

WBC 2004 Program

SATURDAY, JULY 24

8:00 a.m. – 5:00 p.m.	Pre-Congress Course: Introduction to Design of Experiments. Eric Samp, Ph.D., Technical Leader, Coors Brewing Company, Golden, Colorado, U.S.A. – Mohsen A/B This is a perfect introductory course for a wide range of brewing professionals to learn statistical experimental design and how to conduct efficient experiments with multiple test variables. The experimental design techniques covered will provide brewing professionals with methods to effectively evaluate the influence of these types of variables by constructing, executing, and analyzing factorial designs. Discover how to determine the statistical significance of effects, identify interactions, and interpret them. In addition, reducing experimental test sizes by fractionating full factorials will be covered, along with interpretation of design resolution and techniques to determine it. Other topics will include how to test for higher order effects, block for variables that cannot be easily randomized, determine path of steepest ascent/descent, conduct screening designs, and deal with multiple responses.
Noon – 1:00 p.m.	Introduction to Design of Experiments – Lunch – Del Mar A/B
Noon – 6:00 p.m.	Registration – Elizabeth Foyer
Noon – 6:00 p.m.	Speaker Ready Room – Molly A
Noon – 6:00 p.m.	Media Room – Molly B
1:00 – 5:00 p.m.	Pre-Congress Course: Flavor Workshop: Oxidation Flavors—The Science of Beer Aging – Madeline A/D Gain a better understanding of oxidation flavors and processes that affect these flavors at this half-day workshop led by globally-recognized experts. Bill Simpson, Cara Technologies/FlavorActiv, will describe the types of oxidative compounds and their associated flavors, and attendees will learn to identify and evaluate oxidation flavors during the tasting session. Olav Vind Larsen, Danbrew/ A.J.L., will then explore the implications of process design on oxidation. Charlie Bamforth, UC-Davis, will provide insight into the science behind oxidation. The workshop will deliver key information on a subject important to brewers.
2:00 – 7:00 p.m.	Exhibitors and Posters Set Up – Douglas Pavilion
6:00 – 9:00 p.m.	Welcome Reception – Poolside

SUNDAY, JULY 25

6:45 – 7:45 a.m.	Presenters' Breakfast (includes today's presenters) – Del Mar A/B
7:00 a.m. – 6:00 p.m.	Speaker Ready Room – Molly A
8:00 a.m. – 5:30 p.m.	Registration / Silent Auction / Sponsors' Showcase – Elizabeth Foyer
8:00 a.m. – 5:30 p.m.	Media Room – Molly B
WBC 2004 OPENING PLENARY SESSION: Creating Our Future: An Executive View – Elizabeth A/E	
10:00 – 10:10 a.m.	WBC 2004 Welcome
10:10 – 10:30	Globalization. J. F. van Boxmeer, Heineken
10:10 - 10:50 a.m.	Environmental. Yasutsugu Kawasaki, Suntory Limited
10:50 - 11:10 a.m.	Beer and Health. Terry Micek, Coors Brewing Company
11:10 - 11:30 a.m.	Brewing Operations. TBA, SAB/Miller
11:30 a.m. – 2:00 p.m.	Exhibits, Hospitality, and Buffet Lunch – Douglas Pavilion
11:30 a.m. – 2:00 p.m.	Poster Session (see list on page 37). Authors present 11:30 a.m. – 12:30 p.m. – Douglas Pavilion
TECHNICAL SESSION I: Malt. Scott Heisel, Moderator – Elizabeth A/C	
2:00 – 2:05 p.m.	Opening Remarks
2:05 – 2:30 p.m.	O-1. New Method for Malt Treatment by Subcritical Water. Koichi Nakahara, Suntory Ltd., Osaka, Japan
2:30 – 2:55 p.m.	O-2. Wort Amino Acid Composition of Different Barley Varieties and Effect on Nitrogen Assimilation. Xiang Yin, Prairie Malt/Cargill Malt, Biggar, SK, Canada
2:55 – 3:20 p.m.	O-3. Choice of Enzyme Solutions Should Determine the Choice of Raw Materials and Process—Not Vice Versa. Sten Aastrup, Novozymes, Bagsvaerd, Denmark

- 3:20 – 3:50 p.m. Break
- 3:50 – 4:15 p.m. O-4. NIR Spectroscopy for Single-Kernel Analysis—A Novel Tool for the Evaluation of Homogeneity in Barley and Malt. Frank Rath, VLB Berlin, Berlin, Germany
- 4:15 – 4:40 p.m. O-5. Lipid Oxidation During Mashing and Its Impact on Beer Quality—Recent Progress. Hisao Kuroda, Sapporo Breweries Ltd., Shizuoka, Japan
- 4:40 – 5:05 p.m. O-6. The First PCR Marker for Breeding of High-Quality Winter Malting Barley—A Novel Selection Tool Against Beta-Amylase-Weak Genotypes. Michael Voetz, VLB Berlin, Berlin, Germany

TECHNICAL SESSION II: Beer Analysis. Cindy-Lou Dull, Moderator – Elizabeth D/E

- 2:00 – 2:05 p.m. Opening Remarks
- 2:05 – 2:30 p.m. O-7. A New Brewing Science Study in the 21st Century Fused with Brain Science—Measurement of Human Brain Activity Evoked by Stimulation of Beer Bitterness Using Magnetoencephalography. Hirotaka Kaneda, Sapporo Breweries Ltd., Shizuoka, Japan
- 2:30 – 2:55 p.m. O-8. Stable Isotope Dilution Assay of Methanethiol and Dimethyl Trisulfide in Beer Using Purge and Trap Method. Sachio Iinuma, Kirin Brewery Co., Ltd., Yokohama, Japan
- 2:55 – 3:20 p.m. O-9. Development of Multi-residue Analysis Method of Agrochemicals Using Liquid Chromatography/Tandem Mass Spectrometry. Masayuki Omote, Asahi Breweries, Ltd., Ibaraki, Japan
- 3:20 – 3:50 p.m. Break
- 3:50 – 4:15 p.m. O-10. Wort Turbidity—Comparison of Different Measuring Principles. Arnd Rogner, Sigris-Photometer AG, Ennetbürgen, Switzerland
- 4:15 – 4:40 p.m. O-11. Toward Improved Fermentation Consistency Using Multivariate Statistics. Behnam Taidi, Scottish Courage Ltd., Edinburgh, Scotland
- 4:40 – 5:05 p.m. O-12. Multivariate Analysis of Routine Beer Analysis Methods. Karl Siebert, Cornell University, Geneva, NY

TECHNICAL SESSION III: Filtration. Frederik Havel, Moderator – Elizabeth F/H

- 2:00 – 2:05 p.m. Opening Remarks
- 2:05 – 2:30 p.m. O-13. Cost and Quality Comparison Between DE and Crossflow Filtration for Beer Clarification in Industrial Scale. Hans Denniger, Westfalia Separator AG, Oelde, Germany
- 2:30 – 2:55 p.m. O-14. The Filterability of Wort and Beer. Stefan Kreis, Institute for Brewing Technology, Freising, Germany
- 2:55 – 3:20 p.m. O-15. Practical Experiences with Membrane Filtration for the Clarification of Beer on an Industrial Scale. Reinoud Noordman, Heineken Technical Services, Zoeterwoude, Netherlands
- 3:20 – 3:50 p.m. Break
- 3:50 – 4:15 p.m. O-16. Crossflow Filtration of Beer—A True Alternative to Diatomaceous Earth Filtration. Alexander Modrok, Sartorius AG, Goettingen, Germany
- 4:15 – 4:40 p.m. O-17. Beer Stabilization Technology, Clearly a Matter of Choice! Mustafa Rehmanji, International Specialty Products, Wayne, NJ
- 4:40 – 5:05 p.m. O-18. Precoat Filtration, Not a Dead End Street: Introduction of a New Generation of Candle Filters. Thomas Weigand, Filtrox AG, Sankt Gallen, Switzerland

WORKSHOP I: Maintenance: Is There a Better Practice? Dan Robert, Moderator – Randle A/B

- 2:00 – 5:15 p.m. This workshop will cover the foundational elements associated with developing a world-class maintenance organization. Representatives will provide practical examples of how asset management has had a positive impact on product quality, throughput improvements, inventory management, and safety from both Coors Brewing Company and Molson. Quality improvements include DOs, DMS, and customer complaints.

SUPPLIER SESSIONS

- 3:45 – 4:30 p.m. AMC Technologies/PreSens – Gregory A
Optical Oxygen Measurement Technology. John Gleeson, AMC Technologies
- 5:00 – 11:00 p.m. Congress Hospitality Lounge – Randle D/E / Foyer

MONDAY, JULY 26

6:45 – 7:45 a.m.	Presenters' Breakfast (includes today's presenters and authors of posters P-1 through P-52) – Madeline A/D
7:00 a.m. – 6:00 p.m.	Speaker Ready Room – Molly A
7:30 a.m. – 2:30 p.m.	Registration & Silent Auction – Elizabeth Foyer
7:30 a.m. – 2:30 p.m.	Sponsors' Showcase – Elizabeth Foyer
7:30 a.m. – 2:30 p.m.	Media Room – Molly B

TECHNICAL SESSION IV: Hops. Dave Hysert, Moderator – Elizabeth A/C

8:00 – 8:05 a.m.	Opening Remarks
8:05 – 8:30 a.m.	O-19. Organoleptic Profiling and Interactions of Hop Oil Fractions in Various Beer Types. Ray Marriott, Botanix Ltd., Paddock Wood, Kent, U.K.
8:30 – 8:55 a.m.	O-20. Bitter Quality of Beer as Affected by Isocohumulone Levels. Thomas Shellhammer, Oregon State University, Corvallis, OR
8:55 – 9:15 a.m.	O-21. Analysis of Hop Terpenes in Beer and Wort Using the SBSE Method with GC-MS. Toru Kishimoto, Asahi Breweries, Ltd., Ibaraki, Japan
9:15 – 9:45 a.m.	Break
9:45 – 10:10 a.m.	O-22. Utilization of Polyphenol Fraction from Hop Bract Part as Functional Food. Motoyuki Tagashira, Asahi Breweries, Ltd., Ibaraki, Japan
10:10 – 10:35 a.m.	O-23. A Proteome Approach for Detection and Characterization of Hop Inducible Proteins Involved in Hop Resistance of Beer-Spoiling Lactobacilli. Jürgen Behr, Technische Universität München, Freising, Germany
10:35 – 11:00 a.m.	O-24. Potential of Reutericyclin as a Tasteless Hop Analogue in Beer Preservation. Rudi Vogel, Technische Universität München, Freising, Germany
11:00 – 11:25 a.m.	O-25. A Rapid and Low-Cost Method for Quantification of Reduced Iso-Alpha-Acids in Brewing. Mónica Gasparri, Cervecería Polar, C.A., Caracas, Venezuela

TECHNICAL SESSION V: Environmental/Engineering. Kathy Kinton, Moderator – Elizabeth D/E

8:00 – 8:05 a.m.	Opening Remarks
8:05 – 8:30 a.m.	O-26. ECO-MATRIX: A New Economical Pipe System. Kristina Boee, Tuchenhagen Brewery Systems, Buechen, Germany
8:30 – 8:55 a.m.	O-27. Asahi's Approach to Reduction of Energy Basic Unit to Half. Akitoshi Yoshizawa, Asahi Breweries, Ltd., Ibaraki, Japan
8:55 – 9:15 a.m.	O-28. Membrane Separation Activated Sludge Processes: Method of Purifying Warm Water for Warmer. Yasuhiro Sasaki, Asahi Breweries, Ltd., Nisinomiya City, Japan
9:15 – 9:45 a.m.	Break
9:45 – 10:10 a.m.	O-29. Happy Fish Due to or In Spite of an Optimized Wastewater Treatment System? Vera Groot Kormelinck, Paques BV, Balk, Netherlands
10:10 – 10:35 a.m.	O-30. Best Available Techniques in the Brewing Industry. Pjotr van Oeveren, Heineken International, Zoeterwoude, Netherlands
10:35 – 11:00 a.m.	O-31. Greener Beverage Product Security and De-Casing Solutions. Paul Ligon, WM IPS, Woodland, TX
11:00 – 11:25 a.m.	O-32. Aware of Water. Paul Bruijn, Heineken Technical Services, Zoeterwoude, Netherlands

TECHNICAL SESSION VI: Malting. Xiang Yin, Moderator – Elizabeth F/H

8:00 – 8:05 a.m.	Opening Remarks
8:05 – 8:30 a.m.	O-33. Raw Barley as Adjunct—Optimal Application of Malt and Commercial Enzymes for Beer Production. Declan Goode, University College Cork, Cork, Ireland
8:30 – 8:55 a.m.	O-34. A New Technique for Combined Milling and Mashing in the Brewhouse. Richard Sharpe, Brewing Research International, Nutfield, Surrey, U.K.
8:55 – 9:15 a.m.	O-35. Physiochemical Changes in Barley/Malt During the Malting Process with Particular Emphasis on Beta-Glucan and Beta-Glucanases. Eoin Lalor, Quest International Ireland Ltd., Carrigaline, Ireland
9:15 – 9:45 a.m.	Break
9:45 – 10:10 a.m.	O-36. Malting Characteristics of Three Canadian Hulless Barley Varieties, CDC Freedom, CDC McGwire, and CDC Gainer. Yueshu Li, Canadian Malting Barley Technical Centre, Winnipeg, MB, Canada

- 10:10 – 10:35 a.m. O-37. Brewing with Canadian Hulless Barley Varieties, CDC Freedom, CDC McGwire, and CDC Gainer. Robert McCaig, Canadian Malting Barley Technical Centre, Winnipeg, MB, Canada
- O-38. Withdrawn
- 11:00 – 11:25 a.m. O-39. Investigation into Conditions During Early Stage of Kilning to Improve Beer Flavor Stability. Tsutomu Ueda, Asahi Breweries, Ltd., Ibaraki, Japan

WORKSHOP II: Sharing the Knowledge: Brewers, Distillers, and Vintners. Steve Wright, Moderator – Randle A/B

8:00 – 11:00 a.m. Brewers, distillers, and vintners share the challenges of working with natural processes and materials. Technical developments can reveal information of value to all groups. Topics to be discussed include advances in instrumental and sensory correlation, future research directions such as novel yeast strains, and identification and characterization of lactic acid bacteria.

- Technical Developments in the Scotch Whisky Industry—What Can the Brewing and Distilling Industries Learn from One Another? Graham Stewart, Heriot-Watt University, Edinburgh, Scotland
- Occurrence of Lactic Acid Bacteria in Distilleries and Breweries and Their Development During Mashing. Elise Cachat, Heriot-Watt University, Edinburgh, U.K.
- A Study on Characteristic Flavor Compounds in Malt Whisky by the Addition of Brewer's Yeast. Akira Wanikawa, Asahi Breweries, Ltd., Ibaraki, Japan
- Analytical Technology in the Wine Industry—A Review of Analytical Tools Currently Available to the Winemaker and Their Potential Applications for Brewers and Distillers. Gordon Burns, ETS Laboratories, Saint Helena, CA
- Picking Out the Tuba Player from the Orchestra—Comments on the Similarities and Differences Between Beer and Wine Flavor. Phil Chou, Modesto, CA
- Speaker Panel

SUPPLIER SESSIONS

- 8:30 – 9:15 a.m. EaglePicher Filtration & Minerals – Gregory B
Filtration Media. Kimberly Walsh, EaglePicher Filtration & Minerals
- 8:30 – 9:15 a.m. PBM Inc. – Gregory A
Brewery Sampling Valves. Jim Pericles, Jerry Foley; PBM Inc.
- 9:45 – 10:30 a.m. Procon Technologies – Gregory A
In-Line Beer Analysis with Novel Analysis Technologies. Willem de Jong (Rhosonics)
- 9:45 – 10:30 a.m. Tyco Flow Control / Hygienic Process Equipment – Gregory B
Patented Mixproof Valve Technology. Paul Lopez, Tyco Flow Control
- 11:30 a.m. – 2:00 p.m. Exhibits, Hospitality and Buffet Lunch – Douglas Pavilion
- 11:30 a.m. – 2:00 p.m. Poster Session (see list on page 37) Authors present 11:30 a.m. – 12:30 p.m. – Douglas Pavilion

TUESDAY, JULY 27

- 6:45 – 7:45 a.m. Presenters' Breakfast (includes today's presenters of posters P-53 through P-104) – Madeline A/D
- 7:00 a.m. – 6:00 p.m. Speaker Ready Room – Molly A
- 7:30 a.m. – 5:00 p.m. Registration – Elizabeth Foyer
- 7:30 a.m. – 2:00 p.m. Silent Auction – Elizabeth Foyer
- 7:30 a.m. – 5:00 p.m. Sponsors' Showcase – Elizabeth Foyer
- 7:30 a.m. – 5:00 p.m. Media Room – Molly B

TECHNICAL SESSION VII: Flavor. Sue Thompson, Moderator – Elizabeth A/C

- 8:00 – 8:05 a.m. Opening Remarks
- 8:05 – 8:30 a.m. O-40. A Survey About Different Fractions of Hydroxy Fatty Acids During Malting and Brewing and Their Importance for Beer Flavor Stability. Stefan Meyna, University of Technology, Berlin, Germany
- 8:30 – 8:55 a.m. O-41. Relationship Between the Flavor Compounds Formation and the Gene Expression Profiles of Brewing Yeast. Atsushi Fujita, Suntory Ltd., Osaka, Japan

- O-42. Withdrawn.
- 9:15 – 9:45 a.m. Break
- 9:45 – 10:10 a.m. O-43. Improvement of Beer Flavor Stability by Reducing Deterioration Precursors in Malt. Takako Inui, Suntory Ltd., Osaka, Japan
- 10:10 – 10:35 a.m. O-44. Sensory Techniques for Understanding Consumer Preference. Debbie Parker, Brewing Research International, Nutfield, Surrey, U.K.
- 10:35 – 11:00 a.m. O-45. Unraveling Beer Flavor Through the Use of Gas Chromatography-Olfactometry. David Maradyn, Interbrew, London, ON, Canada
- 11:00 – 11:25 a.m. O-46. Actual Aspects of the Analytical Prediction of Flavor Stability. Oliver Franz, Technische Universität München, Freising, Germany
- TECHNICAL SESSION VIII: Analysis.** Jean-Pierre Dufour, Moderator – Elizabeth D/E
- 8:00 – 8:05 a.m. Opening Remarks
- 8:05 – 8:30 a.m. O-47. The Enrichment of Foam-Positive Substances by the Use of Ultrafiltration. Deniz Bilge, University of Technology, Berlin, Germany
- 8:30 – 8:55 a.m. O-48. The Relative Significance of Physics and Chemistry for Beer Foam Excellence. Charles Bamforth, University of California, Davis, CA
- 8:55 – 9:15 a.m. O-49. Comparison of Methods for Assessing Protein in Beer. Karl Siebert, Cornell University, Geneva, NY
- 9:15 – 9:45 a.m. Break
- 9:45 – 10:10 a.m. O-50. Beer Foam Stability—The Role of Specific Polypeptides. Graham Stewart, Heriot-Watt University, Edinburgh, Scotland
- 10:10 – 10:35 a.m. O-51. Comprehensive Quality Assurance of Asahi Breweries, Ltd. Hisanori Okita, Asahi Breweries, Ltd., Ibaraki, Japan
- 10:35 – 11:00 a.m. O-52. Application of GC/MS Method Using SPE Columns for Quantitative Determination of Diacetyl and 2,3-Pentanedione During Beer Fermentation. Jelena Pejin, Faculty of Technology, Novi Sad, Serbia and Montenegro
- 11:00 – 11:25 a.m. O-53. Beverage Appearance and Flavor Protection from Carbon Dioxide Quality Excursions. Chris Duffell, domnick hunter ltd., Newcastle, Tyne & Wear, U.K.
- TECHNICAL SESSION IX: Microbiology.** Candace Wallin, Moderator – Elizabeth F/H
- 8:00 – 8:05 a.m. Opening Remarks
- 8:05 – 8:30 a.m. O-54. Microbial Attachment and Biofilm Formation in Brewery Bottling Plants. Erna Storgårds, VTT Biotechnology, Espoo, Finland
- 8:30 – 8:55 a.m. O-55. Molecular Methods for Detection and Identification of Microbial Contaminants in Brewing Quality Control. Auli Haikara, VTT Biotechnology, Espoo, Finland
- 8:55 – 9:15 a.m. O-56. Microsieves and Fluorochromes—A New Application to Detect Beer-Spoiling Microorganisms. Karl-Josef Hutter, Eichbaum Brauereien AG, Graben-Neudorf, Germany
- 9:15 – 9:45 a.m. Break
- 9:45 – 10:10 a.m. O-57. Microbiological Quality Control in Breweries Based on Real-Time PCR—Implementation Experiences and Future Potential for Brewery Application. Andreas Brandl, Technische Universität München, Freising, Germany
- 10:10 – 10:35 a.m. O-58. A New Improved PCR Method for the Detection and Identification of Live Spoilage Organisms. Karin Pawlowsky, Brewing Research International, Nutfield, Surrey, U.K.
- 10:35 – 11:00 a.m. O-59. Detection and Identification of Beer-Spoilage Bacteria Using Real-Time PCR. Matthias Kiehne, BIOTECON Diagnostics GmbH, Potsdam, Germany
- 11:00 – 11:25 a.m. O-60. Evaluation Study of the Actual Frequency of Different Beer-Spoiling Bacteria with the VIT Analysis. Jiri Snaidr, vermicon AG, Munich, Germany
- WORKSHOP III: Malting Barley Variety Development and Evaluation Systems.** Erin Armstrong, Moderator – Randle A/B
- 8:00 – 11:30 a.m. Effective development and evaluation of malting barley varieties is key to the production of high-quality malt and beer. Presenters will review the various systems in place in Canada, the United States, Australia, and Europe. Questions on specific systems, as well as comparisons with those in other parts of the world, will be discussed.
- Purification and Characterization of a Malt Polysaccharide Inducing Premature Yeast Flocculation. Hideki Koizumi, Kirin Brewery Co., Ltd., Yokohama, Japan

- Breeding Program USA. Mike Davis, American Malting Barley Association, Milwaukee, WI
- Continuous Barley Improvements: Role of EBC Barley and Malt Committee. Wendell Iverson, Heineken, Zoerterwoude, Netherlands
- Breeding Program Canada. Erin Armstrong, Brewing & Malting Barley Research Institute, Winnipeg, MB, Canada
- Newly Developed Method for Estimating the Premature Yeast Flocculation Potential of Malt Samples. Makiko Jibiki, Asahi Breweries, Ltd., Ibaraki, Japan

SUPPLIER SESSIONS

8:30 – 9:15 a.m.	Novozymes – Maggie Viscoflow™. Noel M. Bautista, Novozymes
9:45 – 10:30 a.m.	Rockwell Automation – Maggie Tracking and Tracing Solutions: Preserving Your Brand Value. Paul Nowicki, Rockwell Automation
11:30 a.m. – 2:00 p.m.	Exhibits, Hospitality, and Buffet Lunch – Douglas Pavilion
11:30 a.m. – 2:00 p.m.	Poster Session (see list on page 37). Authors present 11:30 a.m. – 12:30 p.m. – Douglas Pavilion

TECHNICAL SESSION X: Fermentation. Dave Ryder, Moderator – Elizabeth A/C

2:00 – 2:05 p.m.	Opening Remarks
2:05 – 2:30 p.m.	O-61. New Results with an Immobilized Yeast System: Secondary Fermentation with IMMOPORE. Gerrit Blümelhuber, Technische Universität München, Freising, Germany
2:30 – 2:55 p.m.	O-62. Solid State Fermentation (SSF)—Alternative Fermentation Creating Greater Added Value for Grains. Mark Lyons, Alltech Inc., Nicholasville, KY
2:55 – 3:20 p.m.	O-63. Primary Beer Fermentation by PVA-Immobilized Brewing Yeast in a Gas-Lift Bioreactor. Viktor Nedovic, University of Belgrade, Belgrade-Zemun, Serbia and Montenegro
3:20 – 3:50 p.m.	Break
3:50 – 4:15 p.m.	O-64. Detection of Beer-Spoilage Microorganisms Using the Loop-Mediated Isothermal Amplification (LAMP) Method. Youichi Tsuchiya, Sapporo Breweries Ltd., Shizuoka, Japan
4:15 – 4:40 p.m.	O-65. Genetic Characterization of Hop-Sensitive Variants Obtained from Beer-Spoilage Lactic Acid Bacteria. Koji Suzuki, Asahi Breweries, Ltd., Ibaraki, Japan
4:40 – 5:05 p.m.	O-66. Hygiene Monitoring in the Food Industry—A New Approach for Control of the Microbiological Situation. Frank Nitzsche, Koenig Brauerei GmbH, Duisburg, Germany

TECHNICAL SESSION XI: Packaging. Christopher Nunes, Moderator – Elizabeth D/E

2:00 – 2:05 p.m.	Opening Remarks
	O-67. Withdrawn
2:05 – 2:30 p.m.	O-68. Development of a Hybrid Canning Line with High Productivity in a New Kyushu-Kumamoto Plant. Koichi Hotta, Suntory Ltd., Kumamoto, Japan
2:30 – 2:55 p.m.	O-69. Plastic Beer Bottles: Where Are We Today? Nina Goodrich, Amcor, Mississauga, ON, Canada
2:55 – 3:20 p.m.	O-70. Shortening the Changeover Time of a Can Line into Less than 10 Minutes. Takahiro Yoneda, Asahi Breweries, Ltd., Ibaraki, Japan
3:20 – 3:50 p.m.	Break
3:50 – 4:15 p.m.	O-71. Development and Introduction of High-Performance Full-Bottle Inspector. Hirohiko Inoue, Asahi Breweries, Ltd., Tokyo, Japan
4:15 – 4:40 p.m.	O-72. Impact the Bottom Line: A Business Case for Reliability-Driven Maintenance. Paul Lanthier, Ivara Corporation, Burlington, ON, Canada

TECHNICAL SESSION XII: Beer/Brewing. George Reisch, Moderator – Elizabeth F/H

2:00 – 2:05 p.m.	Opening Remarks
2:05 – 2:30 p.m.	O-73. Two Different Brewing Processes Disclosed from Two Ancient Egyptian Mural Paintings. Hideto Ishida, Kirin Brewery Co., Ltd., Tokyo, Japan
2:30 – 2:55 p.m.	O-74. Miller Valley Brewery as a Development Tool in the 21st Century. Jeanne Marais, Miller Brewing Co., Milwaukee, WI

2:55 – 3:20 p.m.	O-75. Design, Planning, and First Practical Experience—The New Grolsch Brewhouse in Enschede, The Netherlands. Thomas Buehler, The Huppmann Group, Kitzingen, Germany
3:20 – 3:50 p.m.	Break
3:50 – 4:15 p.m.	O-76. Wort Aeration—A Critical Approach. Christoph Tenge, Technische Universität München, Freising, Germany
4:15 – 4:40 p.m.	O-77. Observations on a Lauter Tun with a New Design. Heinz Miedaner, Staatliche Brautechnische Prüf- und Versuchsanstalt, Freising, Germany
4:40 – 5:05 p.m.	O-78. Today's Small Brewer: An Industry Partner. Daniel Bradford, Brewers' Association of America, Durham, NC

WORKSHOP IV: Managing the Supply Chain to Protect Integrity and Ensure Quality. Anne Bridges, Moderator – Randle A/B

2:00 – 5:15 p.m. Managing the supply chain to protect integrity and provide a quality product is challenging in the global marketplace. To be successful requires active participation by all stake-holders. This is of particular interest and concern in managing agbiotech traits or GMOs in products between markets with differing regulatory and labeling regulations. Similar supply chain management strategies apply to value-added traits. Changes in global agriculture and potential changes to the European regulations suggest it is timely to review the options. Validated analysis methods for detection of GMO traits in food are essential but they are only part of the program. Equally important tools include the ability to identify the source of the food or ingredient, to provide appropriate test samples, and to determine the proficiency of the laboratory performing the analysis.

- A New Concept for Traceability and Quality Assurance Within the Production Chain of Brewing Barley and Malt in Germany. Frank Nitzsche, Koenig Brauerei GmbH, Duisburg, Germany
- GMOs: What are They, How Do I Detect Them, and Why Should I Care? Kimberly M. Magin, Monsanto Co., St. Louis, MO
- Food and Beverage Supply Chain—Identity Preservation, Safety, and Consumer Preferences. Anne R. Bridges, Minneapolis, MN
- Testing for Adventitious Presence in Seed: An Industry Perspective. David Grothaus, Pioneer, A Dupont Company, Johnston, IA
- Getting a Jump on GMOs: PCR Testing and Its Role in Managing GMOs in Your Supply Chain. Carl Adams, Minneapolis, MN
- Analytical Method Validation—Analysis for Products of Modern Biotechnology. Randal Giroux, Cargill Inc., Wayzata, MN
- Discussion Forum

SUPPLIER SESSIONS

3:45 – 4:30 p.m.	domnick hunter inc., Gas Purification Division – Maggie CO ₂ Purification Device for Draft Beer Dispense. Gary Robson, domnick hunter inc.
2:00 – 6:00 p.m.	Exhibit and Poster Take Down – Douglas Pavilion
5:30 – 6:30 p.m.	Women In Brewing Reception – America's Cup Terrace
5:00 – 11:00 p.m.	Congress Hospitality Lounge – Randle D/E / Foyer

WEDNESDAY, JULY 28

6:45 – 7:45 a.m.	Presenters' Breakfast (includes today's presenters) – Madeline A/D
7:00 – 11:30 a.m.	Speaker Ready Room – Molly A
7:30 a.m. – 1:30 p.m.	Registration – Elizabeth Foyer
7:30 a.m. – 1:30 p.m.	Sponsors' Showcase – Elizabeth Foyer
7:30 a.m. – 1:30 p.m.	Media Room – Molly B

TECHNICAL SESSION XIII: Yeast. Greg Casey, Moderator – Elizabeth A/C

8:00 – 8:05 a.m.	Opening Remarks
8:05 – 8:30 a.m.	O-79. The Fuel Alcohol Industry: She's Younger, She's Bigger, but Is She Wiser? W. M. (Mike) Ingledew, University of Saskatchewan Saskatoon, SK, Canada

- 8:30 – 8:55 a.m. O-80. Aroma-Active Ester Formation in Brewer's Yeast: What, How, Where, Why, and How to Control It? Kevin Verstrepen, MIT Whitehead Institute for Biomedical Research, Cambridge, MA
- 8:55 – 9:15 a.m. O-81. Quality Improvement in Continuous Main Fermentation with Immobilized Yeast. Andreas Ludwig, University of Technology, Berlin, Germany
- 9:15 – 9:45 a.m. Break
- 9:45 – 10:10 a.m. O-82. The New Method for Drying Lager Yeasts. Takaaki Izumi, Suntory Ltd., Osaka, Japan
- 10:10 – 10:35 a.m. O-83. Control of the Yeast Propagation Process—How to Optimize Oxygen Supply and Minimize Stress. Olau Nielsen, Alfa Laval Scandi Brew, Soborg, Denmark
- 10:35 – 11:00 a.m. O-84. Different Physiological Marker to Monitor Yeast Propagation and Fermentation by Flow Cytometry. Karl-Josef Hutter, Eichbaum Brauereien AG, Graben-Neudorf, Germany
- 11:00 – 11:25 a.m. O-85. Stress and the Regulation of Brewing Yeast Flocculation. Katherine Smart, Oxford Brookes University, Oxford, Oxfordshire, U.K.

TECHNICAL SESSION XIV: Health and HACCP. Rob Maruyama, Moderator – Elizabeth D/E

- 8:00 – 8:05 a.m. Opening Remarks
- O-86. Withdrawn
- 8:05 – 8:30 a.m. O-87. Beer and Foliates. Caroline Walker, Brewing Research International, Nutfield, Surrey, U.K.
- 8:30 – 8:55 a.m. O-88. About Beer and Celiac Disease. Michael Lewis, University of California, Davis, CA
- 8:55 – 9:15 a.m. O-89. HACCP Accreditation at Labatt-Interbrew North America—Corporate and Brewery Perspectives. Jessica Hudale, Latrobe Brewing Company, LLC (Labatt-Interbrew), Latrobe, PA, and Terrance Dowhanick, Labatt-Interbrew North America, London, ON, Canada
- 9:15 – 9:45 a.m. Break
- 9:45 – 10:10 a.m. O-90. Effective Strategies in Implementing HACCP in San Miguel Breweries. Arnulfo Senires, San Miguel Corp., Mandaluyong City, Philippines
- 10:10 – 10:35 a.m. O-91. Taking Complexity and Cost Out of the Brewing Industry Supply Chain. Chris Wallace, Scottish Courage Ltd., South Gyle, Edinburgh, Scotland
- 10:35 – 11:00 a.m. O-92. Popular Diets and the Nature of Beer Carbohydrates. Nathaniel Davis, Anheuser-Busch, Inc., St. Louis, MO
- 11:00 – 11:25 a.m. O-93. Pilot-Scale Investigations into the Production of Filtered Beers Rich in Xanthohumol. Martin Biendl, Hopsteiner – Hallertauer, Mainburg, Germany

TECHNICAL SESSION XV: Malting/Mashing. Rob McCaig, Moderator – Elizabeth F/H

- 8:00 – 8:05 a.m. Opening Remarks
- 8:05 – 8:30 a.m. O-94. Parameters Influencing the Mash Filterability in the Brewing Process. Robert Braekeleirs, MEURA s.a., Péruwelz, Belgium
- 8:30 – 8:55 a.m. O-95. Advantages of Fine Wet Milling with a Rotor/Stator System (RSS) and Lautering with Thin-Bed Chamber Mash Filter (TCM). Hans-Jörg Menger, ZIEMANN Ludwigsburg GmbH, Ludwigsburg, Germany
- 8:55 – 9:15 a.m. O-96. Formation Pathways of Trioxilins During Mashing. Leif-Alexander Garbe, Technische Universität, Berlin, Germany
- 9:15 – 9:45 a.m. Break
- 9:45 – 10:10 a.m. O-97. Rheological Studies Simulating the Brewery Mashing Process. Declan Goode, University College Cork, Cork, Ireland
- 10:10 – 10:35 a.m. O-98. The Impact of the Level and Thermostability of Diastatic Power Enzymes on the Hydrolysis of Malt and/or Rice Starch During Wort Production by a Small-Scale Simulated Mashing Procedure. Evan Evans, University of Tasmania, Hobart, TAS, Australia
- 10:35 – 11:00 a.m. O-99. Degradation of Beta-Glucan Gel in Model Systems and Unfiltered Beer Due to High Hydrostatic Pressure Treatment. Steffen Fischer, Technische Universität München, Freising, Germany
- 11:00 – 11:25 a.m. O-100. Application of Lactic Acid Bacteria in Malting and Brewing. Helge Ulmer, University College Cork, Cork, Ireland

WORKSHOP V: Brewing Education and Training. Inge Russell, Moderator – Edward A/C

9:30 – 11:30 a.m.

Whether you are new to the industry and interested in obtaining a globally recognized qualification or are interested in upgrading your current knowledge base via courses or learning about opportunities for your staff members—this is the seminar to attend. Brewing and distilling education offerings will be addressed. This workshop brings together a number of the top brewing professors/lecturers in the world to discuss what education options are available for brewers and distillers. Each will give a short presentation detailing opportunities, options, length of course, costs, etc. For example, you will hear about studying on location at brewing schools in Germany, Scotland, or California; studying from home using the Institute and Guild of Brewing (IGB) home study modules to prepare for exams to obtain the qualifications of AME (Associate Membership Exam) and DMB (Diploma Master Brewer); or studying as an extension student linked to Heriot-Watt University to obtain a M.Sc./Postgraduate Diploma in brewing and distilling. You will learn about short courses offered by MBAA and by ASBC and about other relevant offerings from related scientific organizations. This workshop is an opportunity to compare educational options and to ask questions of the panel members to determine which venue/offering best meets the needs of you or your organization.

Introduction: Inge Russell, Russell & Associates, London, ON, Canada
Presenters: Graham Stewart, International Centre for Brewing and Distilling,
Heriot-Watt University, Edinburgh, Scotland, U.K.
David Taylor, The Institute and Guild of Brewing, London, U.K.
Karl Wackerbauer, Research Institute of Brewing and Malting of
VLB/TUB, Berlin (TUB)
Charles Bamforth, University of California, Davis, CA
Ray Klimovitz, MBAA Technical Director, Chippewa Falls, WI

Q & A with Audience

11:30 a.m. – 1:30 p.m.

Hospitality and Lunch – Elizabeth Foyer and Elizabeth A/E

WBC 2004 CLOSING PLENARY SESSION: The Next Big Thing Is Really Small: How Nanotechnology Will Change the Future of Your Business – Elizabeth A/E

1:30 – 3:15 p.m.

Jack Uldrich, nanotechnology consultant and author of *The Next Big Thing is Really Small*

By 2013, it is estimated that nanotechnology will account for \$1 trillion in new products and services. It is further estimated that the United States will need 2 million new workers trained in the field. In his presentation, Jack Uldrich, will explain what nanotechnology is and why President Bush, in December of 2003, signed into law a \$3.7 billion bill to establish the National Nanotechnology Initiative - the largest federally funded science program since the United States decided to put a man on the moon. Uldrich will document the flurry of nanotechnology research that is taking place in the R&D labs of Fortune 500 companies, as well as introduce participants to the most promising nanotechnology start-ups. He will then describe how the field has captured the imagination of the venture capital community and reveal which companies (and technologies) will reach the commercial marketplace in the next few years. Uldrich will conclude by explaining how nanotechnology will affect virtually every business and describe the concrete steps that people can begin taking today in order to prepare for the sweeping change that nanotechnology will enable tomorrow.

7:00 p.m.

Closing Reception – Elizabeth Foyer/Terrace

7:30 – 11:00 p.m.

Closing Banquet (business attire) – Elizabeth Ballroom