American Society of Brewing Chemists
70th Annual Meeting

June 17-21, 2006
La Quinta Resort & Club
La Quinta, California

Refining the Science of Brewing
Advances and innovations in the distilled, malt-based, and fermented beverage industries
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Location Photo Credits:
Front Cover—Date palms by Arthur Coleman Photography, courtesy of the Palm Springs Bureau of Tourism. Pool at night by Tracy Breshears, courtesy of the La Quinta Resort & Club. Page 1—La Quinta Resort, courtesy of La Quinta Resort. Palm Springs Golf Course, Horseback Riding in Indian Canyons, and Palm Springs Aerial Tramway courtesy of the Palm Springs Bureau of Tourism; Page 13—Downtown Palm Springs by Arthur Coleman Photography, courtesy of the Palm Springs Bureau of Tourism.
Greetings from the ASBC Program Committee. It is our pleasure to welcome you to the 2006 ASBC Annual Meeting at the beautiful La Quinta Resort & Club.

There are great things planned for this meeting! From opening keynote speaker Norma Hill discussing nutrition labeling of malt products to closing speaker Chef Jim Fleishman’s pairings of beer and food, there is something for everyone. An incredible program highlights nine technical sessions that feature 35 oral presentations. In addition, there are 33 posters, 2 workshops, and taste sessions on Sake, as well as beer and chocolate! Opportunities exist around every corner to network, learn, build business relationships, and hear first-hand the latest brewing science and related research. Plus, there will be ample time to connect with colleagues and suppliers while enjoying the exhibits and hospitality.

Take in all the information you can throughout the meeting, but also take time to view the exhibits, converse at the hospitality room, catch up on the latest news in the industry, and relax in the wonderful desert setting of La Quinta.

The 2006 ASBC Program Committee
General Information

Registration
Flores Ballroom Foyer
Saturday, June 17  2:00 – 5:00 p.m.
Sunday, June 18  7:00 a.m. – 5:00 p.m.
Monday, June 19  7:00 a.m. – 3:00 p.m.
Tuesday, June 20  7:00 a.m. – 3:00 p.m.
Wednesday, June 21  7:00 a.m. – 12:00 p.m.

Silent Auction
Flores Ballroom Foyer
Saturday, June 17  Drop-Off  2:00 – 5:00 p.m.
Sunday, June 18  Bidding Open  7:00 a.m. – 5:00 p.m.
Monday, June 19  Bidding Open  7:00 a.m. – 1:50 p.m.

Exhibits
Flores Ballroom 1–5
Saturday, June 17  Exhibit Set-Up  3:00 – 5:00 p.m.
Sunday, June 18  Exhibit Set-Up  9:00 – 11:00 a.m.
Exhibits Open  3:30 – 6:30 p.m.
Monday, June 19  Exhibits Open  10:00 a.m. – 12:00 p.m.
Tuesday, June 20  Exhibits Open  10:30 a.m. – 1:00 p.m.
Exhibit Take-Down  1:00 – 4:00 p.m.

Posters
Flores Ballroom 1–5
Saturday, June 17  Poster Set-Up  3:00 – 5:00 p.m.
Sunday, June 18  Poster Set-Up  9:00 – 11:00 a.m.
Posters Available for Viewing  3:30 – 6:30 p.m.
Authors Present  4:30 – 5:30 p.m.
Monday, June 19  Posters Available for Viewing  10:00 a.m. – 12:00 p.m.
Authors Present  10:00 – 10:30 a.m. (even numbers)
11:30 a.m. – 12:00 p.m. (odd numbers)
Tuesday, June 20  Posters Available for Viewing  10:30 a.m. – 1:00 p.m.
Authors Present  10:30 – 11:00 a.m. (odd numbers)
12:00 – 12:30 p.m. (even numbers)
Poster Take-Down  1:00 – 4:00 p.m.

Meeting Attire
Business casual dress is encouraged for all meeting events.

Photo Release
By virtue of your attendance at the ASBC Annual Meeting, you agree to ASBC’s use of your likeness in promotional materials.
Medical Emergencies

Medical emergencies should be communicated to an ASBC staff member at the registration desk or the hotel staff by dialing the hotel operator.

The nearest hospital is:
John F. Kennedy Memorial Hospital
47111 Monroe Street
Indio, California
760.347.6191

Guest Program

Guests do not pay for registration. However, guests wishing to attend any of the receptions, ticketed food functions, or guest tours must have tickets purchased in advance or onsite. Guests must have name badges to attend technical sessions or the hospitality room. Badges can be obtained at the Registration Desk, Flores Ballroom Foyer.

ASBC is offering welcome activities, guest breakfast with a tour of the resort, and an optional aerial tram tour for guests and family members attending the meeting. Please note: the Guest Breakfast and Tour, and the Palm Springs Aerial Tram Tour required advanced registration prior to onsite.

There are additional tourist options in the area. ASBC encourages guests of meeting attendees to take full advantage of their time in this beautiful area.

Sunday, June 18
1:00 – 4:00 p.m.
Fred Render Pool Area

Get Acquainted Activities
Meet other family members and guests attending the meeting and join fun activities both in and out of the water.

Monday, June 19
9:00 – 11:00 a.m.
Capra B – C

Guest Breakfast and Tour of La Quinta Resort
A representative from the La Quinta Resort & Club will provide a tour of the resort and the various recreational facilities.(pre-registration and ticket required)

2:30 – 3:30 p.m.
Fiesta 8

Beer and Chocolate 101 Workshop
Guests are invited to attend this session during this time period. See workshop description in program. (pre-registration and ticket required)

Tuesday, June 20
10:00 a.m. – 2:00 p.m.
Meet in Main Lobby

Palm Springs Aerial Tramway Tour
(pre-registration and ticket required, this tour will be cancelled if minimum numbers are not met)

NEW and ON SALE

This value-packed CD-Rom presents some of the most important yeast research ever published, organized by date, and available from your desktop. Each article is fully indexed and searchable back through 1977, so you can find exactly the information you need. For example, select research articles based on combinations of search terms to filter down to a specific area of interest: (“volatile organics” and “higher alcohols”); (“oxygen uptake” and “carbohydrate metabolism”); (“yeast physiology” and “flocculation”); (“process control” and “flavor defects”) and more. Add this CD-Rom to your personal collection today and build your knowledge of yeast and its functionality in brewing! From the peer-reviewed Journal of the ASBC.

Back by popular demand! These valuable Tables for Extract Determination in Malts and Cereals and Tables Related to Determination on Wort, Beer, and Brewing Sugars and Syrups are now spiral bound for ease of use at the bench.

Visit the ASBC Registration Desk during the meeting to purchase these new titles.
<table>
<thead>
<tr>
<th>Saturday, June 17</th>
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<th>Monday, June 19</th>
<th>Tuesday, June 20</th>
<th>Wednesday, June 21</th>
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</thead>
<tbody>
<tr>
<td><strong>Short Course: Getting the Most of Your Sensory Testing</strong>&lt;br&gt;1:00 – 5:00 p.m.</td>
<td><strong>Speaker Orientation/ Breakfast (Orals 1–5, Posters 36–55)</strong>&lt;br&gt;7:00 – 8:00 a.m.</td>
<td><strong>Speaker Orientation/ Breakfast (Orals 6–14, 56–68)</strong>&lt;br&gt;7:00 – 8:00 a.m.</td>
<td><strong>Speaker Orientation/ Breakfast (Orals 15–25)</strong>&lt;br&gt;7:00 – 8:00 a.m.</td>
<td><strong>Speaker Orientation/ Breakfast (Orals 26–35)</strong>&lt;br&gt;7:00 – 8:00 a.m.</td>
</tr>
<tr>
<td><strong>Registration</strong>&lt;br&gt;2:00 – 5:00 p.m.</td>
<td><strong>Silent Auction</strong>&lt;br&gt;7:00 a.m. – 1:50 p.m.</td>
<td><strong>Registration</strong>&lt;br&gt;7:00 a.m. – 3:00 p.m.</td>
<td><strong>Registration</strong>&lt;br&gt;7:00 a.m. – 3:00 p.m.</td>
<td><strong>Registration</strong>&lt;br&gt;7:00 a.m. – 12:00 p.m.</td>
</tr>
<tr>
<td><strong>Hospitality</strong>&lt;br&gt;4:00 – 11:00 p.m.</td>
<td><strong>ASBC General Session and Opening Keynote</strong>&lt;br&gt;Presentation: Nutrition Labeling of Malt Beverage Products&lt;br&gt;9:15 – 10:45 a.m.</td>
<td><strong>Technical Session II—Hops</strong>&lt;br&gt;8:00– 10:00 a.m.</td>
<td><strong>Technical Session IV—Micro/Yeast</strong>&lt;br&gt;8:00 – 9:20 a.m.</td>
<td><strong>Technical Session VII—Stabilization</strong>&lt;br&gt;8:00 – 9:20 a.m.</td>
</tr>
<tr>
<td><strong>Past Presidents/First Timers/Students Reception</strong>&lt;br&gt;6:00 – 7:00 p.m.</td>
<td><strong>Exhibits and Hospitality</strong>&lt;br&gt;10:00 a.m. – 12:00 p.m.</td>
<td><strong>Exhibits and Hospitality</strong>&lt;br&gt;10:00 a.m. – 12:00 p.m.</td>
<td><strong>Exhibits and Hospitality</strong>&lt;br&gt;10:30 a.m. – 1:00 p.m.</td>
<td><strong>Technical Session IX—Flavor</strong>&lt;br&gt;1:30 – 3:15 p.m.</td>
</tr>
<tr>
<td><strong>Technical Subcommittee Meetings</strong>&lt;br&gt;11:00 a.m. – 12:00 p.m.</td>
<td><strong>Poster Session</strong>&lt;br&gt;10:00 a.m. – 12:00 p.m.</td>
<td><strong>Poster Session</strong>&lt;br&gt;10:30 a.m. – 1:00 p.m.</td>
<td><strong>Poster Session</strong>&lt;br&gt;10:30 a.m. – 1:00 p.m.</td>
<td><strong>Closing Keynote Presentation: Who Needs Wine? Beer and Food Pairing for Fine Dining</strong>&lt;br&gt;3:30 – 4:15 p.m.</td>
</tr>
<tr>
<td><strong>Beer Design Workshop</strong>&lt;br&gt;1:00 – 2:30 p.m.</td>
<td><strong>Technical Subcommittees Meetings</strong>&lt;br&gt;10:30 a.m. – 11:30 a.m.</td>
<td><strong>Technical Session III—Micro/Yeast</strong>&lt;br&gt;2:00 – 4:25 p.m.</td>
<td><strong>Technical Session V—Process</strong>&lt;br&gt;9:35 – 10:30 a.m.</td>
<td><strong>Closing Reception</strong>&lt;br&gt;7:00 – 10:00 p.m.</td>
</tr>
<tr>
<td><strong>Welcome and Technical Session I—Barley/Malt</strong>&lt;br&gt;1:00 – 3:30 p.m.</td>
<td><strong>Recognition Lunch</strong>&lt;br&gt;12:15 – 1:45 p.m.</td>
<td><strong>Technical Session IV—Analytical</strong>&lt;br&gt;1:00 – 3:50 p.m.</td>
<td><strong>Technical Session VI—Analytical</strong>&lt;br&gt;1:00 – 3:50 p.m.</td>
<td><strong>Hospitality</strong>&lt;br&gt;9:00 – 11:00 p.m.</td>
</tr>
<tr>
<td><strong>Exhibits and Hospitality/Poster Session</strong>&lt;br&gt;3:30 – 6:30 p.m.</td>
<td><strong>Technical Session Session—Micro/Yeast</strong>&lt;br&gt;2:00 – 4:25 p.m.</td>
<td><strong>Statistics, Part Two: Validation of Analytical Methods Workshop</strong>&lt;br&gt;3:55 – 5:30 p.m.</td>
<td><strong>Hospitality</strong>&lt;br&gt;4:00 – 11:00 p.m.</td>
<td><strong>Hospitality</strong>&lt;br&gt;4:00 – 11:00 p.m.</td>
</tr>
<tr>
<td><strong>New Products and Services Session</strong>&lt;br&gt;3:40 – 4:40 p.m.</td>
<td><strong>Beer and Chocolate 101</strong>&lt;br&gt;2:30 – 3:30 p.m. and 4:30 – 5:30 p.m.</td>
<td><strong>Sake One: An Americanized Sake Workshop</strong>&lt;br&gt;5:30 – 6:30 p.m.</td>
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<td><strong>Sake One: An Americanized Sake Workshop</strong>&lt;br&gt;5:30 – 6:30 p.m.</td>
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<tr>
<td><strong>Welcome Reception</strong>&lt;br&gt;7:00 – 9:30 p.m.</td>
<td><strong>Hospitality</strong>&lt;br&gt;9:00 – 11:00 p.m.</td>
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# Program

## Friday, June 16

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:00 a.m.</td>
<td>Technical Committee Meeting and Lunch</td>
<td>La Cita</td>
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</table>

## Saturday, June 17

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:00 a.m.</td>
<td>Board of Directors Meeting and Lunch</td>
<td>La Cita</td>
</tr>
<tr>
<td>1:00 – 5:00 p.m.</td>
<td>ASBC Short Course: Getting the Most from Your Sensory Testing</td>
<td>Fiesta 13 – 14</td>
</tr>
<tr>
<td>2:00 – 5:00 p.m.</td>
<td>Registration</td>
<td>Flores Ballroom Foyer</td>
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<tr>
<td>3:00 – 5:00 p.m.</td>
<td>Exhibit/Poster Set-Up</td>
<td>Flores 1 – 5</td>
</tr>
<tr>
<td>4:00 – 11:00 p.m.</td>
<td>Hospitality</td>
<td>Capra B – C</td>
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<tr>
<td>6:00 – 7:00 p.m.</td>
<td>Past Presidents/First Timers/Students Reception</td>
<td>Fiesta 3 – 4</td>
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## Sunday, June 18

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>7:00 – 8:00 a.m.</td>
<td>Speaker Orientation and Breakfast: Orals 1 – 5, Posters 36 – 55</td>
<td>La Cita</td>
</tr>
<tr>
<td>7:00 a.m.</td>
<td>Registration</td>
<td>Flores Ballroom Foyer</td>
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<tr>
<td>7:00 a.m.</td>
<td>Silent Auction Open</td>
<td>Flores Ballroom Foyer</td>
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<tr>
<td>8:00 – 8:30 a.m.</td>
<td>Program Committee Meeting and Breakfast</td>
<td>Fiesta 13</td>
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<tr>
<td>8:00 – 9:00 a.m.</td>
<td>Local Section Officers Meeting and Breakfast</td>
<td>Fiesta 14</td>
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<tr>
<td>8:00 – 9:00 a.m.</td>
<td>Past Presidents Meeting and Breakfast</td>
<td>Fountain Room</td>
</tr>
<tr>
<td>9:00 – 11:00 a.m.</td>
<td>Exhibit/Poster Set-Up</td>
<td>Flores 1 – 5</td>
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<tr>
<td>9:15 – 10:45 a.m.</td>
<td>ASBC General Session and Opening Keynote Speaker Norma Hill</td>
<td>Flores 7 – 8</td>
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<tr>
<td>11:00 a.m. – 12:00 p.m.</td>
<td>Technical Subcommittee Meetings</td>
<td>Fiesta 13</td>
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<tr>
<td>1:00 – 2:30 p.m.</td>
<td>Beer Design Workshop</td>
<td>Fiesta 6</td>
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## 1:00 – 3:30 p.m. Welcome and Technical Session I – Barley/Malt

**Moderator:** Rob McCaig, Canadian Malting Barley Technical Centre, Winnipeg, MB Canada

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<tbody>
<tr>
<td>1:05 – 1:30 p.m.</td>
<td>O-1. An alternative approach to assess the quality of new malting barley varieties.</td>
<td>Fiesta 13</td>
</tr>
<tr>
<td>1:30 – 1:55 p.m.</td>
<td>O-2. Behavior of malt astringent substances and their control in brewing.</td>
<td>Fiesta 12</td>
</tr>
<tr>
<td>1:55 – 2:20 p.m.</td>
<td>O-3. Molecular characterization of the genetic basis for starch granule size distribution in barley.</td>
<td>Fiesta 14</td>
</tr>
<tr>
<td>2:20 – 2:40 p.m.</td>
<td>O-4. New approaches in malting ecosystem research.</td>
<td>Fiesta 2</td>
</tr>
<tr>
<td>2:40 – 3:05 p.m.</td>
<td>O-5. Effect of subcritical H₂O treated malt on beer quality (III).</td>
<td>Fiesta 6</td>
</tr>
</tbody>
</table>

**WILHELMSON (1), Arja Laitila (1), Erja Kotaviita (2), Timo Huttunen (3), Silja Home (1). (1) VTT Technical Research Centre of Finland, Espoo, Finland; (2) Raisio plc, Raisio, Finland; (3) Viking Malt, Lahti, Finland

**Nakahara (1), DAISUKE YAMADA (1), Koji Nagao (1). (1) Suntory Ltd., 1-1-1 Wakayamadai, Shimamoto-cho, Mishima-gun, Osaka 618-8503, Japan; (2) Musashino Brewery, Suntory Ltd., 3-1 Yazaki-cho, Fuchu, Tokyo 183-8533, Japan

**KAGEYAMA (1), Nobuo Tada (2), Takako Inui (1), Susumu Furukubo (1), Akira Isoe (1). (1) Beer Development Department, Suntory Ltd., 1-1-1 Wakayamadai, Shimamoto-cho, Mishima-gun, Osaka 618-8503, Japan; (2) Musashino Brewery, Suntory Ltd., 3-1 Yazaki-cho, Fuchu, Tokyo 183-8533, Japan

**RAVINDRA N. CHIBBAR (1). (1) University of Saskatchewan, 51 Campus Drive, Saskatoon, SK Canada

**Kische Nakahara (1), DAISUKE YAMADA (1), Koji Nagao (1), Norihiko Kageyama (2), Takako Inui (2), Nobuyuki Fukui (1). (1) Suntory Ltd., 5-2-5, Yamazaki, Shimamoto-cho, Mishima-gun, Osaka, Japan; (2) Beer Development Department, Suntory Ltd., 1-1-1, Wakayamadai, Shimamoto-cho, Mishima-gun, Osaka, Japan
Market pressures, product evolution, consumer action lobbyists, and regulatory initiatives are rapidly changing the marketplace for the brewing industry. Much of the information that is required for labeling now must come from the analytical laboratory and the requirements are growing. Norma Hill will discuss some of the regulatory history behind the malt beverage nutrition label and the history of the cooperative efforts of AOAC and ASBC to meet past regulatory requirements. She will also outline the current methodology used to assess compliance and enumerate a number of the analytical and regulatory challenges that new product lines have and will present.

**Beer Design Workshop**
1:00 – 2:30 p.m.

Join renowned brew masters Keith Villa, Peter Bouckaert, Matt Brynildson, and Terence Sullivan as they discuss their unique points of view regarding the design of award winning beers. This workshop will be filled with informational aspects unique to micro/pub brewers, medium-sized craft brewers, regional craft brewers and major brewers. If you’ve ever wanted to hear about beer design from the artisanal point of view to the scientific, don’t miss this panel.

### Sunday Sessions

#### Keynote Presentation

**Nutrition Labeling of Malt Beverage Products: Science Must Provide a 21st Century Solution**

Norma Hill, Alcohol & Tobacco Trade and Tax Bureau
9:30 – 10:45 a.m.

#### New Products and Services Sessions

3:40 – 4:30 p.m.

**Descriptions**


*Presentation description:* The quality and taste of a beer is most important, since it is the consumer who ultimately decides for or against a beer. The shelf life of a beer is strongly dependant on these two critical factors. To enhance the shelf life, it is not only important to control the dissolved CO₂ (carbon dioxide) content in a beverage but also the O₂ content, because oxygen negatively affects the best before dates and flavour. Breweries control and measure the quantities of O₂ and CO₂ continuously during the production of their beverages. For the first time in many years now a completely new O₂ measuring technology is available for the brewing industry. The principle of measurement is based on the effect of dynamic luminescence quenching by molecular oxygen. The measurement excels through a long term stability; a high accuracy even at very low oxygen values; and a high response time.

In combination with the CO₂ measurement, this new oxygen measurement enables breweries to control the two most important gasses in a very efficient way. F. VERKOELEN.

Siebel Institute Microbiology Services – “Yeast DNA Fingerprinting.”

*Presentation description:* Siebel Institute has developed a selection of DNA fingerprinting services that make this important technology available to breweries of any size. With a full range of affordably-priced testing services, the Siebel Institute can give your brewery the genetic analytical capabilities employed by the worlds most advanced brewing institutions. S. VAN ZANDYCKE.

Hach Company – “Brewing Analysis with Hach DR5000 UV-VIS Spectrophotometer.”

*Presentation description:* During June of 2005 Hach introduced the new DR5000 UV-VIS Spectrophotometer, the next
generation in a long line of easy to use, accurate, and reliable lab instrumentation. The DR5000 now has the added benefit of TNTplus™ Reagents which form a fully integrated analytical solution that delivers enhanced ease-of-use, precision, accuracy, and built-in error elimination, resulting in time and cost savings, as well as unprecedented confidence in test results. As of June 2006, this fully integrated instrument/reagent analysis system, which has typically been used solely for water analytics, will now offer the capability of performing many of the most common analytical tests for brewing applications – Including Bitterness units, Total Polyphenols, Reductones, Anthocyanogens, Beer Color and many more. C. BENEDICT.

**Brewing Research International (BRi) – “The COMPLETE Wine Analysis and Consulting Service.”**

*Presentation description:* BRi has recently purchased the Corkwise company. This company specializes in wine analysis and wine consulting all over the world. The company has qualified Masters of Wine and also specializes in spirits analysis. The offering includes full consulting on all aspects of production, quality, legislative compliance, labeling, etc. all over the world. F. R. SHARPE

**Steinfurth, Inc. – “Automatic Steinfurth Foam Stability Tester.”**

*Presentation description:* The automatic Foam Stability Tester is developed in cooperation with the German Brew Institutes, VLB, and Weihenstephan. The results correlate to the method of Ross & Clark. J. ANGRES.

**Research and Teaching Institute for Brewing in Berlin (VLB Berlin) – “Permeation Through PET Bottles - Development of a Quick Test to Measure Permeation of Gases.”**

*Presentation description:* A prototype to measure the permeation of hydrogen through plastic bottles will be presented. This prototype considered a quick test, because of a measurement time duration of less than two hours. The principle of this quick test bases on a hydrogen sensor with a MIS-FET microchip. M. ORZINSKI.

### Monday, June 19

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<tr>
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<td>Speaker Orientation and Breakfast: Orals 6–4, Posters 56–68</td>
<td>La Cita</td>
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<td>Silent Auction Open</td>
<td>Flores Ballroom Foyer</td>
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<td>Registration</td>
<td>Flores Ballroom Foyer</td>
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<tr>
<td>8:00 – 10:00 a.m.</td>
<td><strong>Technical Session II – Hops</strong></td>
<td>Flores 7 – 8</td>
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<tr>
<td>8:05 – 8:30 a.m.</td>
<td><strong>O-6. Factors affecting formation of the volatile thiols 3-methyl-2-butene-1-thiol and 2-mercapto-3-methyl-1-butanol during fermentation.</strong> MINORU KOBAYASHI (1), Ayako Iida (1), Katsunori Kono (1), Kazunori Shibata (1). (1) Asahi Breweries, Ltd. 1-21, Midori 1-Chome, Moriya-shi, Ibaraki, Japan</td>
<td>Flores Ballroom Foyer</td>
</tr>
<tr>
<td>8:30 – 8:55 a.m.</td>
<td><strong>O-7. Bitterness of Galena and Zeus hop polyphenols.</strong> Ian Mcloughlin (1), Takeshi Kunimune (1), THOMAS H. SHELLHAMMER (1) (1) Oregon State University, Corvallis, OR, USA</td>
<td>Flores Ballroom Foyer</td>
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<tr>
<td>8:55 – 9:10 a.m.</td>
<td>Break</td>
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<td>9:10 – 9:35 a.m.</td>
<td><strong>O-8. Relative bitterness of reduced iso-alpha acids to iso-alpha acids in lager beer.</strong> ANNETTE N. FRITSCH (1), Thomas H. Shellhammer (1) (1) Oregon State University, Corvallis, OR, USA</td>
<td></td>
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<tr>
<td>9:35 – 10:00 a.m.</td>
<td><strong>O-9. Identifying antiradical hop compounds.</strong> PATRICK L. TING (1), Lance Lusk (1), Jay Reffing (1), Sue Kay (1), David Ryder (1) (1) Miller Brewing Company, Milwaukee, WI, USA</td>
<td></td>
</tr>
<tr>
<td>10:00 a.m. – 12:00 p.m.</td>
<td>Exhibits and Hospitality</td>
<td>Flores 1 – 5</td>
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<tr>
<td>10:00 a.m. – 12:00 p.m.</td>
<td>Poster Session – Authors Present</td>
<td>Flores 1 – 5</td>
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<tr>
<td>Authors: Odd numbers 11:30 a.m. – 12:00 p.m.</td>
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<tr>
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<td><strong>Technical Subcommittee Meetings</strong></td>
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<tr>
<td>10:30 – 11:30 a.m.</td>
<td><strong>Craft Brewers</strong></td>
<td>Fiesta 13</td>
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<tr>
<td>10:30 – 11:30 a.m.</td>
<td><strong>Determination of Alpha-Amylase by Automated Flow Analysis</strong></td>
<td>Fiesta 11</td>
</tr>
<tr>
<td>10:30 – 11:30 a.m.</td>
<td><strong>Method for Measurement of Resistance of Free-Radical Oxidation in Beer by Electron Paramagnetic Resonance</strong></td>
<td>Fiesta 12</td>
</tr>
<tr>
<td>12:15 – 1:45 p.m.</td>
<td><strong>Method for Reference Standard for Total Packaged Oxygen</strong></td>
<td>Fiesta 14</td>
</tr>
<tr>
<td>2:00 – 4:25 p.m.</td>
<td><strong>Technical Session III – Micro/Yeast</strong></td>
<td>Flores 7 – 8</td>
</tr>
<tr>
<td>2:05 – 2:30 p.m.</td>
<td><strong>O-10. Induction of viable but nonculturable state of Lactobacillus lindneri DSM 20692 and L. paracollinoides JCM 11969</strong>. KOJI SUZUKI (1), Kazumaru Iijima</td>
<td>Flores 1, 2, 5, 7</td>
</tr>
</tbody>
</table>
2:30 – 2:55 p.m. O-11. Analysis of the gene expression related to methionine metabolism during fermentation by shotgun DNA microarray (SDM) of lager yeast. MASAHIDE SATO (1), Naoyuki Kobayashi (1), Syunsuke Fukuhara (1), Katsuki Maeda (1), Toshio Kurihara (1), Junji Watari (1), Takahide Yokoi (2), Yoshiko Kaku (2), Toshiro Saito (2). (1) Frontier Laboratories of Value Creation, Sapporo Breweries Ltd., Yaizu, Shizuoka, Japan; (2) Hitachi, Ltd., Life Science Group, Kawagoe, Saitama, Japan

2:55 – 3:20 p.m. O-12. Can flocculation be controlled during full-scale fermentations? Stephen Lawrence (1), Brian Gibson (1), KATHERINE A. SMART (1). (1) University of Nottingham, School of Biosciences, Sutton Bonington Campus, Loughborough, LE12 5RD, UK

3:20 – 3:35 p.m. Break

3:35 – 4:00 p.m. O-13. Development of a SNPs-based method to identify brewing yeasts. SHIGEHITO IKUSHIMA (1), Keiko Tanaka (1), Emiko Shimada (1), TatsujI Ishiguro (1), Satoru Mizutani (1), Osamu Kobayashi (1). (1) Central Laboratories for Frontier Technology, Kirin Brewery Co., Ltd., Yokohama-shi, Kanagawa, Japan

4:00 – 4:25 p.m. O-14. Location of Lg-FLO1 gene in bottom-fermenting yeast chromosome and its implications in yeast flocculation. TOMOOGATA OGATA (1), Mami Izumikawa (1), Katsunori Kono (1), Kazunori Shibata (1). (1) Asahi Breweries, Ltd.

Monday Sessions

Monday Sessions

Beer and Chocolate 101

2:30 – 3:30 p.m. and 4:30 – 5:30 p.m.

Pete Slosberg, founder of Pete’s Wicked Ale and Cocoa Pete’s Chocolate Adventures, is an expert in understanding the fine flavors of beer and chocolate and now he has gone that extra step, to pair the two. This year, Cocoa Pete’s adventure is a sweet one, Beer and Chocolate. The presentation is designed for audience participation, discussion, and sheer delight!

Pre-registration is required, prior to meeting arrival.

Tuesday, June 20

7:00 – 8:00 a.m. Speaker Orientation and Breakfast: Orals 15–25
7:00 a.m. – 3:00 p.m. Registration
8:00 – 9:20 a.m. Technical Session IV – Micro/Yeast
Moderator: Andy Diacetis, BridgePort Brewing Co., Portland, OR

8:05 – 8:30 a.m. O-15. Studies on maltotriose assimilation by lager yeast. HARUYO HATANAKA (1), Fumihiko Omura (1), Nobuyuki Fukui (1), Hiroto Kondo (1). (1) Suntory Ltd. Shimamoto-sho, Mishima-gun, Osaka, Japan

8:30 – 8:55 am. O-16. The antioxidant response of yeast during brewery handling: A genomic perspective. BRIAN R. GIBSON (1), Stephen J. Lawrence (1), Chris A. Boulton (2), Wendy Box (2), Katherine A. Smart (1). (1) School of Biosciences, University of Nottingham, Loughborough, LE12 5RD, UK; (2) Coors Brewers Ltd., 137 High Street, Burton-on-Trent DE14 1JZ, UK
8:55 – 9:20 a.m. | O-17. Yeast vitality – A holistic approach towards an integrated solution to predict yeast performance. ELIZABETH J. LODOLO (1), Ian C. Cantrell (1). (1) SABMiller Group Brewing Research, P.O. Box 782178, Sandton, 2146, South Africa

8:00 – 9:20 a.m. | Total Package Oxygen - How to Measure, Validate, and Troubleshoot TPO Workshop | Flores 6

9:20 – 9:35 a.m. | Break

9:35 – 10:30 a.m. | Technical Session V – Process | Flores 7 – 8
Moderator: Kelly Trettner, Coors Brewing Co., Golden, CO

9:40 – 10:05 a.m. | O-18. The oxidation of thiol groups in the brew house. JEREMY R. ROZA (1), Charles W. Bamforth (1). (1) Department of Food Science and Technology, University of California, Davis

10:05 – 10:30 a.m. | O-19. Overcoming oxidation events in mashing. MARCO A. GARCIA (1), Charles W. Bamforth (1). (1) Department of Food Science and Technology, University of California, Davis

10:15 – 11:30 a.m. | Author Signing – Meet Charlie Bamforth, author of the new ASBC book Principles of Malting and Brewing Science (on sale during the meeting) | Flores Ballroom Foyer

10:30 a.m. – 1:00 p.m. | Exhibits and Hospitality | Flores 1 – 5
10:30 a.m. – 1:00 p.m. | Poster Session – Authors Present
Authors: Odd numbers 10:30 – 11:00 a.m.
Authors: Even numbers 12:00 – 12:30 p.m.

11:00 a.m. – 12:00 p.m. | Technical Subcommittee Meetings
• Anton Paar Alcolyser for Measurement of Alcohol and Original Extract in Flavoured Alcoholic Beverages
• Elemental Analysis of Beer and Wort by Inductively Coupled Plasma-Atomic Emission Spectroscopy
• Methods for Measurement of Yeast Vitality
• Soluble Starch

11:30 a.m. – 1:00 p.m. | Lunch Available in Exhibit Hall | Flores 1 – 5

1:00 – 3:50 p.m. | Technical Session VI – Analytical | Flores 7 – 8
Moderator: Cecil Giarratano, Coors Brewing Co., Lakewood, CO

1:05 – 1:30 p.m. | O-20. A new ‘EAP determination’ method to ascertain the endogenous antioxidative potential of beer and other beverages using ESR spectroscopy. FRANK-JUERGEN METHNER (1), Thomas Kunz (2). (1) Berlin University of Technology/VLB Berlin, Berlin, Germany; (2) VLB Berlin, Berlin, Germany

1:30 – 1:55 p.m. | O-21. A novel enzyme-based assay for quantifying diacetyl in fermenting wort. BARRY VAN BERGEN (1), John D. Sheppard (1), Maxime Blanchette (1), John Carvell (2), Armando Jardim (3). (1) Dept. Bioresource Eng. McGill University, Montreal, Quebec, Canada; (2) Aber Instruments, Aberystwyth, UK; (3) Institute of Parasitology, McGill University, Montreal, QC, Canada


2:20 – 2:35 p.m. | Break

2:35 – 3:00 p.m. | O-23. Analysis of volatile components in beer using automated solid-phase micro-extraction (SPME) and high-speed GC-TOFMS. MARK LIBARDONI (1), Jack Cochran (1). (1) LECO Corporation, Las Vegas, NV


3:25 – 3:50 p.m. | O-25. Development of an on-line mass spectrometry technique to monitor the generation of aroma compounds during thermal processing of malted barley. DAVID J. COOK (1), Guy A. Channell (1). (1) University of Nottingham, Sutton Bonington Campus, Loughborough, Leics., UK

1:00 – 4:00 p.m. | Exhibit/Poster Take-Down
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>3:55 – 5:30 p.m.</td>
<td>Statistics, Part Two: Validation of Analytical Methods Workshop</td>
<td>Flores 7 – 8</td>
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<tr>
<td>4:00 – 11:00 p.m.</td>
<td>Hospitality</td>
<td>Capra B – C</td>
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<tr>
<td>5:30 – 6:30 p.m.</td>
<td>Sake One: An Americanized Sake Workshop</td>
<td>Fiesta 8</td>
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<tr>
<td>Evening</td>
<td>Open – Free Time</td>
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</table>

**Tuesday Sessions**

**Total Package Oxygen – How to Measure, Validate, and Troubleshoot TPO Workshop**
8:00 – 9:20 a.m.
Total Package Oxygen (TPO) is quickly becoming the standard used by the brewing industry to determine the amount of oxygen trapped in a package after filling. Join Charles Benedict as he discusses what is needed to get an accurate TPO measurement, how to quickly validate most TPO results, and how to use the data to troubleshoot oxygen contamination sources.

**Statistics, Part Two: Validation of Analytical Methods Workshop**
3:55 – 5:30 p.m.
During this workshop Jim Munroe will discuss the validation of methods used in the laboratory for estimating concentrations or amounts of substances. Emphasis will be on conducting practical ways of constructing and using linear calibrations, limits of detection and quantification, and accuracy and precision. These parameters will be placed in the context of ASBC collaborative testing and everyday use.

**Sake One: An Americanized Sake Workshop**
5:30 – 6:30 p.m.
Greg Lorenz—sakemaster, at Sake One, in Forest Grove, Oregon—will outline methods used in the production of sake and provide background on sake production in America, outlining the differences between American-made and Japanese sakes. A variety of Sake styles will be served during the presentation for tasting and discussion. **Pre-registration is required, prior to meeting arrival.**

**Wednesday, June 21**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tr>
<td>7:00 – 8:00 a.m.</td>
<td>Speaker Orientation and Breakfast: Orals 26–35</td>
<td>La Cita</td>
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<tr>
<td>7:00 – 8:00 a.m.</td>
<td>Technical Committee Breakfast</td>
<td>Fountain Room</td>
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<tr>
<td>7:00 a.m. – 12:00 p.m.</td>
<td>Registration</td>
<td>Flores Ballroom Foyer</td>
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<tr>
<td>8:00 – 9:20 a.m.</td>
<td>Technical Session VII – Stabilization</td>
<td>Flores 7 – 8</td>
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<tr>
<td>8:05 – 8:30 a.m.</td>
<td>O-26. Further studies on the use of a proline-specific protease to prevent chill-haze in beers. HARRY D. CRAIG (1), Jeroen van-Roon (1). (1) DSM, Netherlands</td>
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<tr>
<td>8:30 – 8:55 a.m.</td>
<td>O-27. A new beer finings: A natural, non-animal, alternative to collagen and isinglass. PETER J. ROGERS (1), (1) Foster’s Australia</td>
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<tr>
<td>9:20 – 9:35 a.m.</td>
<td>Break</td>
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<tr>
<td>9:35 – 10:55 a.m.</td>
<td>Technical Session VIII – Packaging</td>
<td>Flores 7 – 8</td>
</tr>
<tr>
<td>10:05 – 10:30 a.m.</td>
<td>O-30. The new system for the measurement of oxygen concentration in sealed packages with fiber-optic oxygen sensor. SATORU KINOSHITA (1), Akihiko Matsuda (1). (1) Kirin Brewery Co., Ltd. Tsurmi-ku, Yokohama, Japan</td>
<td></td>
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</tbody>
</table>
10:30 – 10:55 a.m.  **O-31.** New results on permeation of volatile organic compounds (VOCs) through plastic bottles and closures of beverage and particularly beer. MARTIN ORZINSKI (1), Alexander Wuertz (2), Leif-A. Garbe (1), Jan Schneider (3). (1) VLB Berlin; (2) TU Berlin; (3) University Lippe and Höxter

11:30 a.m. – 1:15 p.m.  Program Committee Meeting and Lunch  
11:30 a.m. – 1:15 p.m.  Publications Committee Meeting and Lunch  
11:30 a.m. – 1:15 p.m.  Technical Committee and Subcommittee Chairs Meeting and Lunch

1:30 – 3:15 p.m.  **Technical Session IX – Flavor**  
Moderator: Alex Speers, Dalhousie University, Halifax, NS Canada

1:35 – 2:00 p.m.  **O-32.** Effect of beer flavors on human emotion. HIROTAKA KANEDA (1), Hidetoshi Kojima (1), Junji Watari (1). (1) Sapporo Breweries Ltd., Yaizu, Shizuoka, Japan

2:00 – 2:25 p.m.  **O-33.** Influence of protein-carbonyl interactions on the flavor stability of beer. LEIF A. GARBE (1), Konrad Neumann (1), Christian T. Piechotta (1), Roland Tressl (1). (1) TU Berlin / VLB, Berlin, Germany

2:25 – 2:50 p.m.  **O-34.** Control of LOX activity in malt for improvement of beer flavor stability. MASAKO SAWADA (1), Takako Inui (1), Seisuke Takaoka (2), Susumu Furukubo (1), Akira Isoe (1), Akira Kogin (2). (1) Beer Development Department, Suntory Ltd, Osaka, Japan; (2) Beer Production Department, Suntory Ltd, Tokyo, Japan

2:50 – 3:15 p.m.  **O-35.** Measurement of swallowing motion during drinking. HIDETOSHI KOJIMA (1), Hirotaka Kaneda (1), Toshio Kurihara (1), Junji Watari (1), Ai Murayama (2), Shohei Fujita (2), Toyohiko Hayashi (2). (1) Sapporo Breweries Ltd., Yaizu, Shizuoka, Japan; (2) Niigata University, Niigata, Japan

3:15 – 3:30 p.m. Break

3:30 – 4:15 p.m.  **Closing Keynote Presentation with Chef Jim Fleishman**  
Closing Reception: Beer and Food Tasting, Extraordinaire!

7:00 – 10:00 p.m.  **Wednesday Session**  
Keynote Presentation

**Who Needs Wine? Beer and Food Pairing for Fine Dining**

**Jim Fleishman, Tournaut Chef, La Quinta Resort & Club**

3:30 – 4:15 p.m.

Wine has its place. But so, too, does beer! The great array of available beers, with their broad spectrum of complex flavors and aromas can enhance any culinary experience, often more effectively than wine. Thoughtfully selected, the right beer not only complements a meal, but makes it a memorable one. During the Closing Keynote Presentation, Chef Jim Fleishman will address the art of successful beer and food pairing and include a series of taste pairings using audience volunteers. Learn the essentials of beer and food pairing, then experience them yourself at the closing reception. Cheers!

**Thursday, June 22**

8:00 a.m. – 12:00 p.m.  Board of Directors Meeting  

8:30 a.m. – 12:00 p.m.  Board of Directors Meeting
NEW and ON SALE

ANNOUNCING an essential reference from one of our foremost brewing science educators.

Meet the Author - Charlie Bamforth
Book Signing - Tuesday 10:15 - 11:30 a.m.
Flores Ballroom Foyer

Charlie Bamforth, Ph.D., D.Sc., is Chair of the Department of Food Science and Technology and Anheuser-Busch Endowed Professor of Malting and Brewing Sciences at the University of California, Davis, and has been part of the brewing industry since 1978. He is the former Deputy Director-General of Brewing Research International, Research Manager and Quality Assurance Manager of Bass Brewers, and Visiting Professor of Brewing at Heriot-Watt University. He is a fellow of the Institute of Brewing and Distilling and of the Institute of Biology. Bamforth is editor-in-chief of the Journal of the American Society of Brewing Chemists and has published innumerable papers, articles, and books on beer and brewing.

Visit the ASBC Registration Desk during the meeting to purchase this new book at the introductory sale price.

Educators - Ask about Student Pricing when you adopt this book for your brewing science course.

This peer-reviewed, reader-friendly book provides a refreshing update for brewing professionals and a primer on brewing science for anyone new to the industry.
Relax and Enjoy Your Stay: Tourism Opportunities

La Quinta Resort & Club

Golf
Experience 90 holes of world-class golf on five courses at the resort and nearby PGA WEST®. Golf instruction is also available at the Jim McLean Golf School located at the resort and PGA WEST.

Salon Services
A full-service beauty salon is available at Yamaguchi Salon, located in Spa La Quinta. Experience the Yamaguchi interpretation of Feng Shui in each of the salon services. All services begin with a consultation. Call for appointments.

Shopping
For one-of-a-kind shopping at Polo Ralph Lauren, Tommy Bahama Bungalow, Brighton Desert Hearts, and so much more, visit The Plaza, the centerpiece of La Quinta Resort & Club. Walk along pathways punctuated by hand-painted ceramic tiles and cool fountains while taking in the colorful flower gardens and early California architecture. All stores open seven days a week.

Spa
In a quiet, natural landscape, Spa La Quinta offers you the ultimate retreat. The ambiance and many of the treatments were borrowed from the area’s citrus groves. The outdoor spa experience takes precedence. From a therapeutic soak to a signature Celestial Shower under the stars, only the desert sky adds another dimension to serenity and relaxation. Call for reservations.

See the Sights: La Quinta and Palm Springs Area

The Palm Springs Aerial Tramway
The Aerial Tramway is one of the most thrilling and unique activities in Southern California. The large cable car gondola elevates from the desert floor to the top of Mt. San Jacinto, rising over 8,516 feet in just 15 minutes! Dine at the peak of San Jacinto with breathtaking views of the valley. The mountain station at the top has a restaurant, cocktail lounge, gift shop, picnic area, and movie theater.

Jeep Tours
The beauty of the California desert landscape is often missed by the casual observer. One way to fully discover this natural wonder is on a guided Jeep Tour. By exploring the path less traveled, the Jeep Tour takes each passenger to the heart of the desert and creates a truly memorable experience.

Horseback Riding
One of the best ways to truly connect with the desert environment is to ride the trails on horseback. Riding through the scenic foothills of the Santa Rosa Mountains, the guide will point out unusual rock formations left by the ancient Salton Sea. And all riders are warmly greeted along the way by the local desert denizens, including rabbits, coyotes, and roadrunners.

Polo Grounds
Polo Grounds offers the ambience of lush green polo fields, white picket fences, and stables of thoroughbred polo ponies set against the tall palm trees and majestic Santa Rosa mountains.

The Indio Desert Circuit
This world-renowned show jumping event attracts the top international horses and riders who journey to Indio, California, to compete under the watchful eye of some of the country’s foremost hunter, jumper, and equitation judges. This spectacular seven-week hunter/jumper show first began in Indio in 1992 and is one of the Circuit’s biggest and best!

Bicycle Adventure
“May the road rise up to meet you, may the wind be always at your back,” as you bicycle over challenging desert trails designed to revitalize the soul and body.

The Living Desert
Billed as the desert’s natural attraction, a guide at this wildlife and botanical park will introduce you to mountain lions, bobcats, Mexican wolves, and golden eagles of the Colorado Desert.

Art Galleries
Visit The Studios Art Gallery in the La Quinta Resort Plaza. Take a short trip to nearby galleries, where you can surround yourself with contemporary art, jewelry, sculpture, furniture, and objects d’art. Whether you’re a serious collector or a novice buyer, you’ll enjoy browsing works by both emerging and established artists. You can also visit the Palm Springs Desert Museum, located at the base of majestic Mt. San Jacinto, featuring exhibition galleries, outdoor sculpture courts, and a 450-seat theater.

Shopping
This “journey into elegance” is a world-class shopping experience at El Paseo, the Rodeo Drive of the desert.

Rock Climbing
Now you can experience the rush of adrenaline your very first day at Uprising Rock Climbing Center in Palm Springs. People of all ages and abilities can learn the ropes at America’s most unique rock climbing facility. Friendly and professional staff will make your experience an adventure to remember.
Posters

Susan Kay, Moderator

P-36  Application of two-dimensional J-resolved nuclear magnetic resonance spectroscopy to differentiation of beer. ALFI KHATIB (1), Hye K. Kim (1), Young H. Choi (1), Robert Verpoorte (1). (1) Dept. Pharmacognosy, Section Metabolomics, Institute of Biology, Leiden University, The Netherlands

P-37  Development of a headspace solid-phase microextraction - GC/MS method for the analysis of citrus volatiles in flavoured alcoholic beverages. DAVID J. MARADYN (1). (1) InBev, London, Ontario, Canada


P-39  Identification of foam- and haze-forming barley proteins using chromatographic and MALDI-TOF mass spectrometry techniques. Marta S. Izydorczyk (1), Werner Ens (2), Yuwei Qian (2), Sharon Bazin (1), TRICIA CHORNICK (1). (1) Canadian Grain Commission, Winnipeg, MB, Canada; (2) University of Manitoba, Winnipeg, MB, Canada

P-40  Method for the assay of alpha-acetolactate using alpha-acetolactate decarboxylase. KEN KOBAYASHI (1), Kazutaka Kusaka (1). (1) National Research Institute of Brewing, Higashi Hiroshima, Japan

P-41  On-line analysis for beer to determine the adsorption of polyphenols during PVPP stabilization. FRANK W. NITZSCHE (1), Diedrich Harms (2), Guido Offer (3). (1) EasyProof Laborbedarf GmbH, Voerde, Germany; (2) Xanten, Germany; (3) MST - Systems, Düsseldorf, Germany

P-42  Variation of phenolic compounds in Taiwanese millet wine through processing, maturation and stabilization. JING-IONG YANG (1). (1) National Kaohsiung Marine University, Kaohsiung, Taiwan

P-43  Wine flavor and aroma analysis by comprehensive two-dimensional gas chromatography with time-of-flight mass spectrometry (GCxGC-TOFMS). Jack Cochran (1), Tincuta Veriotti (2), MARK LIBARDONI (1). (1) LECO Corporation, Las Vegas, NV; (2) LECO Corporation, St. Joseph, MI

P-44  The influence of surface-active compounds on head retention. OLIVER W. MEINHOLD (1). (1) Technische Universität Berlin, Berlin, Germany

P-45  Maximal attenuation: How to measure and how to achieve. NIELS ELVIG (1), Barrie E. Norman (1), Jesper Brask (1). (1) Novozymes A/S

P-46  Effect of low-phytate barley on malt quality including mineral loss during fermentation. MICHAEL J. EDNEY (1), Brian Rossnagel (2), Victor Raboy (3). (1) Grain Research Laboratory, Canadian Grain Commission, Winnipeg, Manitoba, Canada; (2) Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan, Canada; (3) USDA, ARS, Aberdeen, Idaho, USA

P-47  Genetic variation in hardness genes and their impact on malt quality. GLEN P. FOX (1), Robert J. Henry (2), Peter A. Inkerman (3), David M. Poulsen (3). (1) Department of Primary Industries & Fisheries/GFCRC; (2) Southern Cross University/GFCRC; (3) Department of Primary Industries & Fisheries

P-48  Limit dextrinase: The key to Harrington’s success? DENNIS E. LANGRELL (1). (1) Canadian Grain Commission, Winnipeg, Manitoba, Canada

P-49  Malting barley improvement in Eritrea. BEREKET T. NIGUSSE (1). (1) Barley and Wheat Breeder in Eritrean Agricultural Research Institute, Eritrea

P-50  Bioflavoring in beer: Flavor enhancement through hydrolysis of hop glycosides by yeast beta-glucosidase. LUK DAENEN (1), Daan Saison (1), Luc De Cooman (2), Hubert Verachtert (1), Freddy Delvaux (1). (1) Centre for Malting and Brewing Science (CMBS), K.U. Leuven, Belgium; (2) Laboratory of Enzyme and Brewing Technology, KaHo Sint-Lieven, Belgium

P-51  Sodium bisulfite treatment as a method to detoxify deoxynivalenol infected barley. JOSEPH C. LAKE (1), Marcia Browers (2), Alex Speers (1). (1) Dalhousie University, Halifax, Nova Scotia, Canada; (2) Prairie Malt Limited, Biggar, Saskatchewan, Canada

P-52  A community research effort to apply genomics approaches to understand and exploit the genetics of malting quality in barley. KEVIN P. SMITH (1). (1) University of Minnesota, Saint Paul, Minnesota, USA

P-53  The (9S,12S,13S)-9,12,13-trihydroxy-10E-octadecenoic acid (THOE) from barley induced by mechanical stress possesses intrinsic antifungal properties. LEIF A. GARBE (1), Daniela Minuth (1), Roland Tressl (1). (1) TU Berlin / VLB, Berlin, Germany

P-54  Volatile phenolic flavor compounds in beer: Control of phenolic acid extraction and hydrolysis during mashing. NELE VANBENEDEN (1), Frederik Gils (1), Filip Delvaux (1), Freddy R. Delvaux (1). (1) Catholic University of Leuven, Centre for Malting and Brewing Science, Leuven, Belgium

P-55  Foam-stabilizing effects and cling-formation patterns of iso-alpha acids and reduced iso-alpha acids in lager beer. TAKESHI KUNIMUNE (1), Thomas H. Shellhammer (1). (1) Oregon State University, Corvallis, OR, USA
P-57 Application of multiplex PCR to the detection of beer-spoilage bacteria. SHIZUKA ASANO (1), Koji Suzuki (1), Kazutaka Ozaki (1), Hitotose Kuriyama (1), Hiroshi Yamashita (1), Yausushi Kitagawa (1). (1) Asahi Breweries, Ltd.
P-58 Which membrane is the right choice? – A microbiological membrane quality test. FRANK W. NITZSCHE (1), Sabine Mirbach (1), Diedrich Harms (1), Andreas Jonas (2). (1) König Brauerei GmbH, Duisburg, Germany; (2) Dinslaken, Germany
P-59 A new concept for a hygienic inspection of filling plants with on-site analysis. FRANK W. NITZSCHE (1), David Jones (2). (1) EasyProof Laborbedarf GmbH, Voerde, Germany; (2) Dept. Experimental Orthopaedics and Biomechanics, Philipps University, Marburg, Germany
P-60 Comparison of treatments to reduce iron pickup in beer on first fill of new kegs. HILLERY R. HIGHT (1), James I. Mellem (1), Gilbert W. Sanchez (1), Ken Grossman (1). (1) Sierra Nevada Brewing Co., Chico, CA USA
P-61 Better control of dissolved gas measurements around the brewery. BARRY G. FITZGERALD (1). (1) Headmaster Limited, Bramshill, Hampshire, UK
P-62 PDX for major energy savings in brewing. FREDERICK R. SHARPE (1), Gary Freeman (1). (1) Brewing Research International, UK
P-63 Identification of top-fermenting yeast. MASAHIRO GOMI (1), Chikako Akihisa (1), Mayura Mochizuki (1), Shigeito Ikushima (2), Takeo Imai (1), Yutaka Ogawa (1), Keiko Tanaka (2), Osamu Kobayashi (2). (1) Research Laboratories for Brewing, Kirin Brewery Co. Ltd, Yokohama, Japan; (2) Central Laboratories for Frontier Technology, Kirin Brewery Co. Ltd, Yokohama, Japan
P-64 Investigation of the premature yeast flocculation factor in malt. ASHLEY V. PORTER (1), Alex Speers (1), Tom Gill (1), Leigh Glaser (1). (1) Dalhousie University, Halifax, NS, Canada
P-65 Sucrose fermentation through MAL genes: Switching the mode of sucrose metabolism by Saccharomyces cerevisiae. Fernanda Badotti (1), Marcelo G. Dario (1), Maria Luiza A. Cordioli (1), Sergio L. Alves (1), Luiz C. Miletti (1), Paulo S. Schlogl (1), BORIS U. STAMBUK (1). (1) Departamento de Bioquímica, Universidade Federal de Santa Catarina, Florianópolis, SC 88040-900, Brazil
P-66 Vicinal diketone production and reduction during beer fermentation using active dry lager yeast. NORMAND CYR (1), Maxime Blanchette (1), John D. Sheppard (1). (1) Department of Bioresource Engineering, McGill University, Montréal, Québec, Canada
P-67 Yeast mitochondrial DNA mutant formation during yeast handling processes. STEPHEN J. LAWRENCE (1), Katherine A. Smart (1). (1) Division of Food Sciences, School of Biosciences, University of Nottingham, Loughborough, Leicestershire, UK
P-68 Yeast preoxygenation: A true alternative for wort aeration in beer production?. SOFIE A. DEPRAETERE (1), Filip Delvaux (1), Joris Winderickx (2), Freddy R. Delvaux (1). (1) Centre for Malting and Brewing Science, KULeuven, Heverlee, Belgium; (2) Functional Biology, KULeuven, Heverlee, Belgium

Cheers to you, ASBC members!

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We want ASBC to be your #1 industry resource. If you have suggestions for making membership even more valuable, contact Cheryl Sundquist at +1.651.454.7250 or csundquist@scisoc.org.

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ASBC Corporate Members contribute their knowledge, expertise and professional involvement to ensure the continued strength of ASBC and promote excellence in the science and technology of brewing. We appreciate their support of ASBC and encourage you to contact them directly for detailed information on their company-specific products.

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Exhibition
Flores Ballroom 1 – 5

We welcome the following 2006 ASBC Annual Meeting Exhibitors and thank them for their participation at this year’s meeting.

The Exhibition showcases the latest products and services in the brewing industry. Exhibitors will demonstrate items ranging from ingredients and instruments to equipment and services. In addition to serving as your resource to leading industry suppliers, the exhibit hall provides a great opportunity to network with peers over refreshments.

Snacks will be available on Sunday and a buffet lunch will be served in the hall on Tuesday. On Monday following the close of exhibits, attendees and exhibitors are invited to ASBC’s annual Recognition Lunch in Fiesta 1, 2, 5, 7.

Drawings for prizes will also take place in the Exhibit Hall on Monday, June 19, at 10:15, 11:45, and 11:50 a.m. You must be present to win!

Show your support for the contributions of these suppliers by visiting the exhibits at every opportunity.
2006 Exhibitors Numerical Listing

101 BASF Corporation
103 Enzyme Development Corporation
104 Steinfurth, Inc.
105 Kalsec Inc.
106 DIAGNOSTIX LTD.
107 Hach and Hach Ultra
108 Bio-Chem Laboratories, Inc.
109 Phenomenex
111 Analytical Process, Inc.
112 Advanced Instruments, Inc.
203 Profamo Inc.
204 optek-Danulat, Inc.
205 Danisco USA Inc.
206 Siebel Institute of Technology & World Brewing Academy
207 LaMotte Co.
208 White Labs, Inc. Pure Yeast & Fermentation
211 Bruker BioSpin Corporation, EPR Division

213 VLB Berlin
303 Pall Corporation
304 Skalar, Inc.
305 Ecolab Inc.
306 MecSens USA
307 Anton Paar USA
308 PureMalt Products Ltd.
312 Gausmer Enterprises, Inc.
402 Brewing Research International (BRi)
403 Novozymes
404 ISP (International Specialty Products)
405 Cargill
406 Norit Haffmans
407 GenPrime, Inc.
408 PerkinElmer Life and Analytical Sciences
410 Thermo Electron Corporation
411 DSM Food Specialties USA, Inc.

As of May 11, 2006

Exhibit Hall Floor Plan

[Diagram of exhibit hall floor plan]
Oxidative changes in taste and appearance, haze, and turbidity. It alleviates metallic bitterness, serves as an absorber of heavy metal and is used to remove unwanted polyphenols that cause turbidity. Divergan HM polymer is an excellent stabilizer prone to polymerize to products of higher molecular weight which improve the colloidal stability of beer. The use of Divergan also improves the stability of beer haze is caused primarily by polyphenol-protein complexes. Divergan F and RS stabilizers selectively adsorb the polyphenols that cause turbidity. Removing these polyphenols reduces the turbidity and improves the colloidal stability of beer. The use of Divergan also improves the stability of the taste, as the flavonoid polyphenols, in particular, are prone to polymerize to products of higher molecular weight that have a bitter taste. Divergan HM polymer is an excellent absorber of heavy metal and is used to remove unwanted heavy metals from beverages. It alleviates metallic bitterness, oxidative changes in taste and appearance, haze, and turbidity.

**Exhibitor Descriptions**

† Indicates Corporate Member

**Advanced Instruments, Inc.**
Booth 112
2855 Metropolitan Place, Pomona, CA 91767; Telephone: +1.909.392.6900, Fax: +1.909.392.3665, Website: www.aii1.com, E-mail: info@aii1.com. Advanced Instruments Inc. offers the most reliable oxygen sensors on the market along with a wide range of on-line and portable analyzers and sample conditioning systems for accurate analysis of oxygen levels ranging from 1 part-per-billion to 100% pure oxygen, which can significantly impact production yields and improve user profits.

**Analytical Process, Inc.**
Booth 111
P.O. Box 131301, Houston, TX 77219-1301; Telephone: +1.713.526.6552, Fax: +1.713.522.1563, Website: www.analyticalprocess.com, E-mail: api@analyticalprocess.com. The Liquisonic® Plato Monitor is a highly sophisticated online analyzer for the brewing process that provides: direct and accurate determination of initial extract concentration in the wort boiler; precise control of the lautering/mash filtering process; original gravity control in the filtering process; optimizing filtering time; brand-specific blending control for consistent quality; final online beer analysis showing extract, alcohol content, original gravity, and temperature.

† **Anton Par USA**
Booth 307
10215 Timber Ridge Dr., Ashland, VA 23005; Telephone: 1.800.722.7556, Fax: +1.804.550.9074, Website: www.anton-paar.com, E-mail: info.us@anton-paar.com. Anton Paar specializes in developing and producing highly accurate instrumentation to measure CO₂, alcohol, real and original extract of beer both online and in the lab. Our density meters, sound velocity sensors, and carbonation meters are designed for the most demanding of environments. We offer an accurate and easy-to-use viscometer for measuring the dynamic viscosity of congress wort (MEBAK approved). Our high-quality, high-performance products deliver reliable and accurate results, ensuring control of product quality within tight tolerance limits.

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† **Bio-Chem Laboratories, Inc.**
Booth 108

† **Brewing Research International (BRi) Booth 402**
Coopers Hill Rd., Nutfield, Surrey, RH1 4HY, United Kingdom; Telephone: +44.1737.822272, Fax: +44.1737.822747, Website: www.brewingresearch.co.uk, E-mail: bri@brewingresearch.co.uk. BRi is the premier technology and information provider to the global brewing, malting and wine industries. BRi’s consultant provides beer consumer research, flavor evaluation, analysis, auditing, troubleshooting, new product development, technical research, benchmarking, dispense, and microbiological services. BRi’s masters of wine offer wine analysis, troubleshooting, flavor evaluation, and technical advice. BRi also has a membership package, like an insurance policy, including an international beer safety information and alert service, a safety research portfolio and 24/7 emergency response, a health information and research service, and the world’s most-comprehensive technical information provision available on-line through their website.

† **Bruker BioSpin Corporation, EPR Division**
Booth 211
44 Manning Rd., Billerica, MA 01821; Telephone: +1.978.663.7406, Fax: +1.978.670.8851, Website: www.bruker-biospin.com, E-mail: epr@bruker-biospin.com. Bruker BioSpin Corporation manufactures EPR spectrometers for use in flavor-stability applications. Bruker’s EMX Spectrometer is a high-throughput research system for both liquid and solid samples. The e-scan benchtop spectrometer provides rapid, automated analysis for optimizing your beer’s shelf life.

† **Cargill**
Booth 405
15407 McGinty Rd. W., MS 62, Wayzata, MN 55391; Telephone: 1.800.344.1633, Fax: +1.630.505.7846, Website: www.cargill.com. Cargill is a leading provider of malt, liquid and solid brewing adjuncts and innovative solutions to the worldwide brewing industry. Products featured include the world’s most complete line of high-maltose and Clearbrew liquid adjuncts, IsoClear 42% and 55% high-fructose corn syrups, highly fermentable dextrose syrups, and refined grits (brewing starch). All products can be shipped anywhere in the world. Cargill offers great beverages for your customers. Feel free to visit the Cargill booth at the ASBC annual convention or call!

† **Danisco USA Inc.**
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DIAGNOSTIX  Booth 106
Suite 15, 400 Matheson Blvd. E., Mississauga, ON L4Z 1N8, Canada; Telephone: 1.800.282.4075, Website: www.diagnostix.ca.

DSM Food Specialties USA, Inc.  Booth 411
2675 Eisenhower Ave., Eagleville, PA 19403; Telephone: +1.610.650.8480, Fax: +1.610.650.8599, Website: www.brewersclarex.com, E-mail: info.beer-ingredients@dsm.com. DSM’s vision for the brewing industry is the “particle free” process. Brewers Clarex™ is an innovative, extremely reliable, cost-effective, and easy to use “particle free” concept for beer stabilization. Compatible with kieselguhr-free filtration, it sets new standards for beer processing such as simplified layout and avoidance of both beer losses and filter aids. Brewers Clarex™ is environmentally friendly, requires no maintenance, allows reduced energy consumption, and decreases handling/storage costs. Quality of beer improves with the concept by preventing oxygen ingress into the process, hence ensuring flavor stability. Make your future today with Brewers Clarex™.

† Ecolab Inc.  Booth 305
370 Wabasha St. N., St. Paul, MN 55102; Telephone: +1.651.293.2233, Fax: +1.651.293.2260, Website: www.ecolab.com. Ecolab is the leading provider of critical environment sanitation products and systems to the brewery industry, delivering superior brand protection and improved operational efficiencies. Products and programs include brewhouse cleaning, fermentation and maturation cleaning, bottle cleaning, conveyer lubrication technologies, and CIP engineered systems and services.

† Enzyme Development Corporation  Booth 103
360 West 31st St., Ste. 1102, New York, NY 10001-2727; Telephone: +1.212.736.1580, Fax: +1.212.279.0056, Website: www.enzymedevelopment.com, E-mail: info@enzymedevelopment.com. Enzyme Development Corporation has been serving the needs of enzyme users since 1953. Team members are stationed across the country with the head office in New York City and primary production in Scranton, PA. Our people provide technical analysis to help you select the best options. Whether you need multiple truckloads or only a few kilograms, the care, the attention, and the commitment are the same. We offer a full range of enzyme solutions for enhanced brewing performance.

GenPrime, Inc.  Booth 407
157 S. Howard, Suite 605, Spokane, WA 99201; Telephone: +1.509.624.9855, Fax: +1.509.462.2847, Website: www.genprime.com, E-mail: info@genprime.com. GenPrime’s Easy Count enumerates active yeast cells for the brewing industry in less than 10 minutes, eliminating the need for subjective analysis using a hemacytometer or methylene blue. The Easy Count allows brewers to determine pitching rates (based on culture activity) and monitor fermentation performance.

† Gusmer Enterprises, Inc.  Booth 312
1165 Globe Ave., Mountainside, NJ 07092; Telephone: +1.908.301.1811, Fax: +1.908.301.1812, Website: www.gusmerenterprises.com, E-mail: sales@gusmerenterprises.com. For more than eighty years, Gusmer Enterprises has been dedicated to providing service with knowledge to the brewing industry. Gusmer Enterprises supplies the brewing, malting, and distilling industries with a wide variety of products. Instrumentation, malt mills, melting equipment, filtration media, processing aids, and spent-grain handling equipment are just a few examples of our product line. Gusmer Enterprises represents the product lines of Aber Instruments, AB Vickers, Cellulo, D.D. Williamson, Mettler-Toledo, Millipore, Novozymes, Paguag Schlauchtechnik, PQ Corporation, Ponndorf, and Schmidt-Seeger AG.

† Hach and Hach Ultra  Booth 107
P.O. Box 389, Loveland, CO 80539; Telephone: +1.970.669.3050, Fax: +1.970.669.2932, Website(s): www.hach.com or www.hachultra.com, E-mail: cbenedict@hachultra.com. Hach Ultra and Hach Company are sister companies that manufacture and distribute analytical instruments and reagents used to analyze beer, water and effluent. Hach Ultra focuses its core business on dissolved gas measurement for O₂, CO₂, and N₂ with Orbisphere instrumentation. Hach Company focuses on lab and process instrumentation for alkalinity, mineral analysis, BOD, COD, and spectroscopy specifically for brewing parameters. All of our systems are designed to simplify analysis, including complete, easy-to-follow methods, high-quality prepared reagents, accurate instrumentation, and lifetime technical support. Our goal is to offer quality products and competent, friendly support.

† ISP (International Specialty Products)  Booth 404
1361 Alps Rd., Wayne, NJ 07470; Telephone: +1.973.872.4403, Fax: +1.973.628.3886, Website: www.ispcorp.com, E-mail: info@ispcorp.com. ISP is recognized worldwide for its Polyclar line of products (PVPP) used for stabilization and clarification of beer. The line includes products to remove haze-causing polyphenols (Polyclar 10 and Polyclar Super R), and for the simultaneous balanced removal of haze-causing polyphenols and proteins (Polyclar Plus 730). ISP is also a basic supplier of alginates (PGA) to enhance and stabilize foam in beer. Polyclar Brewbrite is a new addition to our product line; it is a wort clarifier and stabilizer and also gives higher wort yield, reduced fermentation time, and longer filter run lengths.

† Kalsec Inc.  Booth 105
P.O. Box 50511, Kalamazoo, MI 49006; Telephone: +1.269.349.9711, Fax: +1.269.382.3060, Website: www.kalsec.com. Kalsec®, a privately owned company located in Kalamazoo, MI, is a major producer of pre-isomerized and reduced hop products marketed worldwide. We are a primary supplier of specialty hop products (including Tetralone®, Hexalone®, Reduced Isolone®, and others) to the world’s leading brewers. The applications vary, but our products are
used for precise bitterness control, light-stability, beer foam enhancement, hop aroma, and flavor. Kalsec® holds numerous patents for specialty hop products and is the originator of tetra-hydroisohumulone derived from beta-acids and hexa-hydroisohumulone. We are proud of our quality commitment, technology leadership, and customer service.

LaMotte Co. Booth 207
P.O. Box 329, Chestertown, MD 21620; Telephone: +1.410.778.3100, Fax: +1.410.778.6394, Website: www.lamotte.com, E-mail: mkt@lamotte.com. LaMotte manufactures meters, test kits, test strips, and reagents for analysis of process waters and finished product. These include meters for chloride, turbidity (ASBC and EBC turbidity), metals, pH, DO, and TDS. The new TC-3000 reads free and total chlorine at 0.02–10 ppm, turbidity at 0.05–4,000 NTU, and APHA color. It allows the user to display results in ASBC or EBC units. Titration tests for alkalinity, hardness, chloride, etc. are also available. Test strips include chlorine dioxide, peracetic acid, chloride, and QAC.

MecSens USA Booth 306
8617 Fair Oaks Pkwy., Fair Oaks Ranch, TX 78015; Telephone: +1.210.698.5446, Fax: +1.866.333.5965, Website: www.mecsensusa.com, E-mail: sales@mecsensusa.com. MecSens manufactures portable and process oxygen measurement systems in Geneva, Switzerland. MecSens’ systems offer numerous advantages, e.g., 1) a robust membrane fixation and protection, resulting in longer service intervals and facilitating the harshest measurements such as oxygen in wort; 2) temperature measured at the membrane face (rather than on the side of the sensor), thus improving accuracy, reducing hygienic impact, and eliminating unneeded mechanical seals; 3) calibration stored in the sensor, allowing convenient laboratory calibration for inline systems.

+ Norit Haffmans Booth 406
1330 Anvil Dr., Rockford, IL 61115; Telephone: +1.815.639.0322, Fax: +1.815.639.1135, Website: www.norit.com, E-mail: info@haffmansna.com. Norit Haffmans manufactures a wide range of quality control equipment to measure CO₂, O₂, foam, and turbidity and for monitoring pasteurization and bottle and keg washing processes. Haffmans has also developed the first-ever combined CO₂/O₂ unit enabling brewers to measure these vital quality parameters with one instrument. The Norit Group also offers CO₂ recovery systems, beer membrane filtration, beer de-colorization systems, a wide range of process valves, and water-reuse solutions.

+ Novozymes Booth 403
77 Perry Chapel Church Rd., Franklinton, NC 27525; Telephone: +1.919.494.3096, Fax: +1.919.494.3415, Website: www.novozymes.com. The key to reducing costs—malt quality, lautering, and beer filtration times—has impact on the process and costs. Brewing enzymes from Novozymes provide the solutions you need to expand your options for your brewing operations and reduce your costs—even with the best of malts.

Use enzymes to improve capacity and efficiency while retaining the high quality of the beer in every brew. Enzymes are natural processing aids and the key to ensuring consistent processes and results. Breweries have used enzyme solutions from Novozymes for over forty years. Meet us at the ASBC and let’s discover how.

+ optek-Danulat, Inc. Booth 204
N118 W18748 Bunsen Dr., Germantown, WI 53022; Telephone: 1.800.371.4288, Fax: +1.262.437.3699, Website: www.optek.com/brewing, E-mail: aworley@optek.com. Optek’s process control instrumentation provides advanced and precise inline analysis of product color, turbidity, haze, and constituent concentration. Our inline sensors and insertion probes, engineered in Germany, provide real-time results through UV-VIS-NIR absorption-based photometers and scattered-light turbidimeters, to monitor and control fermentation, filtration, separation, yeast pitching, wort color and clarity, DE and PVPP dosing, sanitizer concentrations, and more. Optek has recently introduced the “Haze Control” series of dual-angle lab and process turbidimeters for QA/QC, as well as NIST calibration solution standards.

+ Pall Corporation Booth 303
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Phenomenex  Booth 109
411 Madrid Ave., Torrance, CA 90501; Telephone: +1.310.212.0555, Fax: +1.310.328.7768, Website: www.phenomenex.com, E-mail: info@phenomenex.com. Phenomenex is a global leader in providing top-quality separation devices. Featured HPLC columns include high pH stable Gemini™, Synergi™ for method development, and top-selling Luna®. Featured SPE products include Strata® tubes and plates. Featured GC products include Zebron™ columns and accessories. Also, Phenomenex offers application-specific EZ:faast™, for rapid amino acid analysis, and Clarity™, for purification of synthetic oligonucleotides.

† Profamo Inc.  Booth 203
7506 Albert Tillinghast Dr., Sarasota, FL 34240; Telephone: +1.941.379.8155, Fax: +1.941.379.8699, Website: www.profamo.com, E-mail: profamo@comcast.net. Profamo Inc. is pleased to present at ASBC 2006 some of its fine line of equipment from its various manufacturing partners, including, among others, the new Digox 6 portable dissolved oxygen meter from Dr. Thiedig; Rotech’s keg monitoring system; Headmaster’s dissolved oxygen and CO2 calibrators, ACM’s degasser and in-line beer monitor, OxySense’s non-invasive oxygen meter, Pfeuffer’s Tannometer, Friabilimeter, Sortimat, and Viscomat; Lg Automatic’s foam tester, mash bath, sampling device, bottle turner and hazemeter; Keofitt’s sterile sampling systems, and finally Gerhardt’s systems for sample digestion, distillation, shakers, and hot plates.

† PureMalt Products Ltd.  Booth 308
Victoria Bridge, Haddington, Scotland EH41 4BD, United Kingdom; Telephone: +44 1620 824696, Fax: +44 1620 822018, Website: www.puremalt.com, E-mail: info@puremalt.com. Following on from the successful range of BrandMakers, which deliver flavor and color management for variety beers in the cellar, PureMalt’s program of continuous improvement has developed an outstanding malt base for the production of malt alternatives and reduced-alcohol beers. This will be demonstrated on our stand.

Siebel Institute of Technology & World Brewing Academy  Booth 206
1777 N. Clybourn Ave., Suite 2F, Chicago, IL 60614; Telephone: +1.312.255.0705, Fax: +1.312.255.1312, Website: www.siebelinstitute.com, E-mail: info@siebelinstitute.com. Siebel Institute of Technology is pleased to introduce new services for the brewing industry. We now offer a range of yeast DNA fingerprinting services through our Montreal-based Microbiology Services Division. Our Chicago-based Laboratory Services Division features a new service for analyzing staling aldehydes that will give you critical information about the staling that has occurred in your beer. We also offer a complete range of brewing courses including our TwinTrack Brewing Microbiology Program and our web-based training courses, which allow students to take professional-level brewing courses without the cost of travel.

† Skalar, Inc.  Booth 304
5995 Financial Dr., Suite 180, Norcross, GA 30071; Telephone: 1.800.782.4994, Fax: +1.770.416.6718, Website: www.skalar.com, E-mail: info@skalar.com. Come to the Skalar booth to see the malt/beer automated analyzer for fast and accurate automation of time-consuming and difficult wet-chemistry methods. Skalar offers complete automation for simultaneous determination of any combination of: alpha-amylase, anthocyanogen, bitterness, carbon dioxide, color, density, diacetyl, diastatic power, ethanol, free amino nitrogen, beta-glucan, pH, polyphenols, sulfur dioxide (total and free), thiobarbituric acid value, turbidity, and viscosity. Skalar also manufactures the Primacs-SN analyzer for total nitrogen/protein analysis of malt and wort samples. Last, the Formacs TN is available for a TKN alternative (no reagents).

Steinfurth, Inc.  Booth 104
Suite 120, 530 Means St., Atlanta, GA 30318; Telephone: +1.404.586.6817, Fax: +1.404.586.6824, Website: www.steinfurthinstruments.com, E-mail: info@steinfurthinstruments.com. Steinfurth has been producing special measuring systems for the beverage industry worldwide for more than 30 years. We provide solutions for the quality control of beverages and beverage packages. Our product groups are as follows: CO2-measuring systems, measuring systems for temperature/pressure/temperature/pasteurization logger, packaging testing devices, measuring devices for beer foam stability, sampling devices, and laboratory carbonization systems. During the ASBC meeting, we will show our brand new developments for breweries: a fully automatic foam stability tester, an automatic sampling device, and a logger system for monitoring of pasteurization.

† Thermo Electron Corporation  Booth 410
501-90th Ave. NW., Minneapolis, MN 55433; Telephone: +1.763.783.2500, Fax: +1.763.780.2315, Website: www.thermo.com.

VLB Berlin  Booth 213
Seestrasse 13, Berlin, 13353, Germany; Telephone: +49.30.45080.255, Fax: +49.30.45080.210, Website: www.vlb-berlin.org. Versuchs- und Lehranstalt fuer Brauerei in Berlin (VLB): research, teaching, consulting, information, and service for the brewing, malting, and beverage industries since 1883. The VLB Berlin (Research Teaching Institute of Brewing in Berlin - Germany) provides training, research, and service for the brewing industry. Customers all around the world take advantage of our training courses and of our broad experiences in the fields of research, analyses, and consulting. Specials this year: ESR analyses for the determination of endogenous antioxidative potential of beer and other beverages, testing of gas permeation thorough plastic bottles, and “Excellence in Brewing Technology”—an advanced training

White Labs, Inc. Pure Yeast & Fermentation Booth 208
7564 Trade St., San Diego, CA 92121; Telephone: +1.858.693.3441, Fax: +1.858.693.3441, Website: www.whitelabs.com. Since 1995, White Labs has specialized in, and has been producing, certified pure cultured liquid yeast for brewers, distillers, and vintners. Our full-service laboratory provides product and microbial analysis, proprietary yeast banking, lab media, and lab supplies as well as easy-to-use quality control test kits and brewing accessories. Our mission is to provide the highest-quality products at a fair price with unparalleled service. White Labs’ corporate office is based in San Diego, with our sales staff operating out of Boulder, Colorado.

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www.asbcnet.org/checksample

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The following individuals, through their leadership on the Board of Directors, generously donate their time and talents to guide ASBC. Board members play a major role in determining what programs and services should be provided by ASBC in order to advance the industry and you professionally. ASBC is an association run by the members, for the members – an association where your voice is not only welcome, but considered vital. If you have input, please do not hesitate to contact a board member or staff member.

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Thank you

ASBC volunteer members tackle important issues, keep members informed, manage the details, and basically make things happen.

A sincere thanks to everyone who has given their time and talents to make a difference in ASBC and the brewing industry!

ASBC especially thanks the following committee and section chairs:

David P. Barr, *Method for Measure of Resistance of Oxidation in Beer by EPR*
Dirk S. Bendia, *Coordination of New and Alternate Methods of Analysis*
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