

11th International Conference on Partitioning in Aqueous Two-Phase Systems



June 27 - July 2, 1999
Gulf State Park Resort
Gulf Shores, Alabama, USA

SCIENTIFIC PROGRAM

SUNDAY EVENING 6:00-10:00 pm

6:00-7:00 pm MIXER/REGISTRATION

7:00-7:15 pm OPENING CEREMONIES R. D. Rogers, Welcome/Conference Format

7:15-8:15 pm PANEL DISCUSSION Rogers, Hinze, Tjerneld, Haynes, Huddleston, Zaslavsky, Asenjo
(5 minutes from each, then open discussion on similarities/dissimilarities in polymer separation techniques)

8:15-10:00 pm MIXER

MONDAY 8:00 am - 12:00 pm

PHASE BEHAVIOR

D. FORCINITI; C. A. HAYNES

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| 8:00-8:30 am | Jonathan G. Huddleston , Jeffrey W. Baldwin, Robert M. Metzger, and Robin D. Rogers | 1. SOLVATOCHROMIC STUDIES IN POLYETHYLENE GLYCOL/SALT AQUEOUS BIPHASIC SYSTEMS |
| 8:30-9:00 am | Daniel Forciniti | 2. THE USE OF SMALL ANGLE NEUTRON SCATTERING FOR THE STUDY OF SOLUTIONS OF PROTEINS AND POLYMERS |
| 9:00-9:15 am | BREAK | |
| 9:15-9:45 am | Daniel T. Kamei , Daniel I. C. Wang, and Daniel Blankschtein | 3. A FUNDAMENTAL INVESTIGATION OF PROTEIN PARTITIONING IN TWO-PHASE AQUEOUS MIXED MICELLAR SYSTEMS |
| 9:45-10:15 am | Marco Rito-Palomares and Claudia Solano | 4. KINETICS OF PHASE SEPARATION UNDER DIFFERENT PROCESS AND DESIGN PARAMETERS IN AQUEOUS TWO-PHASE SYSTEMS |
| 10:15-10:45 am | Benedicte Lebreton and Andrew Lyddiatt | 5. NOVEL TIE-LINE LENGTH CHARACTERIZATION OF AQUEOUS TWO-PHASE SYSTEMS: IMPLICATIONS FOR OPERATIONS WITH COMPLEX PARTICULATE BIO-FEEDSTOCKS |
| 10:45-11:00 am | BREAK | |
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MODELING AND OPTIMIZATION

J. G. HUDDLESTON; B. ZASLAVSKY

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| 11:00-11:30 am | Heather D. Willauer , Jonathan G. Huddleston, and Robin D. Rogers | 6. MODELING THE PARTITIONING BEHAVIOR OF SMALL ORGANIC MOLECULES IN AQUEOUS BIPHASIC SYSTEMS |
| 11:30 am-12 pm | Boris Zaslavsky , Nellie Gulaeva, Pamela Lechner, Alexander Zaslavsky, and Arnon Chait | 7. ANALYTICAL APPLICATIONS OF AQUEOUS TWO-PHASE PARTITIONING |
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12:00-2:00 pm **LUNCH BREAK**

MONDAY 2:00-6:30 pm

<i>NEW POLYMER SYSTEMS/PHASE RECYCLING</i>		<i>F. TJERNELD; R. KUBOI</i>
2:00-2:30 pm	Josefine Persson , Hans-Olof Johansson, and Folke Tjerneld	8. THERMOSEPARATING WATER/POLYMER SYSTEM: A NOVEL ONE-POLYMER AQUEOUS TWO-PHASE SYSTEM FOR PROTEIN PURIFICATION
2:30-3:00 pm	Ryoichi Kuboi , Hideyuki Ota, and Hiroshi Umakoshi	9. SELECTIVE RECOVERY OF PROTEINS USING STIMULI-RESPONSIVE AQUEOUS TWO-PHASE SYSTEMS
3:00-3:15 pm	BREAK	
3:15-3:45 pm	Mos van Berlo , Marcel Ottens, Karel Luyben, and Luuk van der Wielen	10. PARTITIONING OF AMINO ACIDS IN AQUEOUS TWO-PHASE SYSTEMS WITH VOLATILE SALTS AS RECYCLABLE PHASE-FORMING SUBSTANCES
3:45-4:15 pm	B. Mattiasson and I. Yu. Galaev	11. AFFINITY PARTITIONING USING AQUEOUS TWO PHASE SYSTEMS FORMED BY THERMOSENSITIVE POLYMERS

<i>CROSSLINKED POLYMERS AND HYDROGELS</i>		<i>L. VAN DER WIELEN; A. AXELSSON</i>
4:15-4:45 pm	Charlotte Mattisson, Philippe Roger, Bengt Jönsson, Anders Axelsson , and Guido Zacchi	12. DIFFUSION OF LYSOZYME IN GELS AND LIQUIDS – A GENERAL APPROACH FOR THE DETERMINATION OF DIFFUSION COEFFICIENTS USING HOLOGRAPHIC LASER INTERFEROMETRY
4:45-5:00 pm	BREAK	
5:00-5:30 pm	G. W. Hofland , G. J. Witkamp, and L. A. M. van der Wielen	13. ACID PRECIPITATION OF FOOD PROTEINS USING HIGH-PRESSURE CO ₂
5:30-6:00 pm	L. A. M. van der Wielen , F. van Dierendonck, and D. Irving	14. RELEASE AND SWELLING DYNAMICS OF HYDROGELS
6:00-6:30 pm	J. C. Bosma and J. A. Wesselingh	15. DIFFUSION OF LARGE MOLECULES IN FIBROUS STRUCTURES

6:30-8:30 pm	DINNER BREAK	
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MONDAY 8:30-10:00 pm

POSTER SESSION I/RECEPTION: H. D. Willauer; K. D. Smith

PHASE BEHAVIOR

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| Simon Walker, Ade Aiyedebinu, Cornelius Lau, Benedicte Lebreton, and Andrew Lyddiatt | 16. VARIATION OF PARTITION COEFFICIENT WITH BIOMASS LOADING IN AQUEOUS TWO-PHASE SYSTEMS: IMPACT UPON THE FRACTIONATION AND RECOVERY OF ALBUMIN AND HEMOGLOBIN FROM WHOLE BOVINE BLOOD |
| Marco Rito-Palomares and Luisa Cueto | 17. EFFECT OF BIOLOGICAL SUSPENSIONS ON THE POSITION OF THE BINODAL CURVE IN AQUEOUS TWO-PHASE SYSTEMS |
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MODELING AND OPTIMIZATION

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| Ashley D. Carruth , Heather D. Willauer, Scott K. Spear, Jonathan G. Huddleston, and Robin D. Rogers. | 18. THE USE OF QUANTUM MECHANICAL MODELS (AMSOL) TO PREDICT THE DISTRIBUTION OF ORGANIC MOLECULES IN AQUEOUS BIPHASIC SYSTEMS |
| Hans-Olof Johansson , Gunnar Karlström, Follke Tjerneld, and Charles Haynes | 19. DRIVING FORCES FOR PHASE SEPARATION AND PARTITIONING IN AQUEOUS TWO-PHASE SYSTEMS |
| Alexander Zaslavsky, Nellie Gulaeva, and Boris Zaslavsky | 20. PEPTIDES PARTITIONING IN AQUEOUS DEXTRAN-PEG TWO-PHASE SYSTEM |
| Nellie Gulaeva, Alexander Zaslavsky, Pamela Lechner, Arnon Chait, and Boris Zaslavsky | 21. PARTITIONING OF DRUGS IN OCTANOL-BUFFER AND AQUEOUS DEXTRAN-PEG TWO-PHASE SYSTEM |
| J. C. Marcos , L. P. Fonseca, M. T. Ramalho, and J. M. S. Cabral | 22. MOLECULAR MODELING STUDIES ON PENICILLIN ACYLASE AFFINITY PARTITION |
| J. A. Asenjo and B. A. Andrews | 23. PREDICTING THE PARTITION COEFFICIENTS OF PROTEINS IN AQUEOUS TWO-PHASE SYSTEMS: RULES, MODELS, AND PRACTICAL REALITY |
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MONDAY 8:30-10:00 pm (continued)

POSTER SESSION I/RECEPTION: H. D. Willauer; K. D. Smith

NEW POLYMER SYSTEMS/PHASE RECYCLING

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| L. A. Oliveira, L. A. Sarubbo, A. L. F. Porto, H. S. Duarte, A. M. A. Carneiro-Leão, J. L. Lima-Filho, G. M. Campos-Takaki, and E. B. Tambourgi | 24. A NEW AQUEOUS TWO-PHASE SYSTEM BASED ON CASHEW-NUT TREE GUM AND POLYETHYLENE GLYCOL |
| Jin-Xin Xiao , Ulf Sivars, and Folke Tjerneld | 25. PHASE BEHAVIOR AND PROTEIN PARTITIONING IN AQUEOUS TWO-PHASE SYSTEMS OF CATIONIC-ANIONIC SURFACTANT MIXTURES |
| Y. Huang and D. Forciniti | 26. CHARACTERIZATION AND IMMOBILIZATION ON SOLID SUBSTRATES OF UCON/SALT AQUEOUS TWO-PHASE SYSTEMS |
| Toshinori Shimanouchi, Hiroshi Umakoshi, and Ryoichi Kuboi , | 27. EFFECTIVE SEPARATION OF PROTEINS USING LIPOSOMES AS AQUEOUS TWO-PHASE SYSTEMS MODIFIED BY HEAT/SALT COMBINED STRESSES |
| Ryoichi Kuboi , Makoto Yoshimoto, Toshinori Shimanouchi, and Hiroshi Umakoshi | 28. IMMOBILIZED LIPOSOME CHROMATOGRAPHY FOR REFOLDING AND PURIFICATION OF PROTEIN |
| Pedro de Alcantara Pessoa Filho , Uiram Kocak, Rahoma S. Mohamed, and Watson Loh | 29. AMINO ACIDS AND PROTEIN PARTITIONING IN AQUEOUS TWO-PHASE SYSTEMS CONTAINING BLOCK COPOLYMERS AND ELECTROLYTES |
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MEMBRANES AND CELL BIOLOGY

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| J. Peter Gierow , Lars Ekblad, and Bengt Jergil | 30. PURIFICATION OF RABBIT LACRIMAL GLAND PLASMA MEMBRANES BY AQUEOUS TWO-PHASE AFFINITY PARTITIONING |
| Marika Murto , Ulla Dissing, Gunnar Hörnsten, and Bo Mattiasson | 31. CHARACTERIZATION OF MIXED CULTURES BY MULTI-STEP PARTITION IN AQUEOUS TWO-PHASE SYSTEM CARRIED OUT ON A THIN-LAYER COUNTER CURRENT DISTRIBUTION APPARATUS |
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MONDAY 8:30-10:00 pm (continued)

POSTER SESSION I/RECEPTION: H. D. Willauer; K. D. Smith

SOLUBILIZATION IN SURFACTANTS

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| Ed Granger , Todd Morris, and Martin G. Bakker | 32. SOLUBILIZATION IN SURFACTANT AGGREGATES ON SILICA SURFACES: IMPACT OF SURFACE AND AGGREGATE STRUCTURE |
| D.-P. Hong, K. Shiomori, Y. Kawano, S.-S. Lee, and R. Kuboi | 33. CONFORMATIONAL TRANSITION AND MASS TRANSFER IN EXTRACTION OF PROTEINS BY AOT/ALCOHOL-ISOOCTANE REVERSE MICELLAR SYSTEMS |
| Sílvia A. Costa, Adalberto Pessoa Jr. , Inês C. Roberto | 34. PARTITION OF XYLANOLITIC COMPLEX FROM <i>PENICILLIUM JANTHINELLUM</i> BY AQUEOUS TWO-PHASE SYSTEM (ATPS) |
| Kimberly D. Smith , Scott K. Spear, and Robin D. Rogers | 35. AQUEOUS BIPHASIC SYSTEMS: INFLUENCES OF POLYMER MOLECULAR WEIGHT ON SYSTEM BEHAVIOR |
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PARTICLE PROCESSING

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| Genevieve Braas, Simon Walker , and Andrew Lyddiatt | 36. IMPACT OF WASHING PROCEDURES UPON THE PARTITION BEHAVIOR OF NANOPARTICULATE INCLUSION BODIES |
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TUESDAY 8:00 am - 12:30 pm

<i>INTERFACIAL PHENOMENA</i>		<i>J. M. VAN ALSTINE; K. KIMURA</i>
8:00-8:30 am	E. Huenupi, R. Muñoz, J. A. Asenjo, and B. A. Andrews	37. PHASE FORMATION BEHAVIOR AND KINETICS OF THE SEPARATION OF PHASES AND PROTEINS IN AQUEOUS TWO-PHASE SYSTEMS
8:30-9:00 am	Anna Millqvist-Fureby and Karin Landström	38. AQUEOUS POLYMER TWO-PHASE SYSTEMS AS CARRIERS IN SPRAY-DRYING OF BIOLOGICAL MATERIAL
9:00-9:15 am	BREAK	
9:15-9:45 am	Andres Veide and Martin Malmsten	39. ELECTROSTATIC AND HYDROPHOBIC EFFECTS OF OLIGOPEPTIDE INSERTIONS ON PROTEIN ADSORPTION AT SOLID SURFACES
9:45-10:15 am	Bradley M. Steels, Doina Hritcu, Werner Müller, Donald E. Brooks, and Charles A. Haynes	40. ENTROPIC INTERACTION CHROMATOGRAPHY: PROTEIN PURIFICATION USING END-GRAFTED POLYMER BRUSHES

<i>SOLUBILIZATION IN SURFACTANTS</i>		<i>M. G. BAKKER; W. L. HINZE</i>
10:15-10:45 am	Willie L. Hinze	41. REVIEW AND UPDATE ON SURFACTANT-MEDIATED CLOUD POINT EXTRACTIONS
10:45-11:00 am	BREAK	
11:00-11:30 am	Ulf Sivars and Folke Tjerneld	42. AFFINITY ISOLATION OF INTEGRAL MEMBRANE PROTEINS WITH DETERGENT/POLYMER AQUEOUS TWO-PHASE SYSTEMS CONTAINING METAL CHELATING POLYMER
11:30 am-12 pm	Jin-Xin Xiao and Kai-Xuan Wang	43. AQUEOUS TWO-PHASE SYSTEMS FORMED BY POLYMER AND CATIONIC-ANIONIC SURFACTANT MIXTURES
12:00-12:30 pm	Martin G. Bakker , Gregory L. Turner, and Ed Granger	44. SOLUBILIZATION IN SURFACTANT AGGREGATES ON SILICA SURFACES: IMPACT OF SURFACE AND OF AGGREGATE STRUCTURE

12:30-2:00 pm	LUNCH BREAK	
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TUESDAY 2:00-6:30 pm

APPLICATIONS IN BIOTECHNOLOGY

F. TJERNELD; P. LESTER

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| 2:00-2:30 pm | C. Winter, D. Ansaldi, J. Clifford, P. Lester, and B. Wolk | 45. INITIAL ISOLATION OF RECOMBINANT PROTEINS FROM WHOLE FERMENTATION LYSATES USING AQUEOUS TWO PHASE SYSTEMS |
| 2:30-3:00 pm | Jeff Lorch | 46. TWO-PHASE AQUEOUS EXTRACTION AS A PROCESS DEVELOPMENT TOOL |
| 3:00-3:30 pm | Klaus Selber, Teppo Hyytia, Anja Rodenbrock, Richard Fagerström, Merja Penttilä, and Maria-Regina Kula | 47. SEPARATION OF GENETICALLY MODIFIED CELLULASES USING DETERGENT BASED AQUEOUS TWO-PHASE EXTRACTION |
| 3:30-3:45 pm | BREAK | |
| 3:45-4:15 pm | Anna Nilsson, Kristina Berggren, Maurice Manesse, Per-Åke Nygren, Nina Bandmann, and Folke Tjerneld | 48. RECOMBINANT PROTEIN PARTITIONING IN THERMOSEPARATING AQUEOUS TWO-PHASE SYSTEMS BY GENETIC ENGINEERING OF PEPTIDE TAGS TO TARGET PROTEINS |
| 4:15-4:45 pm | Patricia Alred | 49. PURIFICATION OF A RECOMBINANT PROTEIN FROM MAMMALIAN CELL CULTURE: AN INDUSTRIAL APPLICATION |
| 4:45-5:00 pm | BREAK | |
| 5:00-5:30 pm | B. A. Andrews, E. Huenupi, and J. A. Asenjo | 50. INDUSTRIAL PROSPECTS OF AQUEOUS TWO-PHASE PROCESSES |
| 5:30-6:00 pm | Genevieve Braas, Simon Walker, and Andrew Lyddiatt | 51. RECOVERY OF NANOPARTICULATE BIOPRODUCTS FROM SUSPENSION FEEDSTOCKS: RELEVANCE TO THE MANUFACTURE OF GENE THERAPEUTICS |
| 6:00-6:30 pm | DISCUSSION | |
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- 6:30-8:30 pm **DINNER BREAK**
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TUESDAY 8:30-10:00 pm

POSTER SESSION II/RECEPTION: S. T. Griffin; G. A. Broker

INTERFACIAL PHENOMENA

- Kazuyoshi Kimura** 52. PARTITION ACCOMPANIED BY ADSORPTION AT THE INTERFACE IN AQUEOUS TWO-PHASE SYSTEM: ACCUMULATION OF LOW MOLECULAR MASS AT THE INTERFACE SIMULTANEOUSLY WITH ADSORPTION OF HIGH MOLECULAR MASS
- Nina Bandman, Per-Åke Nygren, Andres Veide, and **James M. Van Alstine** 53. PHAGE PARTITIONING: FUNCTIONAL SELECTION OF SURFACE DISPLAYED PEPTIDES
- James M. Van Alstine**, Douglas G. Hayes, Anne-Lee Asplund, Ylva Bengtsson, and Fredrik Setterwall 54. FRACTIONATIONS BASED ON UREA COMPLEX AND TWO-PHASE SYSTEM FORMATION
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APPLICATIONS IN BIOTECHNOLOGY

- Heather D. Willauer**, Ashish P. Kassangottuwar, Jonathan G. Huddleston, John M. Wiest, Gary C. April, and Robin D. Rogers 55. AQUEOUS BIPHASIC SYSTEMS FOR THE SEPARATION OF LIGNINS FROM CELLULOSE IN THE PAPER PULPING PROCESS
- Sheryl Fernandes**, Göte Johansson, and Rajni Hatti-Kaul 56. TWO-PHASE PARTITIONING OF RECOMBINANT CUTINASE
- Bo Mattiasson**, Marina Otamiri, and Patrick Adlercreutz 57. POLYMER-POLYMER ORGANIC TWO-PHASE SYSTEMS AS MEDIA FOR BIOCATALYSIS. ENZYME-POLYMER INTERACTIONS AS STABILIZING MEANS WITH SPECIAL REFERENCE TO BIOCATALYSIS IN WATER-POOR MEDIA
- Bo Mattiasson** and Rajni Hatti-Kaul 58. STRATEGIES TO MAKE AQUEOUS TWO-PHASE SYSTEMS MORE ROBUST AND EASILY HANDLED IN DOWNSTREAM PROCESSING SITUATIONS
- Klaus Selber**, Franz Nellen, Bernhard Steffen, Jörg Thömmes, and M.-R. Kula 59. DEVELOPMENT OF A METHOD FOR EFFICIENT OPTIMIZATION OF AQUEOUS TWO-PHASE EXTRACTION
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INORGANIC ABS/ABEC PARTITIONING

- T. A. Graber, B. A. Andrews, and **J. A. Asenjo** 60. A MODEL FOR THE PARTITION OF METAL IONS IN AQUEOUS TWO-PHASE SYSTEMS
- M. E. Taboada, T. A. Graber, B. A. Andrews, and **J. A. Asenjo** 61. DROWNING-OUT CRYSTALLIZATION OF SODIUM SULFATE USING AQUEOUS TWO-PHASE SYSTEMS
- Grant A. Broker**, Scott K. Spear, Johnathan G. Huddleston, and Robin D. Rogers 62. COORDINATION VS. HYDRATION OF METAL IONS WITH PEG POLYMERS AS A FUNCTION OF POLYMER LENGTH
- D. Fontana** and G. Ricci 63. POLYETHYLENE-GLYCOL BASED AQUEOUS BIPHASIC SYSTEMS: PHASE EQUILIBRIA AND PARTITIONING OF 1,10-PHENANTHROLINE COPPER(II) SULFATE COMPLEX
- Derrica Boochee, **Leslie Dunklin**, **Richard Lee**, Jonathan G. Huddleston, Heather D. Willauer, and Robin D. Rogers 64. SUMMER UNDERGRADUATE RESEARCH PROGRAM (SURP) AT THE UNIVERSITY OF ALABAMA: SYNTHESIS AND CHARACTERIZATION OF ROOM TEMPERATURE IONIC LIQUIDS AND PHASE DIAGRAMS FOR POLYETHYLENE GLYCOL/SALT MIXTURES
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TUESDAY 8:30-10:00 pm (continued)

POSTER SESSION II/RECEPTION: S. T. Griffin; G. A. Broker

PARTITION OF BIOMOLECULES

- José G. L. F. Alves, Lucy D. A. Chumpitaz,** Luiza H. M. da Silva, Antonio J. A. Meirelles
- Benedicte Lebreton** and Andrew Lyddiatt
- Christopher Chalko, **Dorothy M. Morr ,** and **D. James Morr **
- A. David Peter, **D. James Morr ,** and **Dorothy M. Morr **
- Adalberto Pessoa, Jr.,** A. C. Lucarini, D. P. Silva, D. Moraes, E. Kimura, F. M. Kapritchkoff, R. B. F. Marino, and M. Z. Ribeiro
- Mizuo Maeda** and Daisuke Umeno
- Monica A. Bim and **Telma T. Franco**
- Ufuk G nd z** and Konca Korkmaz
- Ufuk G nd z** and Aysel Ergen
- S. Engel,** Z. Barak, D. M. Chipman, and J. C. Merchuk
- S. Engel,** Z. Barak, D. M. Chipman, and J. C. Merchuk
- Thomaz de Gouveia and **Beatriz V. Kilikian**
65. PARTITIONING OF WHEY PROTEINS, BOVINE SERUM ALBUMIN, AND INSULIN IN AQUEOUS TWO-PHASE SYSTEMS
66. APPLICATION OF AQUEOUS TWO-PHASE PARTITION TO THE PRODUCTION OF HOMOGENEOUS PREPARATIONS OF FLUORESCENTLY LABELLED HUMAN SERUM ALBUMIN
67. NADH OXIDASE ACTIVITY OF BRINE SHRIMP OSCILLATES WITH A PERIOD OF 25 MINUTES AND IS ENTRAINED BY LIGHT
68. A LIGHT ENTRAINABLE AND PERIODIC NADH OXIDASE ACTIVITY OF *TETRAHYMENA*
69. HEXOKINASE AND GLUCOSE 6-PHOSPHATE DEHYDROGENASE EXTRACTION FROM A *SACCAROMYCES CEREVISIAE* CRUDE HOMOGENATE BY AQUEOUS TWO-PHASE SYSTEM
70. DNA-POLYMER COVALENTLY CONJUGATED SYSTEMS FOR AFFINITY SEPARATION
71. LIQUID-LIQUID EXTRACTION OF ALKALINE XYLANASE IN AQUEOUS TWO-PHASE SYSTEMS
72. BOVINE SERUM ALBUMIN PARTITIONING IN AN AQUEOUS TWO-PHASE SYSTEM: EFFECT OF pH AND SODIUM CHLORIDE CONCENTRATION
73. VISCOSITY PREDICTION OF PEG-DX-WATER SOLUTIONS USED IN AQUEOUS TWO-PHASE SYSTEMS
74. DETERMINING VALINE-ACETOHYDROXY ACID SYNTHASE (AHAS) DISSOCIATION CONSTANT K_d , BY USE OF AQUEOUS TWO PHASE SYSTEM (ATPS)
75. PURIFICATION OF ACETOHYDROXY ACID SYNTHASE (AHAS) IN AQUEOUS TWO PHASE SYSTEM (ATPS)
76. BOAFFINITY EXTRACTION OF GLUCOAMYLASE IN AQUEOUS TWO-PHASE SYSTEM USING STARCH AS FREE BIOLIGAND
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WEDNESDAY CONFERENCE OUTING

THURSDAY 8:30 am - 1:00 pm

MEMBRANES AND CELL BIOLOGY**D. M. MORRÉ; D. J. MORRÉ**

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| 8:30-8:45 am | Dorothy M. Morré and D. James Morré | 77. AQUEOUS TWO-PHASE PARTITION APPLIED TO ISOLATION OF MEMBRANES FROM CULTURED MAMMALIAN CELLS – AN OVERVIEW |
| 8:45-9:00 am | D. James Morré and Dorothy M. Morré | 78. AQUEOUS TWO-PHASE PARTITION APPLIED TO FRACTIONATION OF PLANT CELLS AND RECENT DEVELOPMENTS |
| 9:00-9:30 am | William M. Clark , Jidong Lou, and Glen Jorgensen | 79. CONTINUOUS FLOW TWO-PHASE ELECTROPHORESIS FOR PROTEIN RECOVERY FROM CELL LYSATE |
| 9:30-9:45 am | BREAK | |
| 9:45-10:15 am | J. F. Birdwell , J. D. Randolph, and S. P. Singh | 80. PRELIMINARY DEVELOPMENT OF A NEW METHOD FOR LIQUID-LIQUID EXTRACTION IN AQUEOUS TWO-PHASE PARTITIONING SYSTEMS |
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PROTEIN PARTITION - RELATION TO SURFACE EXPOSURE OF AMINO ACID RESIDUES**A. VEIDE; G. JOHANSSON**

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| 10:15-10:45 am | Kristina Berggren , Maarten Egmond, and Folke Tjerneld | 81. ROLE OF SURFACE EXPOSED AMINO ACID RESIDUES IN PROTEIN PARTITIONING: POINT MUTATIONS AND COMPUTER ANALYSIS |
| 10:45-11:15 am | Eric Collet , Nina Bandmann, Jeanette Leijen, Per-Åke Nygren, and Andres Veide | 82. GENETIC ENGINEERING OF THE <i>FUSARIUM SOLANI PISI</i> LIPASE CUTINASE FOR ENHANCED PARTITIONING IN PEG-SODIUM PHOSPHATE AQUEOUS TWO PHASE SYSTEMS |
| 11:15-11:30 am | BREAK | |
| 11:30 am-12 pm | Hans-Olof Johansson , Douglas G. Kilburn, and Charles Haynes | 83. AFFINITY EXTRACTIONS USING A CELLULOSE-BINDING-DOMAIN TAG AND THERMOSEPARATING HYDROXYETHYL CELLULOSE-BASED POLYMERS |
| 12:00-12:30 pm | Ch. Rämisch , J. Thömmes, and M.-R. Kula | 84. PARTITIONING OF NATIVE AND UNFOLDED ENZYMES IN AQUEOUS TWO-PHASE SYSTEMS |
| 12:30-1:00 pm | Hiroshi Umakoshi , Josefine Persson, Hans-Olof Johansson, Daniel E. Otzen, Mikael Oliveberg, Ryoichi Kuboi, and Folke Tjerneld | 85. SEPARATION PROCESS USING THERMOSEPARATING POLYMER TWO-PHASE SYSTEMS BASED ON UNFOLDING AND REFOLDING OF PROTEINS |
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1:00-2:30 pm **LUNCH BREAK**

THURSDAY 2:30-6:30 pm

INORGANIC PARTITIONING

M. LANGER; J. A. ASENJO

2:30-3:00 pm	Robin D. Rogers , Heather D. Willauer, Scott T. Griffin, and Jonathan G. Huddleston	86. AQUEOUS POLYMERIC SOLUTIONS AS ENVIRONMENTALLY-BENIGN SOLVENT EXTRACTION MEDIA
3:00-3:30 pm	Michael J. Gula, Michaela Langer , Robin Rogers, and Andrew Bond	87. SEPARATION, CONCENTRATION AND IMMOBILIZATION OF TECHNETIUM FROM ALKALINE SUPERNATE WASTE WITH EICHROM'S ABEC [®] RESIN
3:30-4:00 pm	Scott T. Griffin , Scott K. Spear, and Robin D. Rogers	88. PARTITIONING OF IODIDE IN AQUEOUS BIPHASIC SYSTEMS AND UPTAKE ON ABEC [®] RESINS
4:00-4:15 pm	BREAK	
4:15-4:45 pm	Scott K. Spear , Scott T. Griffin, and Robin D. Rogers	89. A NEW RHENIUM-188 GENERATOR TECHNOLOGY USING POLYETHYLENE GLYCOL-BASED AQUEOUS BIPHASIC EXTRACTION CHROMATOGRAPHIC RESINS
4:45-5:15 pm	Ann E. Visser , Scott T. Griffin, Deborah H. Hartman, and Robin D. Rogers	90. NAPHTHOL AND RESORCINOL-BASED AZO DYES AS METAL ION COMPLEXANTS IN AQUEOUS BIPHASIC SYSTEMS
5:15-5:30 pm	BREAK	
5:30-6:30 pm	BUSINESS MEETING	

THURSDAY 7:00-10:00 pm

7:00-10:00 pm	BANQUET	BEACH CLUB RESORT
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James M. Van Alstine

Introduction of the Biennial ATPS Award Winner

Göte Johansson

Award Address

Robin D. Rogers

Student Awards and Closing Remarks

FRIDAY 8:00 am - 12:45 pm

PARTITION OF BIOMOLECULES

T. T. FRANCO; M. LI

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| 8:00-8:30 am | Marco Rito-Palomares , Alejandro Negrete, Leobardo Serrano, and Enrique Galindo | 91. AROMA COMPOUNDS RECOVERY FROM MICELLIAL CULTURES IN AQUEOUS TWO-PHASE PROCESSES |
| 8:30-9:00 am | Ufuk Gündüz | 92. PARTITIONING OF BOVINE SERUM ALBUMIN IN AN AQUEOUS TWO-PHASE SYSTEM: OPTIMIZATION OF PARTITION COEFFICIENT |
| 9:00-9:30 am | Maria Estela da Silva and Telma Teixeira Franco | 93. EXTRACTION AND PURIFICATION OF PEROXIDASE OF SOYBEAN (<i>GLYCINE MAX</i>) BY METAL AFFINITY PARTITIONING |
| 9:30-9:45 am | BREAK | |
| 9:45-10:15 am | Mian Li , Zi-Qiang Zhu, Jonathan G. Huddleston, and Robin D. Rogers | 94. PARTITIONING OF ERYTHROMYCIN BY TEMPERATURE-INDUCED AQUEOUS TWO-PHASE SYSTEM |
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PARTICLE PROCESSING

A. LYDDIATT; R. HATTI-KAUL

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| 10:15-10:45 am | Irene Barinaga-Rementería Ramírez , Lars Ekblad, and Bengt Jergil | 95. BIOSPECIFIC AFFINITY PARTITIONING OF LIPOSOMES |
| 10:45-11:15 am | Yun J. Kwon and Rajni Hatti-Kaul | 96. METAL ION BOUND PARTICLES IN AQUEOUS TWO-PHASE SYSTEM FOR PROTEIN PURIFICATION |
| 11:15-11:30 am | BREAK | |
| 11:30 am-12 pm | M. D. Kaminski and L. Nuñez | 97. METAL SEPARATION CAPABILITIES USING AQUEOUS BIPHASIC SYSTEMS ON MAGNETIC RESINS |
| 12:00-12:30 pm | Simon Walker , Benedicte Lebreton, and Andrew Lyddiatt | 98. QUANTITATION OF THE EFFECTIVE TIE-LINE LENGTH OF WORKING AQUEOUS TWO-PHASE SYSTEMS: GENERIC APPLICATION TO THE OPTIMIZATION OF PRACTICAL PROTEIN RECOVERIES FROM PARTICULATE FEEDSTOCKS |
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12:30 pm CLOSING CEREMONIES
