



ISPPP 2013
33rd International Symposium and Exhibit on the
Separation and Characterization of
Biologically Important Molecules

ISPPP 2013 Scientific Program (as of 6-19-2013)

Wednesday, July 17, 2013

- 7:30 AM **Symposium Registration Open**
- 10:00 AM **Exhibition Opens in Harbor Ballroom II & III**
- 8:10 AM **Welcome and Opening Remarks in Burroughs Room**

Wednesday Session 1. Analytical Separations

Location: Burroughs Room

- 8:20 AM L-101 **Orthogonal Bioseparations.** Mark Schure, Kroungold Analytical, Blue Bell, PA, USA
- 8:40 AM L-102 **New Advances in Hydrophilic Interaction Chromatography of Peptides: Comparison of HILIC/SALT to HILIC and RPC.** Colin Mant, Robert Hodges, Department of Biochemistry and Molecular Genetics, University of Colorado Denver, Aurora, CO, USA
- 9:00 AM L-103 **Highly Efficient LC-MS of Intact Proteins using Sub-0.5 μ m Particles with Slip Flow.** Zhen Wu¹, Bingchuan Wei², Ximo Zhang¹, Mary Wirth¹, ¹Purdue University, West Lafayette, IN, USA; ²University of Washington, Seattle, WA, USA
- 9:20 AM L-104 **Capillary-channeled Polymer (C-CP) Fibers for High Throughput Analytical Separations and Desalting of Proteins Prior to MALDI and ESI-MS.** R. Kenneth Marcus¹, Abby Schaddock-Hewitt¹, Benjamin T. Manard¹, Carolyn Q. Burdette², Marissa Pierson¹, ¹Clemson University, Clemson, SC, USA; ²National Institute of Standards and Technology, Gaithersburg, MD, USA
- 9:40 AM L-105 **Increasing the Peak Capacity of Peptide Separations using Long Microcapillary Columns and Sub 2 μ m Particles at 30,000+ psi.** Kaitlin Fague, Justin Godhino, Edward Franklin, Jordan Stobaugh, University of North Carolina, Chapel Hill, NC, USA
- 10:00 AM **Break in Exhibit and Poster Session Hall**
(Location: Harbor Ballroom II & III)

Wednesday Session 2. Proteomics and Protein Measurements

Location: Burroughs Room

- 10:40 AM L-106 **Application of a Robust and Modular Cartridge based NanoLC System for Proteomics.** Michael Bereman¹, Tom Corso², Colleen Van Pelt², Michael MacCoss¹,
¹University of Washington, Seattle, WA, USA; ²CorSolutions, Ithaca, NY, USA
- 11:00 AM L-107 **Protein Markers for Cancer Stem Cells in Pancreatic Cancer.** David Lubman,
Jianhui Zhu, University of Michigan, Ann Arbor, MI, USA
- 11:20 AM L-108 **Target-based Multiplex MRM Assays.** Christopher M. Colangelo, Lisa Chung,
Shifman Mark, Abbott Thomas, Fumika Sakaue, Angus Nairn, Willaims Kenneth, Yale
University, New Haven, CT, USA
- 11:40 AM L-109 **Pretreatment of Human Fluid Samples for Trace Protein Analysis.**
Frank Jahnke, Sonata Biosciences, Inc., Auburn, CA, USA
- 12:00 PM Lunch on own
- 12:00-1:30 PM **Free Vendor Seminar Sponsored by Waters Corporation**
Location: Carlton Room
Must register with Waters in order to attend as seating is limited
- 1:30 - 3:00 PM **Poster Session I in Exhibit and Poster Session Hall**
(Location: Harbor Ballroom II & III)
- 3:00 - 3:45 PM **Break/Social in Exhibit and Poster Session Hall**
(Location: Harbor Ballroom II & III)

Wednesday Session 3. Protein Therapeutics

Location: Burroughs Room

- 3:45 PM L-110 **IgG Asparagine-linked Oligosaccharide Profiling by High-performance Anion-exchange Chromatography with Pulsed Amperometric Detection.** Jeffrey Rohrer¹, Deanna Hurum², Lipika Basumallick¹, ¹Thermo Fisher Scientific, Sunnyvale, CA, USA; ²Palo Alto, CA, USA
- 4:05 PM L-111 **Size-exclusion Chromatography using Multi-angle Light Scattering (SEC-MALS) for the Characterization of Polypeptide Mixtures.** Joseph Glajch, Ying Li, Momenta Pharmaceuticals, Cambridge, MA, USA
- 4:25 PM L-112 **Developing an Automated Workflow for Disulfide Linkages Analysis of Biotherapeutics by High-Resolution LCMS.** Asish Chakraborty¹, Stephane Houel¹, Henry Shion¹, Scott Berger¹, Weibin Chen¹, Anurag Rathore², ¹Waters Corporation, Milford, MA, USA; ²Indian Institute of Technology, New Delhi, Delhi, INDIA
- 4:45 PM L-113 **Analytical HIC for mAb Aggregate Analysis; How Does the Salt Ion Type Influence the Selectivity?** Hannah Brueck, Judith Vajda, Werner Conze, Egbert Mueller, Tosoh Bioscience GmbH, Stuttgart, GERMANY
- 5:05 - 7:00 PM **Welcome Mixer in Exhibit and Poster Session Hall**
(Location: Harbor Ballroom II & III)

Thursday, July 18, 2013

7:45 AM **Symposium Registration Open**

10:00 AM **Exhibition Open in Harbor Ballroom II & III**

Thursday Session 4. Affinity and Ion Exchange Methods

Location: Harbor Ballroom I

8:20 AM L-114 **Discovery and Development of Universal Fc Binders for Antibody Purification.** Marc Arnold, Holger Bittermann, Thomas Neumann, Graffinity Pharmaceuticals GmbH, Heidelberg, GERMANY

8:40 AM L-115 **Development of a Sialic Acid-specific Affinity Chromatography for the Purification and Separation of Glycoprotein Isoforms.** Matthias Meininger¹, Francisco Vito Santos da Silva¹, Samanta Cajic¹, René Hennig¹, Erdmann Rapp¹, Frank Zwanziger², Stefan Laufer², Karl-Heinz Wiesmueller³, Heinz Rotering⁴, Udo Reichl¹, Michael Wolff¹, ¹Max Planck Institut for Dynamics of Complex Technical Systems, Magdeburg, GERMANY; ²Eberhard-Karls-University, Tuebingen, GERMANY; ³EMC Microcollections GmbH, Tuebingen, GERMANY; ⁴Merckle Biotec GmbH, Ulm, GERMANY

9:00 AM L-116 **Reversible Cyclic and Polycyclic Peptides for the Discovery of Affinity Ligands.** Stefano Menegatti, Robert Blackburn, Kevin Ward, Ruben Carbonell, North Carolina State University, Raleigh, NC, USA

9:20 AM L-117 **Understanding Ion Exchange Adsorption Mechanism.** Francisco Marques¹, Patricia Aguilar¹, Marvin Thrash Jr.², Cristina Dias-Cabral¹, ¹University of Beira Interior, Covilhã, PORTUGAL; ²Central State University, Wilberforce, OH, USA

9:40 AM L-118 **Purification of a Potential Malaria Vaccine by Multimodal Ion Exchange Chromatography.** Sonja Jensen, Jessica Paul, Gesine Cornelissen, Hamburg University of Applied Sciences, Hamburg, GERMANY

10:00 AM **Break in Exhibit and Poster Session Hall**
(Location: Harbor Ballroom II & III)

Thursday Session 5. Monoclonal Antibody Separations

Location: Harbor Ballroom I

- 10:40 AM L-119 **New Tools to Achieve Enhanced Process Productivity in the Purification of Monoclonal Antibodies and Other Recombinant Proteins.** Milton Hearn, Monash University, Clayton, Victoria, AUSTRALIA
- 11:00 AM L-120 **Investigation of Monoclonal Antibody Purification by Aqueous Two-phase Extraction.** Jan Mündges, Shuai Shi, Tim Zeiner, TU Dortmund University, Dortmund, GERMANY
- 11:20 AM L-121 **Fujifilm Diosynth's and Chromatan's Investigation of Countercurrent Tangential Chromatography for Purification of Monoclonal Antibodies.** Oleg Shinkazh, Chromatan, State College, PA, USA
- 11:40 AM L-122 **2D-DIGE for Host Cell Protein Analysis and Antibody Process Development.** Alois Jungbauer, BOKU, Vienna, AUSTRIA
- 12:00 PM Lunch on own
- 12:00-1:30 PM **Free Vendor Seminar Sponsored by Shimadzu**
"Turning Mountains into Molehills: The New Landscape of Protein Analysis"
Location: Griffin Room
Must register with Shimadzu in order to attend as seating is limited
SIGN UP BY CONTACTING <https://www.surveymonkey.com/s/K5R8NVL>
- 12:00-1:30 PM **Free Vendor Seminar Sponsored by Knauer**
"Contichrom®: A Versatile Purification Platform for Batch/CaptureSMB/MCSGP Biochromatography"
Location: Carlton Room
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- 1:30 - 3:00 PM **Poster Session II in Exhibit and Poster Session Hall**
(Location: Harbor Ballroom II & III)
- 3:00 - 3:30 PM **Break/Social in Exhibit and Poster Session Hall**
(Location: Harbor Ballroom II & III)

Thursday Session 6. Protein Targets

Location: Harbor Ballroom I

- 3:30 PM L-123 **Integration and Intensification of Downstream Bioprocessing based in Aqueous Two-phase Systems.** Ana Azevedo, Raquel Aires-Barros, Instituto Superior Tecnico, Lisbon, PORTUGAL
- 3:50 PM L-124 **Multi-stage Enzyme Extraction using Aqueous Two-phase Systems – Experiment and Modeling.** Axel Prinz, Katharina Koch, Tim Zeiner, TU Dortmund University, Dortmund, GERMANY
- 4:10 PM L-125 **Purifying and Concentrating Recovery Process Samples for Recombinant Protein Quantification.** Tanja Buch, Ian Marison, DCU, Dublin, IRELAND
- 4:30 PM L-126 **Predicting Protein Solubility and Crystallization Behavior based on the Second Osmotic Virial Coefficient.** Marcel Herhut, Christoph Brandenbusch, Gabriele Sadowski, Department of Biochemical and Chemical Engineering, Dortmund, GERMANY
- 4:50 PM L-127 **Historical Retrospective of ISPPP Conferences.** Milton Hearn, Monash University, Clayton, Victoria, AUSTRALIA
- 5:10 PM Pause
- 6:30 - 8:30 PM **Symposium Banquet** - please purchase \$30 ticket online by July 1
Location: Burroughs room

Friday, July 19, 2013

- 8:15 AM **Symposium Registration Open**

Friday Session 7. Bio-Therapeutics

Location: Harbor Ballroom I

- 8:45 AM L-128 **Improved Identification and Quantitation of Host Cell Proteins in Protein Therapeutics using 2D-LC and Ion Mobility.** Weibin Chen, Catalin Doneanu, Keith Fadgen, Martha Stapels, Waters, Milford, MA, USA
- 9:05 AM L-129 **Additional Structural Insights on Therapeutic Glucocerebroside Variants and Impurities by SEC.** John Thomas, Shire, Lexington, MA, USA
- 9:25 AM L-130 TBD
- 9:45 AM L-131 **Impact of Plasmid Size on the Purification of Model pDNA Vaccines by HIC on Phenyl Membrane Adsorbers.** Luis Raiado-Pereira, Jonathan de la Vega, D. Miguel F. Prazeres, Marilia Mateus, Instituto Superior Tecnico, Lisbon, PORTUGAL
- 10:05 AM L-132 **Protein Biomarker Assays for Drug Safety Assessments.** Jennifer Colangelo, Pfizer, Groton, CT, USA
- 10:25 AM **Break**

Friday Session 8. Glycans and Complex Carbohydrates

Location: Harbor Ballroom I

- 11:00 AM L-133 **Separations of Intact Glycoproteins by HILIC.** Barry Boyes¹, Ron Orlando², Joseph DeStefano¹, ¹Advanced Materials Technologies, Inc., Wilmington, DE, USA; ²University of Georgia, Athens, GA, USA
- 11:20 AM L-134 **Progress Towards Automated Sequencing of Heparin/Heparan Sulfate.** Joshua S. Sharp, Complex Carbohydrate Research Center, University of Georgia, Athens, GA, USA
- 11:40 AM L-135 **HILIC-MS of Glycans and Glycopeptides.** Joseph Zaia, Center for Biomedical Mass Spectrometry, Boston University, Boston, MA, USA
- 12:00 PM L-136 **Hypothesis Driven Glycomics.** Shujuan Tao¹, Yining Huang¹, Barry Boyes², Ron Orlando¹, ¹Complex Carbohydrate Research Center, University of Georgia, Athens, GA, USA; ²Advanced Materials Technologies, Inc., Wilmington, DE, USA
- 12:20 PM **Closing Remarks**
- 12:30 PM **Adjourn**

See the list of poster presentations on the following pages

Preliminary List of Poster Presentations

Posters are located in the Exhibit Hall in Harbor Ballroom II & III

Wednesday & Thursday Poster Session Times: 1:30 – 3:00 PM

All posters must be put up onto the poster boards on Wednesday morning and left on the poster boards for two days. Do not remove the poster until the end of Poster Session II on Thursday afternoon. The size of each poster board is 3.6 feet wide (110cm) by 3.6 feet high (110cm). Please see "Poster Information" at www.ISPPP.org.

- **Epitope Mapping and the Selection of MABs used in the Diagnostic Immunoassays.** Cheng Zhao, Bryan Tieman, Bailin Tu, Robert Ziemann, Jeffrey Fishpaugh, Carol Ramsay, Abbott Laboratories, Abbott Park, IL, USA
- **An Alternative Capture Step for Monoclonal Antibodies: Phenyl Boronate as a New Multimodal Ligand.** Ana M. Azevedo, Raquel dos Santos, Sara A.S.L. Rosa, M. Raquel Aires-Barros, Instituto Superior Tecnico, Lisbon, PORTUGAL
- **Phenyl Boronic Acid as Ligand for a Multimodal Chromatography: Adsorption Behavior Comparison between Control Pore Glass and Agarose Matrixes.** Rimenys Jr. Carvalho¹, James Woo², Karim A. Nakamura², Maria Raquel Aires-Barros¹, Ana M. Azevedo¹, Steven M. Cramer², ¹Instituto Superior Tecnico, Lisbon, PORTUGAL; ²Rensselaer Polytechnic Institute, Troy, NY, USA
- **Aggregate Removal with Cation Exchange Chromatography (Nuvia™ HR-S).** Paul K. Ng, Mark A. Snyder, Bio-Rad Laboratories, Hercules, CA, USA
- **Optimized One-day Assay for Quantitation of Monosaccharide Content in Proteins by 2-Picoline-Borane Reductive Amination.** Nicholas Woon, Genentech, South San Francisco, CA, USA
- **Chiral Separation of D,L-Phenylglycine using an Enantioselective Membrane Formed by Polycondensation of Bovine Serum Albumin with 1,6-Diisocyanatohexane on a Polysulfone Membrane.** Li-Ming Yuan, Guang-Yong Zeng, Department of Chemistry, Yunnan Normal University, Kunming, Yunnan, P.R. CHINA
- **Methodology of Monoclonal Antibody Charge-variant Analysis by Ion-exchange Chromatography.** Hillel Brandes, Roy Eksteen, Sigma Aldrich / Supelco, Bellefonte, PA, USA
- **Analysis of Associated Forms of Insulins.** Sara Fexby Garmer, Martin Mårtensson, Dorte Bjerre Steensgaard, Aage Hvass, Svend Havelund, Novo Nordisk A/S, Måløv, DENMARK
- **2D Separation and Immunoreactive Coverage of CHO and E.coli Host Cell Proteins (HCP) by Polyclonal Antibodies – Use of Fluorescent Labeling (Cyanine Dyes) in 2D Western Blotting.** Harbhajan Dhillon, Mark Abbott, Jonathan Basch, Mark Panek, Bristol-Myers Squibb, East Syracuse, NY, USA
- **Lipidomics using Ion Mobility Mass Spectrometry with Transomics Informatics.** Giuseppe Astarita¹, Roy Martin¹, Giorgis Isaac¹, James Langridge², Weibin Chen¹, ¹Waters Corporation, Milford, MA, USA; ²Waters Corporation, Manchester, UK
- **N-linked Glycan Profile Comparison Between the Innovator and a Biosimilar Etanercept.** Ying Qing Yu, Weibin Chen, Waters Corporation, Milford, MA, USA
- **Characterization of Two Novel Analytical Chromatographic Columns for Orthogonal Analysis of Monoclonal Antibody and Protein Aggregates and their Isoforms.** Justin Steve, Atis Chakrabarti, Tosoh Bioscience LLC, King of Prussia, PA, USA

- **Greater Loading Capacity and Resolution for Improved Process-scale Peptide Purification.** Jochen Saar¹, Reno Nguyen², Chitra Sundarajan³, Scott Anderson⁴, Dennis McCreary⁵, Janine Sinck⁶, ¹Worms, GERMANY; ²Hesperia, CA, USA; ³Hyderabad, Andrapradesh, INDIA; ⁴Deerfield, IL, USA; ⁵Columbia, MD, USA; ⁶Allentown, PA, USA
- **Charge Surface Modified C18 Columns for Increasing Peak Capacity in LC-MS Peptide Separations with Formic Acid Mobile Phases.** Matthew Lauber, Stephan Koza, Kenneth Fountain, Waters Corporation, Milford, MA, USA
- **Purification of a Potential Malaria Vaccine by Multimodal Ion Exchange Chromatography.** Sonja Jensen, Jessica Paul, Gesine Cornelissen, Hamburg University of Applied Sciences, Hamburg, GERMANY
- **A Quality by Design Approach: Systematic Optimization of Malaria Vaccine Purification with IMAC.** Jessica Paul, Arthur Dukart, Jasmin Zuehlke, Gesine Cornelissen, Hamburg University of Applied Sciences, Hamburg, GERMANY
- **Characterization of Two Novel High Capacity Strong Ion Exchange Resins.** Chinlun Huang, J. Kevin O'Donnell, Tosoh Bioscience, King of Prussia, PA, USA
- **Automating Workflows for Developing Separation and Reporting Methods for Size Exclusion Chromatography.** Thomas E. Wheat, Aparna Chavali, Patricia McConville, Waters Corporation, Milford, MA, USA
- **Aggregates and Particle Characterization to Support Biomanufacturing Process Development.** Yogesh Mudaliar, Rong-Rong Zhu, Tim Hanley, EMD Millipore, Bedford, MA, USA
- **Enthalpic and Entropic Contributions in Lysozyme Adsorption onto a Cation-exchange Support.** Francisco Marques¹, Goncalo Silva¹, Marvin Thrash, Jr.², Cristina Dias-Cabral¹, ¹CICS-UBI-Health Sciences Research Centre, University of Beira Interior, Covilha, PORTUGAL; ²Department of Water Resources and Environmental Engineering, College of Science and Engineering, Central State University, Wilberforce, OH, USA
- **Superficially Porous Particles for Peptide and Protein Analysis.** Barry Boyes, Joseph Kirkland, Stephanie Schuster, Brian Wagner, Joseph DeStefano, Advanced Materials Technologies, Inc., Wilmington, DE, USA
- **Malaria Vaccine Purification via Expanded Bed Adsorption Chromatography Combined with an Ultrafiltration.** Sarah Schreiber, Sven Oliver Borchert, Jessica Paul, Gesine Cornelissen, University of Applied Sciences, Hamburg, GERMANY
- **Microcalorimetric Study of Linear Plasmid DNA Adsorption onto an Ion Exchange Support.** Patricia Aguilar¹, Filipa Pires¹, Marvin Thrash, Jr.², Cristina Dias-Cabral¹, ¹CICS-UBI-Health Sciences Research Centre, University of Beira Interior, Covilha, PORTUGAL; ²Department of Water Resources and Environmental Engineering, College of Science and Engineering, Central State University, Wilberforce, OH, USA
- **Continuous-batch Protein Chromatography – Continuous Capture Coupled with Two-step Automated Batch Polish.** Peter Tiainen, Jais Rose Bjelke, Ditte Skibstrup, Haleh Ahmadian, Novo Nordisk A/S, Malov, DENMARK
- **Separation of DMB-Labeled Sialic Acids for the Comparison of Biosimilars to Reference Materials with an Improved Chromatographic Method.** Xiaoning Lu, Hillel Brandes, Dave Bell, Roy Eksteen, Sigma-Aldrich, Bellefonte, PA, USA

- **Bioseparations with 3.5- and 5-Micron Wide-Pore Superficially Porous Particles.** Joseph DeStefano, Joseph Kirkland, Stephanie Schuster, Bill Johnson, Advanced Materials Technologies, Inc., Wilmington, DE, USA
- **Twin Column CaptureSMB: A Novel Cyclic Process to Increase the Capacity Utilization in Protein A Chromatography.** Monica Angarita¹, Baur Daniel¹, Thomas Muller-Spath², Roel Lievrouw³, Geert Lissens³, Guido Strohlein², Massimo Morbidelli¹, ¹ETH Zurich, Zurich, SWITZERLAND; ²ChromaCon AG, Zurich, SWITZERLAND; ³JSR Life Sciences, Leuven, BELGIUM
- **Microfluidic CE-MS Applied to Protein, Peptide, and Small Molecule Characterization.** Gregory Roman¹, Scott Mellors², Martin Gilar¹, James Murphy¹, J. Michael Ramsey², ¹Waters Corporation, Milford, MA, USA; ²University of North Carolina, Chapel Hill, NC, USA
- **Effects of Mobile Phase Optimization on Analyte Behaviour in Size Exclusion Chromatography of Biomolecules.** James Martosella¹, Andrew Coffey², ¹Agilent Technologies, Wilmington, DE, USA ²Agilent Technologies, Church Stretton, UK
- **Fast and Efficient Reversed-phase Liquid Chromatography/Mass Spectrometry Characterization of Glycosylation in the Fc Region of a Recombinant IgG(1) Therapeutic Monoclonal Antibody (mAb).** James Martosella, Phu Duong, Alex Zhu, Agilent Technologies, Wilmington, DE, USA
- **Peptide Mapping of a Therapeutic Monoclonal Antibody (mAb): Optimizations for Increasing Speed and Peptide Identifications.** James Martosella¹, Ning Tang², Alex Zhu¹, ¹Agilent Technologies, Wilmington, DE, USA; ²Agilent Technologies, Santa Clara, CA, USA
- **Countercurrent Tangential Chromatography for Purification of Monoclonal Antibodies.** Oleg Shinkazh, Chromatan, State College, PA, USA
- **A Novel Automated Enrichment Process for the Isolation of Product-related Impurities from Active Pharmaceutical Ingredients.** Thomas Muller-Spath, Nicole Ulmer, Lars Aumann, Guido Strohlein, Michael Bavand, ChromaCon AG, Zurich, SWITZERLAND
- **Combining Small-scale Purification and Analysis of Monoclonal Antibodies on One Instrument.** Sonja Schneider, Agilent Technologies, Waldbronn, GERMANY
- **Amphoteric Ion-Exchange Separation of Biomolecules with Porous or Non-Porous Polymer-Based Resins.** Ken Tseng¹, Toshi Ono¹, Tsunehisa Hirose², Kazuhiro Kimata², ¹Nacalai USA Inc., San Diego, CA, USA; ²Nacalai Tesque, Kyoto, JAPAN
- **New Wide Pore Media Improves Loading Capacity and Productivity of Peptide and Protein Purification by Flash Chromatography.** Bopanna NK, Chitra Sundararajan, Melissa Wilcox, Janine Sinck, Reno Nguyen, Grace Discovery Sciences, Deerfield, IL, USA
- **Isomeric Separation of Procainamide Labeled N-glycans by Using Novel Superficially Porous Particle HILIC Column.** Shujuan Tao¹, Yining Huang¹, Barry Boyes², Ron Orlando¹, ¹CCRC, University of Georgia, Athens, GA, USA; ²AMT, Wilmington, DE, USA
- **Two Dimensional Separations: Which Dimension Plays the Most Important Role in Protein Identification Efficiency?** Darryl Johnson¹, Barry Boyes², Ron Orlando¹, ¹CCRC, University of Georgia, Athens, GA, USA; ²AMT, Wilmington, DE, USA

FREE VENDOR SEMINARS

Free Vendor Seminar sponsored by WATERS - Wednesday, July 17 @ 12:00-1:30PM

Free Vendor Seminar sponsored by SHIMADZU - Thursday, July 18 @ 12:00-1:30PM

Must register with Shimadzu in order to attend as seating is limited

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Turning Mountains into Molehills: The New Landscape of Protein Analysis

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Free Vendor Seminar sponsored by KNAUER - Thursday, July 18 @ 12:00-1:30PM

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List of Exhibiting Organizations

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