Araki¹, Kunihiro Hatase¹, Jun Okuda³, Kenso Soai^{1,2}, ¹Department of Applied Chemistry, Tokyo University of Science, Kagurazaka, Shinjuku-ku, Tokyo, 162-8601 JAPAN; ²Chiral Material Research Center, Research Institute of Science and Technology, Tokyo University of Science, Kagurazaka, Shinjuku-ku, Tokyo 162-8601, JAPAN; ³Institute for Inorganic Chemistry, RWTH Aachen University, Landoltweg 1, 52056 Aachen, GERMANY

P-M Formation of Chiral Crystal from Achiral Crystal and Enantioselective Synthesis Induced by Chiral Crystal of Achiral Nucleobase Cytosine in Combination with Asymmetric Autocatalysis. Kenta Suzuki^a, Yuko Hakoda^a, Hiroko Mineki^a, Tsuneomi Kawasaki^{a,b}, Kenso Soai^{a,b}, ^aDepartment of Applied Chemistry, Tokyo University of Science, Kagurazaka, Shinjuku-ku, Tokyo 162-8601, JAPAN; ^bChiral Material Research Center, Research Institute of Science and Technology, Tokyo University of Science, Kagurazaka, Shinjuku-ku, Tokyo 162-8601, JAPAN

P-M Synthesis and Characterization of a New Liquid Crystalline Chiral Single-molecule Magnet. Mathieu Gonidec, David B. Amabilino, Jaume Veciana, Institut de Ciència de Materials de Barcelona, Campus de la Autònoma, Bellaterra, SPAIN

P-M Enhancement of IR and VCD Intensities Due to Charge Transfer. Valentin Paul Nicu, Mojgan Heshmat, Evert Jan Baerends, Theoretical Chemistry, Vrije Universiteit Amsterdam, De Boelelaan 1083, 1081 HV Amsterdam, THE NETHERLANDS

P-M Chiral Sensing Polymeric Film. Paola Rizzo, Gaetano Guerra, Dipartimento di Chimica, Università di Salerno, via S.Allende, 84081 Baronissi (Salerno), ITALY

P-M Chiral Separations with Magnetic Silica Nano Particles Modified by a Chiral Selector: Chirality Fishing. Kyu Jung Lee, Hee Jung Choi and Myung Ho Hyun, Department of Chemistry, Pusan National University, Busan 609-735, KOREA (SOUTH)

P-M Self-assembly of Symmetrically Tri-deuterated-benzene 1,3,5-tricarboxamides. Seda Cantekin, D. W. R. Balkenende, C. Duxbury, A. R. A. Palmans, E. W. Meijer, Laboratory of Molecular Science and Technology, Eindhoven University of Technology, P.O Box 513, NL-5600 MB, Eindhoven, THE NETHERLANDS

P-M Physical Models for the Origin of Homochirality in Amino Acids. Toshiko Izumi¹, Martin Klussmann^{2,3}, Donna G. Blackmond^{1,2}, Cristobal Viedma⁴, ¹Department of Chemical Engineering and ²Department of Chemistry, Imperial College London, London, SW7 2AZ UK; ³Max-Planck-Institut fuer Kohlenforschung, Kaiser-Wilhelm-Platz 1, 45470 Muelheim an der Ruhr, GERMANY; ⁴Departamento Cristalografia-Mineralogia, Facultad Geologia, Universidad Complutense, 28040, Madrid, SPAIN

P-M Enantiomer-Selective and Helix-Sense-Selective Living Block Copolymerization of Isocyanide Enantiomers and AFM Observations of the Resulting Block Copolymers. Motonori Banno¹, Zong-Quan Wu^{1,2}, Kanji Nagai^{1,2}, Kento Okoshi², Kiyotaka Onitsuka³, Eiji Yashima^{1,2}, ¹Department of Molecular Design and Engineering, Graduate School of Engineering, Nagoya University, Chikusa-ku, Nagoya 464-8603, JAPAN; ²Yashima Super-structured Helix Project, ERATO, JST, JAPAN; ³Osaka University, JAPAN

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P-M A Simple Bent-core Mesogen Lacking Schiff Base Moieties Exhibiting a B4-like Phase. Ethan Tsai^a, Jacqueline M. Richardson^b, Yongqiang Shen^a, Dong Chen^a, Michi Nakata^{at}, Noel A. Clark^{at}, David M. Walba^b, ^aDepartment of Physics and Liquid Crystal Materials Research Center, University of Colorado, Boulder, CO 80309, USA; ^bDepartment of Chemistry & Biochemistry and Liquid Crystal Materials Research Center, University of Colorado, Boulder, CO 80309, USA

P-M Nitrogen Chiral Center Stabilized by Rotaxane Structure. Kazuko Nakazono, Sakiko Suzuki, Toshikazu Takata, Tokyo Institute of Technology, Department of Organic and Polymeric Materials, 2-12-1, Ookayama, Meguro, Tokyo 152-8552, JAPAN

P-M Quantifying the Agreement Between the Experimental and Simulated VCD Spectra. Eike M.S. Debie^{1,2}, Rina K. Dukor¹, Laurence A. Nafie^{1,2}, ¹BioTools, Inc., 17546 Bee Line Hwy., Jupiter, FL 33458, USA; ²Department of Chemistry, Syracuse University, Syracuse, NY 13244, USA

P-M An Enantiomerically Pure Allenic-Acetylenic Macrocycle: Synthesis and Rationalization of Its Outstanding Chiroptical Response. José Lorenzo Alonso-Gómez^{a,b}, Pablo Rivera-Fuentes^b, Nobuyuki Harada^{a,c}, Nina Berova^a, François Diederich^b, ^aDepartment of Chemistry, Columbia University, 3000 Broadway, New York, NY 10027, USA; ^bLaboratorium für Organische Chemie ETH Zurich Hönggerberg, HCI, CH-8093, SWITZERLAND; ^cInstitute of Multidisciplinary Research for Advanced Materials, Tohoku University, 2-1-1 Katahira, Aoba, Sendai 980-8577, JAPAN

P-M Multi-joint Polymers Composed of Chiral Ferrocene Joints and Rigid Diacetylene Units. Takahiro Fukino, Norifumi Fujita, Takuzo Aida, School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, JAPAN

P-M Gas-phase Enantioselective Association Between Chiral Macrocyclic Hosts and Aminoacid-type Guests: Insights into the Structure and Dynamics of Protonated Three-body Adducts. C. Villani, F. Gasparrini, M. Pierini, M. Speranza, C. Fraschetti, Dipartimento di Chimica e Tecnologie del Farmaco, Università di Roma "La Sapienza", P.le A. Moro 5, 00185 Roma, ITALY

P-M Preparative Chiral Purification of Pharmaceutically Compounds using Axial Compressed Columns. Peter C. Rahn, William Cash, Phenomenex, Inc., 411 Madrid Avenue, Torrance, CA 90503, USA

P-M Optimizing Throughput and Purity for Pharmaceutically Active Compounds Using Axial Packed Preparative Chiral Columns. Peter C. Rahn, William Cash, III, Phenomenex, Inc., 411 Madrid Avenue, Torrance, CA 90503, USA

P-M Stereochemistry Education on Chiral Polycyclic Hydrocarbons that Belong to Icosahedral Symmetry. Takeshi Iizuka, Emeritus Professor of Gunma University, Daita 2-28-8, Setagaya, Tokyo 155-0033, JAPAN

P-M Quinine-immobilized Zirconia for Enantioseparation of Non-acidic Analytes in Reversed-phase Capillary Electrochromatography. Jung Hag Park, Munrak Lee, Yeungnam University, Department of Chemistry, Gyeongsan 712749, SOUTH KOREA

P-M Chiral Chemical Absorption Property of a Crosslinked Poly(N-isopropyl acrylamide-Co-Sodium acrylate) Thermoresponsive Gel. Dibyendu S. Bag, Sarfaraz Alam, K.U. Bhasker Rao, Defence Materials and Stores Research and Development Establishment (DMSRDE), Defence Research and Development Organization (DRDO), Kanpur-208013, INDIA

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P-M Molecular Simulations of Free-Base and Metallo-Porphyrins Appended to 5'-end DNA Scaffold. Ana G. Petrovic^a, Regina R. Monaco^a, Warren McGee^a, Gennaro Pescitelli^b, Koji Nakanishi^a, George A. Ellestad^a, Milan Balaz^c, Nina Berova^a, ^aDepartment of Chemistry, Columbia University, 3000 Broadway, New York, NY 10027, USA; ^bUniversita degli Studi di Pisa, Dipartimento di Chimica e Chimica Industriale, 56126, Pisa, ITALY; ^cDepartment of Chemistry, University of Wyoming, 1000 E. University Avenue, Laramie, WY 82071, USA

P-M Attrition-Enhanced Deracemization in the Synthesis of Clopidogrel - A Practical Application of a New Discovery. Maarten W. van der Meijden¹, Michel Leeman¹, Edith Gelens¹, Wim L. Noorduin², Bernard Kaptein³, Elias Vlieg², Richard M. Kellogg¹, ¹Syncom B.V., Kadijk 3, 9747 AT Groningen, THE NETHERLANDS; ²Radboud University Nijmegen, IMM Solid State Chemistry, Heyendaalseweg 135, 6525 AJ Nijmegen, THE NETHERLANDS; ³DSM Pharmaceutical Products, Advanced Synthesis, Catalysis & Development, P.O. Box 18, 6160 MD Geleen, THE NETHERLANDS

P-M Comparison of Chiroptical Properties Between Solid and Solution States. T. Suzuki¹, T. Osaka^{2,3}, T. Asahi^{1,3}, ¹Department of Life Science and Medical Bioscience, Waseda University (TWIns), Tokyo, JAPAN; ²Department of Applied Chemistry, Waseda University, Tokyo, JAPAN; ³Consolidated Research Institute for Advanced Science and Medical Care, Waseda University (ASMeW), Tokyo, JAPAN

P-M Forensic Age Analysis of Teeth Using Amino Acids – Effects of Storage/Extraction Conditions on Aspartic Acid Enantiomers. S. Hendry¹, C. Morrison¹, F. Smith¹, K. Spohr¹, A. Donaldson², ¹School of Engineering and Science, University of the West of Scotland, Paisley, UK; ²Glasgow Dental Hospital and School, Faculty of Medicine, University of Glasgow, Glasgow, UK

Tuesday Poster Presentations

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P-T Improved Enantioseparation of a Key Drug Intermediate by Chiral GC Using Hydrogen Carrier Gas. Jian Ning, Tilak Chandrasekaran, Schering Plough Research Institute, Union, NJ 07083, USA

P-T Calix[4]resorcinarenes and Cationic Cyclodextrins as Water-Soluble Enantioselective NMR Shift Reagents. Ngoc H. Pham, Cora. D. Chisholm, T. J. Wenzel, Bates College, Department of Chemistry, Lewiston, ME 04240, USA

P-T Cyclodextrin-, Cellulose – and Synthetic Polymer-based Chiral Stationary Phases for Enantioseparation of Substituted Binaphthyls. Lucie Loukotková^a, Zuzana Bosáková^a, Eva Tesařová^b, Daniel W. Armstrong^c, ^aDepartment of Analytical Chemistry, Charles University in Prague, Faculty of Science, Albertov 2030, 128 43 Prague 2, CZECH REPUBLIC; ^bDepartment of Physical and Macromolecular Chemistry, Charles University in Prague, Faculty of Science, Albertov 2030, 128 43 Prague 2, CZECH REPUBLIC; ^cDepartment of Chemistry and Biochemistry, University of Texas at Arlington, Arlington, TX, USA

P-T Calculating Chirality on the Web. Hadassah Elgavi¹, Chaim Dryzun¹, Amir Zayit¹, Mark Pinsky^{1,2}, Alex Puschinsky¹, David Avnir¹, ¹Institute of Chemistry and the Lise Meitner Minerva Center for Computational Quantum Chemistry; ²Institute of Earth Sciences, The Hebrew University of Jerusalem, Jerusalem 91904, ISRAEL

P-T Chiral Silicate Zeolites. Chaim Dryzun¹, Yitzhak Mastai², Ayelet Shvalb², David Avnir¹, ¹Institute of Chemistry and the Lise Meitner Minerva Center for Computational Quantum Chemistry, The Hebrew University of Jerusalem, Jerusalem 91904, ISRAEL; ²Department of Chemistry, Bar-Ilan University, Ramat Gan 52900, ISRAEL

P-T Novel Protic Chiral Ionic Liquids Based on Ephedrine Derivatives. Sergio L. de Rooy, Min Li, David K. Bwambok, Bilal El-Zahab, Santhosh Challa, Isiah M. Warner, Department of Chemistry, Louisiana State University, Baton Rouge, LA 70803, USA

P-T Molecular Modeling of Enantioselective Adsorption of Chiral Alkan-2-ols in Homochiral Metal-organic Frameworks. Xiaoying Bao, Linda J. Broadbelt, Randall Q. Snurr, Department of Chemical and Biological Engineering, Northwestern University, Evanston, IL 60208, USA

P-T Examples for Fast Chiral Method Development with Parallel LC in Normal Phase and Reverse Phase Mode. Marcel Althaus^a, Holger Gumm^b, ^aHoffmann La Roche, 4070 Basel, SWITZERLAND; ^bSeplatec GmbH, Louis-Blériot-Str. 5, 12487 Berlin, GERMANY

P-T Characterization of Interconversion of Chiral Compounds in Chiral Environment. Jana Svobodová, Pavel Dubský, Eva Tesařová, Bohuslav Gaš, Charles University in Prague, Faculty of Science, Department of Physical and Macromolecular Chemistry, Hlavova 8, 128 43 Prague, CZECH REPUBLIC

P-T Liquid Chromatographic Resolution of α -amino Acid Derivatives on Two CSPs Based on Diastereomeric Chiral Crown Ethers Incorporating Two Different Chiral Units. Hee Jin Kim, Hee Jung Choi, Yoon Jae Cho, Myung Ho Hyun, Department of Chemistry, Pusan National University, Busan 609-735, KOREA

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P-T Preparation and Application of a Crown Ether Based HPLC Chiral Stationary Phase Containing Thioester Linkages. Kyu Jung Lee, Hwan Sun Cho, Hee Jung Choi, Myung Ho Hyun, Department of Chemistry, Pusan National University, Busan 609-735, KOREA

P-T Resolution of Racemic Chiral Drugs Containing a Secondary Amino Group on a Chiral Stationary Phase (CSP) Based on (+)-(18-crown-6)-2,3,11,12-tetracarboxylic Acid. A. Reum Lee, Hee Jung Choi, Myung Ho Hyun, Department of Chemistry, Pusan National University, Busan, KOREA

P-T Performance and Benefits of Macrocyclic Glycopeptide-based CSPs in Enantiomeric Purification Using Bench-top Simulated Moving Bed (SMB) Technology. J.T. Lee¹, William Campbell¹, ¹Supelco, Division of Sigma-Aldrich, Bellefonte, PA, USA; Robert Mierendorf², ²SEMBA Biosciences

P-T Enantioselective Synthesis of Fluoro-substituted 1-Chloro-3-phenylpropan-2-ols and 1-Chloro-3-phenylpropan-3-ols as Building Blocks for Biologically Active Compounds. Li-Te Chang, Ling-Wei Hsin, Institute of Pharmaceutical Sciences, College of Medicine, National Taiwan University, Number 1, Section 1, Jen-Ai Road, Room 1336, Taipei, Taiwan 10018, RO CHINA

P-T Speed Up SFC Chiral Method Development with a 8x Parallel System. Holger Gumm, Sepiatec GmbH, Louis-Blériot-Str. 5, 12487 Berlin, GERMANY

P-T Synthesis and Chiral Recognition of Poly(phenylenevinylene)-Encapsulated Amylose Derivatives. Kazumi Tamura¹, Eiji Yashima¹, Tomoyuki Ika², Yoshio Okamoto², ¹Department of Molecular Design and Engineering, Graduate School of Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, JAPAN; ² EcoTopia Science Institute, Nagoya University, Furo-cho, Chikusa-ku, Nagoya, JAPAN

P-T Investigation of Solution Phase Enantioselective Recognition by Continuous Flow Transmission Mode Desorption Electrospray Ionization Mass Spectrometry (CF-TM-DESI-MS). Aruna B. Wijeratne, Samuel H. Yang, Brian Edwards, Kevin A. Schug, Department of Chemistry and Biochemistry, University of Texas at Arlington, Arlington, TX 76019, USA

P-T Sulfoxides in the Enantiospecific Synthesis of [2.2]paracyclophane Derivatives. Rakesh Parmar^a, Gareth J Rowlands^b, Richard J. Seacome^a, ^aChemistry Division, Department of Chemistry and Biochemistry, University of Sussex, Falmer, Brighton, UK; ^bInstitute of Fundamental Sciences, Massey University, Private Bag 11 222, Palmerston North, NEW ZEALAND

P-T Synthesis and Chiroptical Properties of Novel Oligopeptides from Achiral Amino Acids. Joon-il Cho¹, Masahiro Tanaka¹, Kazushi Kinbara², Takuzo Aida¹, ¹Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, JAPAN; ²Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai 980-8577, JAPAN

P-T Towards Enhanced Throughput Screening Using Short Columns Packed with DAICEL 3-Micron CSPs. Norbert M. Maier, Geoffrey B. Cox, Chiral Technologies, Inc., 800 N. Five Points Road, West Chester, 19380 PA, USA

P-T Operational Pressure Stability of Wide-Pore 3- and 5-Micron Polysaccharide-based Chiral Chromatography Columns. Norbert M. Maier, Geoffrey B. Cox, Chiral Technologies, Inc., 800 N. Five Points Road, West Chester, 19380 PA, USA

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P-T Selectivity Study of New Polysaccharide-based Chiral Stationary Phases. Geoffrey B. Cox, N. Maier, P. Franco, T. Zhang, Chiral Technologies, Inc., 800 N. Five Points Road, West Chester, PA 19380, USA

P-T The Utilization of SFC for Achiral Separations Employing a Chiral Column. Eric Pullen, Regis Technologies, Inc., 8210 Austin Avenue, Morton Grove, IL 60053, USA

P-T Semi Synthetic Route Towards Therapeutically Active Chiral γ -butyrolactone Based Molecules. I. Ilbnusaud, Deenamma Habel, Shibin Chacko, H. Simimole, School of Chemical Sciences, Mahatma Gandhi University, Kottayam, INDIA

P-T Synthesis and Examination of Sulfated Cyclofructans as a Novel Class of Chiral Selectors for Capillary Electrophoresis. Man-yung Tong, Chunxia Jiang, Zachary S. Breitbart, Daniel W. Armstrong, University of Texas at Arlington, Arlington, TX 76019, USA

P-T Chiral Recognition of (S)-Phenylethylamine and/or (S)-Naphthylethylamine derived Nickel(II) and Copper(II) macrocyclic Complexes. Jae Jeong Ryoo¹, Kil Sik Min¹, Jong Won Shin², Hwan-Suk Do¹, Mi Jung Park¹, ¹Dept. of Chemistry Education, Kyungpook National University, Taegu, 702-701, KOREA; ²Dept. of Chemistry, Kyungpook National University, Taegu, 702-701, KOREA

P-T High-throughput Development of Organocatalytic Reactions. Jay C. Conrad, David W. C. MacMillan, Merck Center for Catalysis, Department of Chemistry, Princeton University, Princeton NJ, USA

P-T Chiral Synthesis of Mannich Bases and Separation of Racemic Mixtures. Meghal V. Modi¹, Praful D. Bharadiya¹, Dhruvo Jyoti Sen², C.N. Patel², ¹Department of Pharmaceutical Chemistry, B. S. Patel Pharmacy College, Linch, Saffrony Institute of Technology, Ahmedabad-Mehsana Highway Road, Mehsana-384435, Gujarat, INDIA; ²Postgraduate Research Laboratory, Department of Pharmaceutical Chemistry, Shri Sarvajanic Pharmacy College, Hemchandracharya North Gujarat University, Arvind Baug, Mehsana-384001, Gujarat, INDIA

P-T Analysis of Amino Phosphonic Acids and Their Carboxylic Acid Counterparts Using Crown Ether Columns. Wesley Barnhart, Kyung H. Gahm, Molecular Structure, Discovery Analytical Sciences, Amgen Inc., One Amgen Center Dr., Thousand Oaks, CA 91320, USA

P-T Enantioanalysis of Tertatolol with Immobilized Polysaccharide-derived HPLC Chiral Column at Nano-detection Level. Mohammed Hefnawy, Abdulrhman Al-Majed, Aymen Al-Suwailem, Department of Pharmaceutical Chemistry, College of Pharmacy, King Saud University, Riyadh, SAUDI ARABIA

P-T Developing Chiral Methods beyond Chiral Separation in Pharmaceutical Industry. Hong-Xun Guo, Fang Wang, Jenny Chen, Jun Han, David Yeung, Kelly Hu, Steven Wu, David Semin, Janet Cheetham, AR&D, Amgen Inc., One Amgen Central Drive, Thousand Oaks, CA 91320, USA

P-T About the Role of Affinities and Mobilities in Enantioseparations Using Capillary Electrophoresis. Bezhn Chankvetadze¹, Ketevan Lomsadze¹, Ana B. Martinez-Giron², Maria Castro-Puyana², Antonio L. Crego², Maria Luisa Marina², Antonio Salgado³, ¹Department of Physical and Analytical Chemistry, School of Exact and Natural Sciences, Tbilisi State University, Chavchavadze Ave 1, 0128 Tbilisi, GEORGIA; ²Department of Analytical Chemistry, Faculty of Chemistry, University of Alcala, 28871 Alcala de Henares (Madrid), SPAIN; ³Department of Medicinal Chemistry, Centro Nacional de Investigaciones Oncologicas (CNIO), 28029 Madrid, SPAIN