

Program

The Role of Structure in Biological, Chemical and Environmental Separations: From the Molecular to the Macro

January 6-11, 2008

Fiesta Resort Hotel
Puntarenas, Costa Rica

Conference Chair

T. Alan Hatton
Massachusetts Institute of Technology

ECI

**Engineering Conferences International
6 MetroTech Center
Brooklyn, NY 11201 USA
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Sunday, January 6, 2007

16:00 – 18:30	Registration (Roble 2 Conference Room)
17:00 – 18:00	Welcome Reception at the Pier Bar
18:00	Dinner (Calypso 1 Restaurant – reserved area)

IMPORTANT ANNOUNCEMENTS

- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

Monday, January 7, 2007

07:00 Breakfast (Calypso Restaurant – open seating)
(Note: Continental breakfast available 06:30 – 07:00.)

07:45 – 08:00 Welcoming comments

08:00 - 10:00

General Session 1

SEPARATIONS: A DISCIPLINARY BODY OF KNOWLEDGE
C. Judson King, University of California, Berkeley, USA

SEPARATIONS TECHNOLOGY - QUANTIFYING THE
EXPECTATIONS
Chris Fell, University of New South Wales, Australia

GREENHOUSE GAS REMEDIATION: A LARGE-SCALE
SEPARATION CHALLENGE
Geoffrey W. Stevens, University of Melbourne, Australia

SYMMETRY AS A GENERAL CONCEPT FOR IMPROVING
PROCESS EFFICIENCIES
Mike Kearney, Amalgamated Research Inc., USA

10:00 - 10:30 Coffee break

10:30 - 12:30

General Session 2

ADVANCES IN RAPID-TEMPERATURE-SWING-ADSORPTION
TECHNOLOGY; CONCEPTUAL AND ENGINEERING STUDIES
AND NEW APPLICATIONS
George E. Keller II, Mid-Atlantic Technology, Research and
Innovation Center (MATRIC), USA

ENTROPIC AND MOLECULAR ORDERING EFFECTS IN LIQUID
PHASE ADSORPTIVE SEPARATIONS
Gino V. Baron, Vrije Universiteit, Brussels

CHROMATOGRAPHIC PURIFICATION OF THERAPEUTIC
PROTEINS
Massimo Morbidelli, Institute for Chemical and Bioengineering,
ETH Zurich, Switzerland

FRACTIONATION OF BIOACTIVE PEPTIDES BASED ON
MEMBRANE TECHNOLOGY IN A HYBRID MODE
Ulrich Kulozik, Technical University Munich, Institute for Food
Process Engineering and Dairy Technology, Germany

12:30 - 13:30 Lunch (Calypso 1 Restaurant – reserved area)

Monday, January 7, 2007 (continued)

13:30 - 18:00 Free time/*ad hoc* discussions

18:00 - 19:30 Dinner (Calypso 1 Restaurant – reserved area)

19:30 - 21:30

General Session 3

MOLECULAR STRUCTURE TRANSITION IN THE
DOWNSTREAM PROCESSING OF PROTEIN
Diannan Lu, Jun Wang, Kai Kang, Jianzhong Wu, Zheng
Liu*Tsinghua University, China

UNFOLDING OF PROTEINS UPON ADSORPTION ON
HYDROPHOBIC INTERACTION CHROMATOGRAPHY
SURFACES: ANALYSIS OF KINETICS AND
THERMODYNAMICS
Alois Jungbauer, University of Natural Resources and Applied Life
Sciences, Department of Biotechnology, Austria

STRUCTURE FORMATION IN THE CLASSICAL METHODS OF
SOLID-LIQUID SEPARATION TECHNOLOGIES
Hermann Nirschl, Institute of Particle Technology, University of
Karlsruhe, Germany

21:30 - 22:30 Poster session/Social Hour

Tuesday, January 8, 2007

07:00 Breakfast Breakfast (Calypso Restaurant – open seating)
(Note: Continental breakfast available 06:30 – 07:00.)

08:00 - 10:00

General session 4

APPLICATION OF MAGNETIC SEPARATION TECHNIQUES IN BIOTECHNOLOGY: A MULTISCALE OPTIMIZATION PROBLEM
Matthias Franzreb, Forschungszentrum Karlsruhe, Germany

INTEGRATION OF FERMENTATION AND SEPARATION FOR THE PRODUCTION OF L-PHENYLALANINE
Emile J.A.X. van de Sandt, DSM, The Netherlands

PROCESS INTENSIFICATION BY COUPLING BIOCATALYSIS WITH BENIGN HETEROGENEOUS SEPARATION
Andreas S. Bommarius, Georgia Institute of Technology, USA

MONOLITHIC CATALYTIC REACTORS WITH STORAGE OF COMPONENTS ON CATALYST SURFACE
Milos Marek, Institute of Chemical Technology, Prague

10:00 - 10:30

Coffee break

10:30 - 12:30

General Session 5

SPATIAL AND TEMPORAL CONTROL OF SELF-ASSEMBLY USING REDOX-ACTIVE SURFACTANTS
Nicholas L. Abbott, University of Wisconsin-Madison, USA

TUNABLE INTERFACES FOR SELECTIVE SENSING AND SEPARATIONS BASED ON OLIGONUCLEIC ACIDS
Thomas Schafer, Universitat Rovira i Virgili, Italy

SEQUENCE-SELECTIVE EXTRACTION OF DNA USING DNA-FUNCTIONALIZED REVERSE MICELLES
Masahiro Goto, Kyushu University, Japan

PHOTORESPONSIVE CATIONIC VESICLES FOR ENHANCED GENE DELIVERY
C. Ted Lee, Jr., University of Southern California, USA

12:30 - 13:30

Lunch (Calypso 1 Restaurant – reserved area)

13:30 - 18:00

Free time/*ad hoc* discussions

18:00 - 19:30

Dinner (Calypso 1 Restaurant – reserved area)

Tuesday, January 8, 2007 (continued)

19:30 - 21:30

General Session 6

DNA TRANSPORT ON SOFT RECONFIGURABLE SURFACES
Ravi Kane, Rensselaer Polytechnic Institute, USA

MODELING DNA SEPARATIONS IN MAGNETIC POST ARRAYS
Patrick S. Doyle, MIT, Department of Chemical Engineering, USA

ELECTROPHORETIC SEPARATION TECHNOLOGIES:
ADVANCES IN MICROCHANNEL DNA SEQUENCING AND
GENOTYPING
Annelise E. Barron, Stanford University, USA

21:30 - 22:30

Poster session/Social Hour

Wednesday, January 9, 2008

- 07:00 – 08:00 Breakfast (Calypso Restaurant – open seating)
(Note: Continental breakfast available 06:30 – 07:00.)
- 08:00 - 10:00 **General Session 7**
- EMERGENCE AND MORPHOLOGY OF IDEAL MEMBRANE
CASCADES
E. N. Lightfoot, University of Wisconsin, USA
- FABRICATION FOR NEXT-GENERATION SEPARATION
Toyoki Kunitake, Frontier Research System, RIKEN/ The
University of Kitakyushu, Japan
- DEVELOPMENT OF FLUORSCENCE TECHNIQUES FOR
MONITORING AND MODELLING OF MEMBRANE PROCESSES
Joao G. Crespo, Universidade Nova de Lisboa
- THE MASS TRANSFER PERFORMANCE OF MEMBRANES IN
BIOLOGICALLY ACTIVE ENVIRONMENTS
Michael J. Semmens, University of Minnesota, USA
- 10:00 - 10:30 Coffee Break
- 10:30 - 11:30 Free time/*ad hoc* discussions
- 12:00 - 18:00 Conference Excursion to Villa Lapas (lunch included)
- 18:00 Dinner (no reserved seating)

Thursday, January 10, 2008

07:00 Breakfast Breakfast (Calypso Restaurant – open seating)
(Note: Continental breakfast available 06:30 – 07:00.)

08:00 - 10:00

General Session 8

GAS SEPARATION USING IONIC LIQUIDS AND IONIC LIQUID
POLYMERS

Richard D. Noble, University of Colorado, USA

DEVELOPMENT OF PROPANE/PROPYLENE SEPARATIONS:
FROM MOLECULAR SIMULATION TO PROCESSES

Alirio Rodrigues, University of Porto- FEUP-Associate Laboratory
LSRE/LCM, Portugal

REMOVAL OF VOCS FROM WATER BY VARIOUSLY
MODIFIED POLY(DIMETHYLSILOXANE) MEMBRANES
DURING PERVAPORATION

Tadashi Uragami, Faculty of Chemistry, Materials and
Bioengineering, Kansai University, Japan

Xe RECOVERY AND PURIFICATION VIA ADSORPTION

Tim Golden, Tom Farris and Brian Peterson, Air Products and
Chemicals, Inc., USA

10:00 - 10:30

Coffee break

10:30 - 12:30

General Session 9

THE ROLE OF MOLECULAR ARCHITECTURE IN IMMOBILIZED
LIGANDS ON ENHANCED IONIC SEPARATIONS: THE
AUXILIARY GROUP EFFECT AND SUPPORTED LIGAND
SYNERGISTIC INTERACTION

Spiro D. Alexandratos, Hunter College of the City University of
New York, USA

INVESTIGATION OF PROTEIN BINDING IN ION EXCHANGE
SYSTEMS WITH PROTEIN CHARGE LADDERS AND
HOMOLOGOUS PROTEIN LIBRARIES

Steven Cramer, Rensselaer Polytechnic Institute, USA

PROTEIN SEPARATION PROPERTIES OF MAGNETIC BEADS
MADE BY A SPRAY PROCESS

Urs Alexander Peuker, Clausthal University of Technology,
Institute of Chemical Engineering, Germany

EXPLORING THE ROLE OF MULTISCALE STRUCTURES IN
FUNCTIONALIZATION OF SEPARATION MATERIALS

Guangsheng Luo, Department of Chemical Engineering, Tsinghua
University, China

Thursday, January 10, 2008 (continued)

12:30 - 13:30 Lunch (Calypso 1 Restaurant – reserved area)

13:30 - 18:00 Free time/*ad hoc* discussions

13:30 - 15:30 **General Session 10**

MORPHOLOGY PREDICTION OF FACETED CRYSTALS
GROWN FROM SOLUTION

Michael F. Doherty, University of California, Santa Barbara, USA

FORMATION OF CRYSTALLINE HYDRATES, POLYMORPHS,
AND ADDUCTS AS PRODUCTS OR INTERMEDIATES

Ronald W. Rousseau, Georgia Institute of Technology, USA

NANOPARTICLE CRYSTALS, ORDERED COATINGS AND
GELS USING LYS-SIL

Michael Tsapatsis, University of Minnesota, USA

MAGNETOPHORETIC FRACTIONATION OF FINE PARTICLES

Ravikanth Annavarapu, Kenneth A. Smith and T. Alan Hatton,
MIT, USA

15:30 - 19:00 Free time/*ad hoc* discussions

19:00 - 20:00 Social Hour

20:00 – 22:00 Conference Dinner

Friday, January 11, 2008

07:00 Breakfast (Calypso Restaurant – open seating)
(Note: Continental breakfast available 06:30 – 07:00 while the full breakfast is served until 10:30 am)

10:00 Departures to airport according to international flight schedule.
From the hotel to the International Airport, it takes an average of 1.5 – 2 hours driving. Participants must be at the airport at least three hours prior to the departure time of their international flight.

Note: Check-out time at the hotel is 12 noon