

BREWING SUMMIT

SAN DIEGO

2018

ASBC Meeting, August 12 – 14
Joint Exhibition and Programming 13 & 14
Master Brewers Conference 13 – 15

Sheraton San Diego Hotel & Marina
San Diego, CA, U.S.A.



UNITED WE BREW



UNITED WE BREW

Offers and Events

New from Master Brewers!



Dark Lagers: History, Mystery, Brewing Techniques, Recipes

by Thomas Kraus-Weyermann and Horst Dornbusch



Book Signing: Meet the Authors

Tuesday, August 14, from
12:30 to 1:15 p.m.

Master Brewers Booth 903
(in the Nautilus Foyer)

Only \$34 when you purchase at the book signing!

Authors!

- Connect with John Palmer, Editor-in-Chief of the *MBAA Technical Quarterly* and the Master Brewers book program, about publishing your work with us.

“United We Brew” T-shirt!

Only \$20 at the Brewing Summit!

New Master Brewers vintage “trucker hat”!

Only \$17 at the Brewing Summit!

- ▶ Stop by the publications table in the Bayview Foyer to get your shirts, hats, and other Master Brewers books.



Welcome Message

Welcome to Brewing Summit 2018!

The American Society of Brewing Chemists and Master Brewers Association of the Americas welcome you to Brewing Summit 2018! ASBC and Master Brewers have joined together to bring you more programming, more exhibits, and more chances to network with peers from around the world! We think you'll agree that the Brewing Summit is an inspiring combination of events that pairs the science of brewing with technology along with discourse and learning in sunny San Diego, California.

ASBC and Master Brewers have collaborated to develop four joint workshops. Join us at "Shelf Stability and Instrumental Analysis" to learn about how you can increase your beer's shelf life and then for "Meditations on *Saccharomyces cerevisiae* var. *diastaticus*" on Tuesday for more information about this yeast strain. We are excited to bring you a two-part series on brewing with cannabis with "Demystifying Cannabis" on Monday and "A Plant, a Process, Safe Access, and Flavor" on Tuesday.

On Monday evening, don't miss out on the chance to connect with your colleagues from both ASBC and Master Brewers at the Brewing Summit Bayfront Party at Coasterra, a beautiful venue right on the bay! Have a beer and tapas in the open air while enjoying live entertainment, all in view of the San Diego skyline. Afterward, head back to the hotel for Irish coffee at the Afterglow.

We thank you for joining us and look forward to two programs packed with learning and networking. From ASBC and Master Brewers, welcome to San Diego and Brewing Summit 2018!

Sylvie Van Zandycke

ASBC Program Committee Chair

Andrew Tveekrem

Master Brewers Technical Committee Chair

Patricia Aron

ASBC Programs Chair

Darren Goodlin

Master Brewers Technical Committee Vice Chair

Committees

Thank you to the following volunteers who created the Brewing Summit program.

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Lallemand Brewing

Patricia Aron
Rabr Malting Co.

Kimberly Bacigalupo
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*Research Labs for Alcoholic
Beverage Technology,
Kirin Co., Ltd.*

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Sponsors

Thank You Sponsors!

From A to Z — We Keep It Clean!



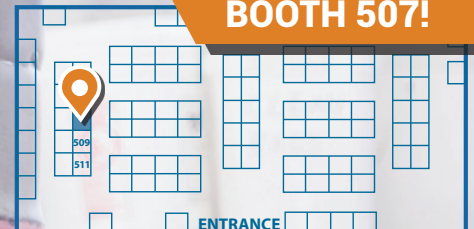
Sponsored Station Sponsors: AFCO, Ballast Point, Baswood, EnviroLogix Inc., and LGC.

“Hi, my name is Becca. And I have a **wastewater problem.**”

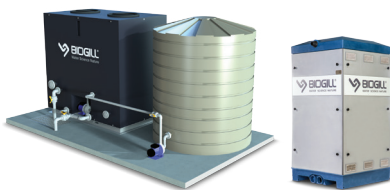
Becca's brewery is growing, and growing fast! Production has more than tripled, from 3,000 bbl/yr to 10,000 bbl/yr, and she needed an onsite solution to her increasing wastewater disposal needs. Fortunately, she found BioGill. Their affordable and scalable wastewater system is the perfect solution for Becca's growing brewery.

**As production increases,
Becca's wastewater disposal
fees are finally decreasing.**

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**ROI period varies based on surcharges and brewery capacity.*

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brewery@biogill.com

Schedule-at-a-Glance

A ASBC Meeting **M** Master Brewers Conference **JS** Joint Session

Saturday, August 11 – Pre-Summit Activities

8:00 a.m. – 3:30 p.m.	ASBC Board of Directors Meeting	<i>Executive Conference 4</i>
10:00 a.m. – 5:00 p.m.	A Pre-Meeting Workshop: Yeast Flavors—From Traditional to Modern Technologies*	<i>Executive Conference 3AB</i>
3:00 – 11:00 p.m.	Hospitality Room Open	<i>Harbor's Edge</i>
8:30 – 10:00 p.m.	A Brains & Beer Trivia Night*	<i>Executive Conference 2AB</i>

Sunday, August 12 – ASBC Meeting

8:00 – 9:45 a.m.	A ASBC Opening Session and Keynote: Make Lactic Acid Bacteria Great Again—Malting and Brewing	<i>Grande Ballroom A</i>
9:00 a.m. – 12:00 p.m.	Master Brewers Executive Committee Meeting	<i>Seabreeze</i>
10:00 – 11:45 a.m.	A Workshop: Starting a Sensory Program from the Ground Up	<i>Harbor Island 2</i>
10:00 – 11:45 a.m.	A Technical Session: Malt and Grain I	<i>Grande Ballroom A</i>
10:00 – 11:45 a.m.	A Technical Session: Yeast, Fermentation, and Microbiology I	<i>Harbor Island 1</i>
11:30 a.m. – 4:00 p.m.	M Field Trip: Ballast Point, White Labs, and Societe Brewing* <i>Bus departs Sheraton lobby at 11:30 a.m.</i>	<i>Offsite</i>
1:00 – 2:45 p.m.	A Workshop: Malt Flavor and Sensory Analysis: Back to Basics and into the Future*	<i>Harbor Island 2</i>
1:00 – 2:45 p.m.	A Technical Session: Analytical I	<i>Harbor Island 1</i>
1:00 – 2:45 p.m.	A Technical Session: Hops I	<i>Grande Ballroom A</i>
1:00 – 4:00 p.m.	Master Brewers Board of Governors Meeting	<i>Seabreeze</i>
1:00 – 5:00 p.m.	M Pre-Conference Workshop: Meeting OSHA Requirements—On a Budget*	<i>Spinnaker</i>
2:00 – 8:00 p.m.	Exhibitor Set-Up	<i>Pavilion</i>
2:00 – 8:00 p.m.	Sponsored Station Set-Up	<i>Nautilus Level</i>
3:00 – 4:15 p.m.	A Technical Session: Yeast, Fermentation, and Microbiology II	<i>Harbor Island 1</i>
3:00 – 4:45 p.m.	A Workshop: Gin: The Art and the Science of a Historic Spirit*	<i>Harbor Island 2</i>
3:00 – 4:45 p.m.	A Technical Session: Brewing	<i>Grande Ballroom A</i>
3:00 – 11:00 p.m.	Hospitality Room Open	<i>Harbor's Edge</i>
4:45 – 6:00 p.m.	ASBC Happy Hour*	<i>Bayview Lawn</i>

* This is a ticketed event—you must present your ticket to gain access

Monday, August 13 – Shared ASBC and Master Brewers Programming

7:45 – 11:30 a.m.	Poster and Sponsored Station Set-Up	<i>Nautilus Level</i>
8:00 – 9:45 a.m.	A Workshop: Sour Beers: New Frontiers	<i>Harbor Island 1 & 2</i>
8:00 – 9:45 a.m.	A Technical Session: Analytical II	<i>Grande Ballroom A</i>
8:00 – 9:45 a.m.	M Master Brewers Opening Session and Keynote: An Artist Gets Invited to Speak at a Brewing Summit...News at 11	<i>Grande Ballroom BC</i>
8:00 – 11:00 a.m.	Exhibitor Set-Up	<i>Pavilion</i>
10:00 – 11:45 a.m.	A Technical Session: Sensory	<i>Grande Ballroom A</i>
10:00 – 11:45 a.m.	M Workshop: Brewhouse Water Treatment: The Final Frontier to Exceptional Quality Beer	<i>Grande Ballroom BC</i>
10:00 – 11:45 a.m.	M Workshop: OSHA Emphasis and Resources for Compliance	<i>Harbor Island 1 & 2</i>
11:45 a.m. – 1:45 p.m.	Lunch with Exhibits	<i>Pavilion</i>
11:45 a.m. – 6:30 p.m.	Posters and Sponsored Stations Open	<i>Nautilus Level</i>
11:45 a.m. – 6:30 p.m.	Exhibits Open	<i>Pavilion</i>
1:45 – 3:00 p.m.	M Technical Session: Yeast, Fermentation, and Microbiology I	<i>Grande Ballroom BC</i>
1:45 – 3:30 p.m.	JS Joint Workshop: Shelf Stability and Instrumental Analysis	<i>Harbor Island 1 & 2</i>
1:45 – 3:30 p.m.	A Technical Session: Malt and Grain II	<i>Grande Ballroom A</i>
3:45 – 5:30 p.m.	M Brewing Fundamentals: Beer Clarity—Clarification and Cloudification in the Brewery I	<i>Grande Ballroom BC</i>
3:45 – 5:30 p.m.	JS Joint Workshop: Demystifying Cannabis: Analysis, Compliance, and Approval as an Ingredient	<i>Harbor Island 1 & 2</i>
3:45 – 5:30 p.m.	A Technical Session: Hops II	<i>Grande Ballroom A</i>
5:30 – 6:30 p.m.	Brewing Summit Happy Hour with Exhibits	<i>Pavilion</i>
6:45 – 9:45 p.m.	Brewing Summit Bayfront Party at Coasterra*	<i>Coasterra (offsite)</i>
9:45 – 11:30 p.m.	Afterglow <i>Sponsored by Malteurop North America</i>	<i>Harbor Island 3</i>
9:45 – 11:30 p.m.	Hospitality Room Open	<i>Harbor's Edge</i>

Tuesday, August 14 – Shared ASBC and Master Brewers Programming

8:00 – 9:15 a.m.	A Technical Session: Yeast, Fermentation, and Microbiology III	<i>Grande Ballroom A</i>
8:00 – 9:45 a.m.	M Workshop: Inside and Outside the Black Box: A Practical Approach to Achieving Quality in Draft Packaging	<i>Grande Ballroom BC</i>
8:00 – 9:45 a.m.	A Technical Session: Hops III	<i>Harbor Island 1 & 2</i>
9:45 a.m. – 2:00 p.m.	Posters and Sponsored Stations Open	<i>Nautilus Level</i>
9:45 a.m. – 2:00 p.m.	Exhibits Open	<i>Pavilion</i>
10:00 – 11:15 a.m.	A Technical Session: Malt and Grain III	<i>Grande Ballroom A</i>
10:00 – 11:45 a.m.	M Workshop: A Conversation on Late Hopping: Flavors, Aromas, and Effects	<i>Grande Ballroom BC</i>
10:00 – 11:45 a.m.	JS Joint Workshop: Meditations on <i>Saccharomyces cerevisiae</i> var. <i>diastaticus</i>	<i>Harbor Island 1 & 2</i>
11:45 a.m. – 2:00 p.m.	Lunch with Exhibits	<i>Pavilion</i>
12:30 – 1:15 p.m.	JS Joint Book Signing Event	<i>Nautilus Level</i>
2:00 – 2:30 p.m.	Poster Take-Down	<i>Nautilus Level</i>

* This is a ticketed event—you must present your ticket to gain access

Tuesday, August 14 – Shared ASBC and Master Brewers Programming, Cont.

2:00 – 3:15 p.m.	M Technical Session: Malt and Grains	<i>Grande Ballroom BC</i>
2:00 – 3:45 p.m.	M Workshop: Brewhouse Engineering	<i>Harbor Island 1 & 2</i>
2:00 – 3:45 p.m.	A Technical Session: Novel Methods	<i>Grande Ballroom A</i>
2:00 – 6:00 p.m.	Exhibitor Move-Out	<i>Pavilion</i>
2:00 – 6:00 p.m.	Sponsored Station Move-Out	<i>Nautilus Level</i>
4:00 – 5:15 p.m.	M Technical Session: Packaging	<i>Grande Ballroom BC</i>
4:00 – 5:15 p.m.	A Technical Session: Yeast, Fermentation, and Microbiology IV	<i>Grande Ballroom A</i>
4:00 – 5:45 p.m.	JS Joint Workshop: A Plant, a Process, Safe Access, and Flavor	<i>Harbor Island 1 & 2</i>
5:45 – 7:00 p.m.	Master Brewers Happy Hour*	<i>Bayview Lawn</i>
5:45 – 11:00 p.m.	Hospitality Room Open	<i>Harbor's Edge</i>

Wednesday, August 15 – Master Brewers Conference

8:00 – 9:15 a.m.	M Technical Session: Sustainability	<i>Grande Ballroom BC</i>
8:00 – 9:15 a.m.	M Technical Session: Yeast, Fermentation, and Microbiology II	<i>Grande Ballroom A</i>
8:00 – 9:45 a.m.	M Workshop: Packaging: Common Errors in Filler Air Pickup	<i>Harbor Island 3</i>
10:00 – 11:45 a.m.	M Workshop: Ask the Brewmasters: Cold Side Operations	<i>Grande Ballroom A</i>
10:00 – 11:45 a.m.	M Brewing Fundamentals: Beer Clarity—Clarification and Cloudification in the Brewery II	<i>Harbor Island 3</i>
10:00 – 11:45 a.m.	M Technical Session: Hops	<i>Grande Ballroom BC</i>
11:45 a.m. – 1:00 p.m.	M Volunteer Opportunity Fair	<i>Spinnaker</i>
1:00 – 2:45 p.m.	M Workshop: Brewer and Supplier Partnerships for a Safe, Quality Brew	<i>Harbor Island 3</i>
1:00 – 2:45 p.m.	M Workshop: Brewery Automation and Inline Instrumentation Considerations	<i>Grande Ballroom A</i>
1:00 – 2:45 p.m.	M Technical Session: Brewery Operations	<i>Grande Ballroom BC</i>
3:00 – 4:15 p.m.	M Master Brewers Closing Session: The State of a Changing Craft Brewing Industry	<i>Grande Ballroom BC</i>

* *This is a ticketed event—you must present your ticket to gain access*



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General Information

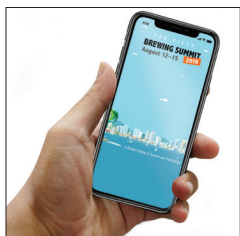
Brewers Central—Registration Hours

Brewers Central is located in the Bayview Foyer. The desk will be open at the following times:

Saturday, August 11:	3:30 – 6:00 p.m.
Sunday, August 12:	7:30 a.m. – 5:00 p.m.
Monday, August 13:	7:30 a.m. – 5:30 p.m.
Tuesday, August 14:	8:00 a.m. – 5:45 p.m.
Wednesday, August 15:	8:00 a.m. – 3:00 p.m.

Please have your name badge with you at all times to ensure access to sessions and events.

Brewing Summit 2018 Mobile App



Keep connected with the Brewing Summit mobile app. Download BrewSum18 to access the schedule, abstracts, exhibitor descriptions, announcements, and more, all at your fingertips!

Abstracts

Brewing Summit abstracts for ASBC and Master Brewers can be accessed in two ways:

- **Brewing Summit 2018 Mobile App:** The mobile app is available for download on the ASBC and Master Brewers websites.
- **ASBC and Master Brewers websites:** Go to asbcnet.org/BrewingSummit2018, or mbaa.com/BrewingSummit2018.

Guests

Guests must register and purchase a Guest Bundle to participate in Brewing Summit 2018.

- The **ASBC Guest Bundle** includes access to the hospitality room, the Brewing Summit Bayfront Party, and the ASBC Happy Hour. Guests wishing to attend the Master Brewers Happy Hour must purchase a separate ticket.
- The **Master Brewers Guest Bundle** includes access to the hospitality room, the Brewing Summit Bayfront Party, and the Master Brewers Happy Hour. Guests wishing to attend the ASBC Happy Hour must purchase a separate ticket.

Guests do not have access to the sessions or exhibit hall. Coworkers and business associates are not considered guests and must pay the applicable registration fees.

Proceedings

Electronic proceedings are available to purchase for \$79 at Brewers Central. The proceedings will be available online following Brewing Summit 2018 to all who purchased them.

Hospitality Room

Join your peers for conversation and refreshments! The Hospitality Room is located in Harbor's Edge and will be open at the following times:

Saturday, August 11:	3:00 – 11:00 p.m.
Sunday, August 12:	3:00 – 11:00 p.m.
Monday, August 13:	9:45 – 11:30 p.m.
Tuesday, August 14:	5:45 – 11:00 p.m.

***Name badge must be worn in hospitality room**

Speaker Kiosk

The speaker kiosk will be available for speakers to review their presentations the day before their scheduled session. The kiosk is located near Brewers Central in the Bayview Foyer.

Open Meeting Room

Two meeting rooms set conference room style for a maximum of 16 people each are available for use during Brewing Summit. To check on their availability and reserve a time slot (not to exceed 2 hours), stop by Brewers Central.

Photo Release

Photographs will be taken at Brewing Summit 2018 for use in promotional materials after the summit has concluded. By registering for this meeting, you agree to allow ASBC and Master Brewers to use your photo.

Schedule: Day-by-day

Saturday, August 11

A ASBC Meeting **M** Master Brewers Conference **JS** Joint Session

8:00 a.m. – 3:30 p.m.	ASBC Board of Directors Meeting	<i>Executive Conference 4</i>
10:00 a.m. – 5:00 p.m.	A Pre-Meeting Workshop: Yeast Flavors—From Traditional to Modern Technologies*	<i>Executive Conference 3AB</i>
3:00 – 11:00 p.m.	Hospitality Room Open	<i>Harbor's Edge</i>
8:30 – 10:00 p.m.	A Brains & Beer Trivia Night*	<i>Executive Conference 2AB</i>

A Premeeting Workshop: Yeast Flavors—From Traditional to Modern Technologies*

10:00 a.m. – 5:00 p.m. • Executive Conference 3AB

Moderators: Caroline Parnin-Smith, Lallemand Brewing; Sylvie Van Zandycke, Lallemand Brewing

Speakers: Matthew Dahabieh, Renaissance BioScience Corp.; Matthew Farber, University of the Sciences; Chaz Rice, Mascoma LLC; Bill Simpson, Cara Technology Ltd.; Kara Taylor, White Labs Inc.

Traditionally, brewers have relied on history and evolution to choose which yeast to brew with. Ale yeasts are highly diversified and have been around for thousands of years; they can produce a large panel of flavors from neutral to extremely fruity. They have evolved to sustain the stresses of beer fermentation and are excellent at utilizing wort sugars. Lager yeasts are much closer genetically and phenotypically; their origin has been determined as late 15th century Bavaria. They produce little flavor but can be differentiated by the production of other compounds such as sulfur. The pure culture of yeast, a practice established by Carlsberg in the late 19th century, has introduced the concept of reliable and consistent fermentations for both ales and lagers. Non-Saccharomyces yeasts have always been considered as undesirable as they introduce flavor deviations into the brew; the uncontrollable element of being a contaminant is mostly what was causing the issue. Nowadays, pure cultures of non-Saccharomyces yeasts that display extremely unique combinations of flavors and aroma are now available for brewers to experiment with. Those strains should be chosen carefully, characterized thoroughly from a reputable source that is able to clearly define the impact and limitations of each particular strain. Lastly, in today's world, technology allows us to alter microorganisms in order to modify the production of specific flavors or/and enhance fermentation. This can be done either by selective breeding—a lengthy naturally occurring process—or by genetic modification—a highly precise, fast, and powerful method yet controversial in the food and beverage industry. This workshop will cover all types of yeasts available for brewers to play with and will focus on flavor production. We will be tasting beers made with identical grain bills and fermentation parameters, but made with different yeasts throughout the day. These tastings will provide attendees with hands-on sensory experience while we discuss how far we have come in terms of yeast impacting the organoleptic characteristics of beer and how far we could and should go. *Preregistration is required.*

A Brains & Beer Trivia Night*

8:30 p.m. – 10:00 p.m. • Executive Conference 2AB

You bring the brains; we'll bring the beer! Fire up your synapses and dominate the competition at the Saturday night pre-meeting trivia bash! This after-dinner activity is a perfect way to network prior to the meeting kick-off. Make connections, lounge around, and blow your own horn—sing your own praises—and lay it on thick how much better your team truly is. In this spirited game of twisted trivia, may the beer be ever in your favor. *Preregistration is required.*

** This is a ticketed event—you must present your ticket to gain access*

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Schedule: Day-by-day

Sunday, August 12

A ASBC Meeting **M** Master Brewers Conference **JS** Joint Session

7:00 – 8:00 a.m.	ASBC Speaker Breakfast	Harbor Island 1
8:00 – 9:45 a.m.	A ASBC Opening Session and Keynote: Make Lactic Acid Bacteria Great Again—Malting and Brewing	Grande Ballroom A
9:00 a.m. – 12:00 p.m.	Master Brewers Executive Committee Meeting	Seabreeze
10:00 – 11:45 a.m.	A Workshop: Starting a Sensory Program from the Ground Up	Harbor Island 2
10:00 – 11:45 a.m.	A Technical Session: Malt and Grain I <i>Moderator: David Maradyn</i> 10:00 A-001. Michael Féchir. A new analytical approach to malt aroma characterization in beer and intermediates 10:25 A-002. Keisuke Okada. Malt quality analysis for amylolytic enzymes and lipoxygenase revealed a new insight into stable beer production with desired flavor profiles 10:50 A-003. Zhao Jin. Malting quality of Fusarium head blight–infected rye (<i>Secale cereale</i>) 11:15 A-004. Takumi Sugiyama. Influence of high-molecular-weight polypeptides on the smoothness of beer	Grande Ballroom A
10:00 – 11:45 a.m.	A Technical Session: Yeast, Fermentation, and Microbiology I <i>Moderator: Sylvie Van Zandvyeke</i> 10:00 A-005. Matthew Winans. Brewing yeast from the Far East, <i>Saccharomyces arboricola</i> and the hybrids 10:25 A-006. Yang He. Rapid assessment of yeast phenotypic diversity through the application of Raman spectroscopy 10:50 A-007. Chris Curtin. Genomic variation amongst <i>Brettanomyces</i> yeasts 11:15 A-008. Avi Shayevitz. Do oak barrels contribute to variability of the microbiome in barrel-aged beers?	Harbor Island 1
11:30 a.m. – 4:00 p.m.	M Field Trip: Ballast Point, White Labs, and Societe Brewing* <i>Bus departs Sheraton lobby at 11:30 a.m.</i>	Offsite
1:00 – 2:45 p.m.	A Workshop: Malt Flavor and Sensory Analysis: Back to Basics and into the Future*	Harbor Island 2
1:00 – 2:45 p.m.	A Technical Session: Analytical I <i>Moderator: Aaron Golston</i> 1:00 A-009. Joerg Maxminer. The use of analytical methods in brewing quality control—Not as easy as we think? 1:25 A-010. Katherine Witrick. The effects an acidified environment has on the development of aroma compounds during serial pitching 1:50 A-011. Nils Rettberg. Rapid and solventless analysis of thiols in brewing samples 2:15 A-012. Sisse Jongberg. Investigation of haze-related protein-phenol conjugates in beer	Harbor Island 1
1:00 – 2:45 p.m.	A Technical Session: Hops I <i>Moderator: Phillip Chou</i> 1:00 A-013. Lucas Chadwick. The freshening power of Centennial hops 1:25 A-014. Dean Hauser. The extraction efficiency of hop bitter acids and volatiles during dry hopping 1:50 A-015. Cong Nie. Aging of hops and their effects on ale and lager beer flavor quality 2:15 A-016. Kaylyn Kirkpatrick. The enzymatic power of hops and the interplay between hop cultivar and beer style	Grande Ballroom A
1:00 – 4:00 p.m.	Master Brewers Board of Governors Meeting	Seabreeze
1:00 – 5:00 p.m.	M Pre-Conference Workshop: Meeting OSHA Requirements—On a Budget*	Spinnaker

2:00 – 8:00 p.m.	Exhibitor Set-Up	<i>Pavilion</i>
2:00 – 8:00 p.m.	Sponsored Station Set-Up	<i>Nautilus Level</i>
3:00 – 4:15 p.m.	A Technical Session: Yeast, Fermentation, and Microbiology II <i>Moderator: Scott Britton</i>	<i>Harbor Island 1</i>
	3:00 A-022. Matthew Farber. Development of a selective medium for detection of <i>Saccharomyces cerevisiae</i> var. <i>diastaticus</i> in the brewery	
	3:25 A-023. Margaret Whitener. So many media, so little time. Which LAB detection media should you use and why?	
	3:50 A-024. Laura Hill. The microbiological impact of dry hopping beers with pelletized and whole-cone Cascade hops	
3:00 – 4:45 p.m.	A Workshop: Gin: The Art and the Science of a Historic Spirit*	<i>Harbor Island 2</i>
3:00 – 4:45 p.m.	A Technical Session: Brewing <i>Moderator: Anna Sauls</i>	<i>Grande Ballroom A</i>
	3:00 A-017. Shelley Smith. Effects of select key variables on haze stability	
	3:25 A-018. Sho Asano. Hop polyphenols contributing to fullness in beer and their control using polyvinylpyrrolidone (PVPP)	
	3:50 A-019. Chengtuo Niu. Effect of protein Z ₄ and its structural modification on beer foam stability	
	4:15 A-020. Bhekisisa Dlamini. Nitrogen supplementation of unmalted sorghum worts on yeast fermentation performance during lager beer production	
3:00 – 11:00 p.m.	Hospitality Room Open	<i>Harbor's Edge</i>
4:45 – 6:00 p.m.	ASBC Happy Hour*	<i>Bayview Lawn</i>

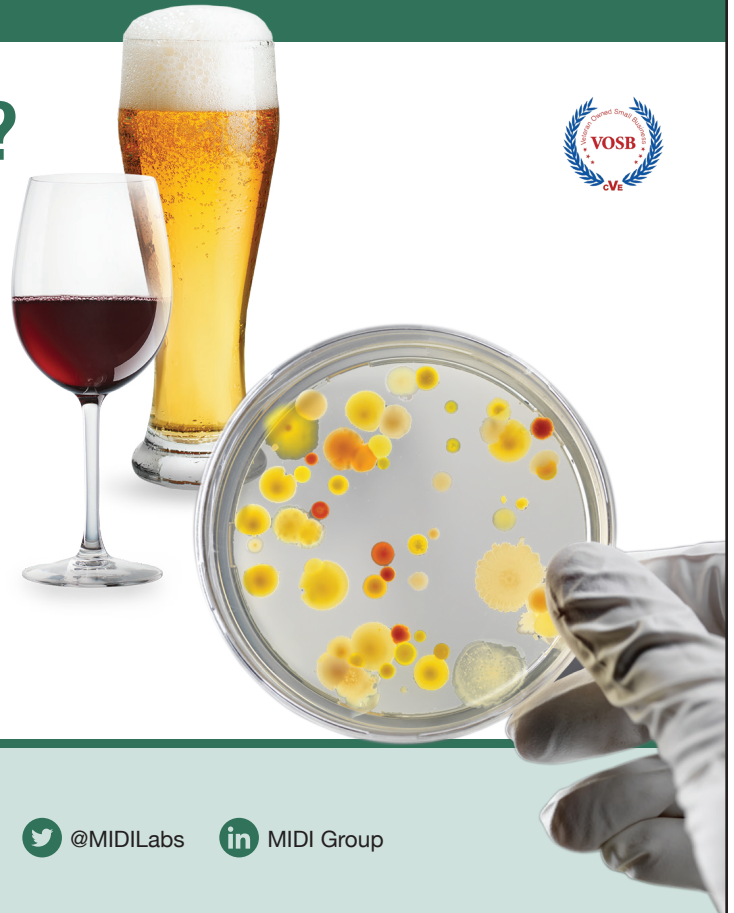
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MIDI Group

A ASBC Opening Session and Keynote: Make Lactic Acid Bacteria Great Again—Malting and Brewing

8:00 a.m. – 9:45 a.m. • Grande Ballroom A

ASBC Opening Remarks and Business Meeting

8:00 a.m. – 8:45 a.m.

Speaker: Chris Powell, University of Nottingham

Make Lactic Acid Bacteria Great Again—Malting and Brewing

8:45 a.m. – 9:45 a.m.

Keynote Speaker: Elke Arendt, University College Cork

Lactic acid bacteria (LAB) have been extensively used for centuries as starter cultures to carry out food fermentations and are looked upon as burgeoning “cell factory” for the production host of functional bio molecules and food ingredients. In recent years, multiple functional compounds have been isolated, identified, and shown to be active in food/beverage systems. This presentation gives an overview of the use of lactic acid bacteria in the malting and brewing/beverage industry. It will concentrate on three areas where specific metabolites of LAB can be used to improve the malting and brewing process. The first part will concentrate on the isolation and characterization of antifungal compounds from LAB and their application in malting and brewing. The second part will deal with the use of specifically selected LAB and their application in reducing the malting loss and the third part will focus on the application of LAB for the production of sour beers and explore their potential for the production of novel wort based beverages. Novel options to combat beer-spoiling lactic acid bacteria will also be explored.



Professor Arendt is a native of Stuttgart, Germany. She graduated as an engineer of food technology at Hohenheim University in 1988 (M.Sc.) and received her Ph.D. degree from the same institute in 1991. The same year, she moved to University College Cork (Ireland) as a postdoctoral scientist funded by a Marie Curie fellowship. In 1993, she was appointed as a faculty member at UCC where she established an externally-funded research group, which was consistently supported by grants from national, EUn and industry sources. In 2007, she was awarded a D.Sc. degree from the National University of Ireland for her published work in the area of fermented foods. In 2016, she was appointed as principal investigator at the APC Microbiome Institute. In her research field, she was listed as one of the most highly cited researchers in world in 2017 (Clarivate Analytics) and has a H-Index of 63 (Google Scholar). She lectures and carries out research in the areas of malting, brewing, and cereal science. Specific research topics include: lactic acid bacteria and their application in malting and brewing as well as cereal products, gluten-free malting and brewing, and functional cereal-based foods and beverages. Professor Arendt is currently the head of a group of 25 research staff and Ph.D. students.

A Workshop: Starting a Sensory Program from the Ground Up

10:00 a.m. – 11:45 a.m. • Harbor Island 2

Moderator: Lindsay Barr, New Belgium Brewing Co.

Speakers: Lindsay Barr, New Belgium Brewing Co.; Bob Galligan, Surly Brewing Co.; Kaitlyn Hendricks, 3 Floyds Brewing

For those looking to start a sensory program in a small craft brewery, the image of a gold standard world-class sensory program can present an incredibly intimidating image. “How am I ever going to have the time to devote to training my panel?” “I don’t have enough people in my brewery to achieve statistical significance in my measurement.” “What methods are approachable and can produce meaningful and actionable results?” These are just a few examples of the many unique barriers to entry preventing craft brewers from starting a sensory program. Here, we will discuss unique and creative solutions to breaking down these barriers while maintaining the highest scientific integrity in their sensory program. Participants will leave with a clear path for developing and

growing their program and the understanding that the barriers, once seemingly insurmountable, are simply workable challenges once given the proper attention.

M Field Trip: Ballast Point, White Labs, and Societe Brewing*

11:30 a.m. – 4:00 p.m. • Offsite; Bus departs Sheraton lobby at 11:30 a.m.

Have lunch at Ballast Point’s newly renovated Miramar location, then take the bus over to White Labs for a beer tasting and tour. At White Labs, you’ll be treated to experiential taste tests with a focus on how yeast impacts the beer complexity and flavor profile. Then it’s over to Societe Brewing Company for a tour and fresh beer brewed in this 20-barrel production brewery. Lunch included. Preregistration required.

Field Trip is sponsored in part by White Labs



A Workshop: Malt Flavor and Sensory Analysis: Back to Basics and into the Future*

1:00 p.m. – 2:45 p.m. • Harbor Island 2

Moderators: Patricia Aron, Rahr Corporation; Lindsay Barr, New Belgium Brewing Co.

Speakers: Patricia Aron, Rahr Corporation; Lindsay Barr, New Belgium Brewing Co.; Harmonie Bettenhausen, Colorado State University; Cassie Poirier, Briess Malting Co.; Andrea Stanley, Valley Malt

This workshop will take the participant back to the basics of malt flavor, malt sensory, and malt quality analysis. Speakers will take a dive into understanding the parameters on a malt COA and how these quality parameters relate to flavor, flavor potential, and flavor stability. Participants will learn how to conduct the hot steep sensory method and go through single malt evaluations using the beer flavor map in conjunction with the DraughtLab application. The workshop will include guidance and direction on how to assess malt quality in the brewery as well as what it means to run a malt “sensory” program in a small malthouse with limited panelists. The workshop will conclude with an overview of what lies ahead—the future of malt flavor and how current research through metabolomics is guiding the way.

M Pre-Conference Workshop: Meeting OSHA Requirements—On a Budget*

1:00 p.m. – 5:00 p.m. • Spinnaker

Moderator: Mark Jaeggi, Sabhailteacht Solutions, LLC

This workshop is designed with the craft brewer in mind. It will cover multiple popular safety topics such as LOTO, confined space entry, fork trucks, hazard communication, PPE, and new OSHA regulations, etc. The instructor will present the information in an open and understandable format, welcoming questions and specific situations that may be of concern to the participants. The information provided for each topic will discuss how to properly apply the OSHA regulation to your operations to ensure compliance. Additionally, the instructor will provide numerous free resources for program templates, training, etc., that brewers on a budget can use to meet the regulatory requirements of applicable OSHA standards. Participants will learn how to create specific programs related to these OSHA programs right in the class.

Preregistration required.

A Workshop: Gin: The Art and the Science of a Historic Spirit*

3:00 p.m. – 4:45 p.m. • Harbor Island 2

Moderators: Rebecca Newman, Consultant; Amaey Mundkur, John I. Haas

Speakers: Gwen Conley, Cutwater Spirits; James Porteous, Electric Spirits UK; Katherine Smart, The Surrey Copper Distillery

The gin workshop is a spirited journey from past to present. Please join us, along with a selected panel of speakers who will guide our palates through a tasting of gins from large, small, traditional and artisanal distilleries. Quench your thirst with something different as well as engage your palate and learn that not all gin is clear or crafted with juniper botanicals. Seating is limited and there is an additional fee for this course.

ASBC Happy Hour*

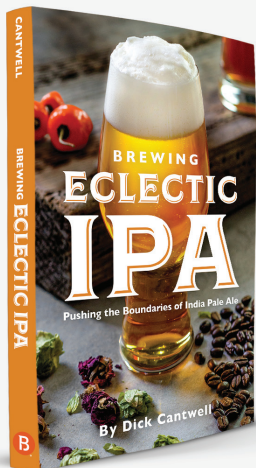
4:45 p.m. – 6:00 p.m. • Bayview Lawn

Get outside and enjoy the night sky—and a few light refreshments, while you're at it—during the ASBC Happy Hour at Brewing Summit. Get to know your room (block) mates, pick your favorite poster presenter's brain, and let loose after a busy day.

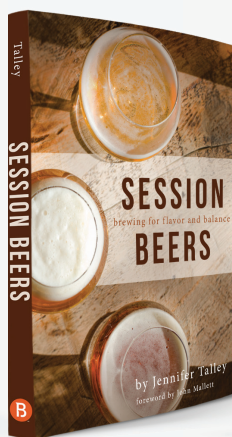
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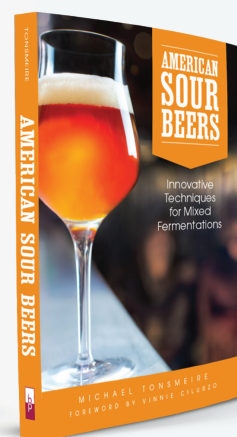
Brewing Eclectic IPA:
Pushing the Boundaries of
India Pale Ale
By Dick Cantwell



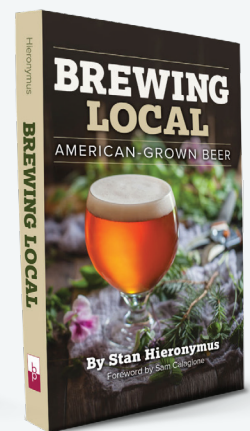
Session Beers:
Brewing for
Flavor and
Balance
By Jennifer Talley



Quality Management:
Essential Planning
for Breweries
Mary Pelletieri



American Sour Beers:
Innovative
Techniques
for Mixed
Fermentations
By Michael Tonsmeire



Brewing Local:
American-
Grown Beer
By Stan Hieronymus



**BREWERS
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Schedule: Day-by-day

Monday, August 13

A ASBC Meeting **M** Master Brewers Conference **JS** Joint Session

7:00 – 8:00 a.m.	Master Brewers Speaker Breakfast	<i>Harbor Island 3</i>
7:45 – 11:30 a.m.	Poster and Sponsored Station Set-Up	<i>Nautilus Level</i>
8:00 – 9:45 a.m.	A Workshop: Sour Beers: New Frontiers	<i>Harbor Island 1 & 2</i>
8:00 – 9:45 a.m.	A Technical Session: Analytical II <i>Moderator: Zachary Quandt</i> 8:00 A-025. Drew Budner. The effect of yeast strain on the aroma chemical profiles of barley and sorghum beers 8:25 A-026. Laurent Dagan. Thiols in beer: Key information to balance beer profile 8:50 A-027. Matthias Baldus. Elucidation of prooxidative effects of malt- and beer-derived antioxidants 9:15 A-028. Klaas Reglitz. From cone to consumer: Behavior of 4MMP in hops and beer	<i>Grande Ballroom A</i>
8:00 – 9:45 a.m.	M Master Brewers Opening Session and Keynote: An Artist Gets Invited to Speak at a Brewing Summit...News at 11	<i>Grande Ballroom BC</i>
8:00 – 11:00 a.m.	Exhibitor Set-Up	<i>Pavilion</i>
10:00 – 11:45 a.m.	A Technical Session: Sensory <i>Moderator: Amaey Mundkur</i> 10:00 A-029. Amy Noga. Applying the Napping technique to distinguish differences between numerous, highly hopped beers 10:25 A-030. Rebecca Ford. How do bitterness units relate to bitterness perception in beer? 10:50 A-031. Martina Gastl. Nonalcoholic beer—Sensory requirements on upcoming beer market 11:15 A-032. Jason Cohen. Semantic lexicons: A new technique for predicting sensory perception	<i>Grande Ballroom A</i>
10:00 – 11:45 a.m.	M Workshop: Brewhouse Water Treatment: The Final Frontier to Exceptional Quality Beer	<i>Grande Ballroom BC</i>
10:00 – 11:45 a.m.	M Workshop: OSHA Emphasis and Resources for Compliance	<i>Harbor Island 1 & 2</i>
11:45 a.m. – 1:45 p.m.	Lunch with Exhibits	<i>Pavilion</i>
11:45 a.m. – 6:30 p.m.	Posters and Sponsored Stations Open	<i>Nautilus Level</i>
11:45 a.m. – 6:30 p.m.	Exhibits Open	<i>Pavilion</i>
1:45 – 3:00 p.m.	M Technical Session: Yeast, Fermentation, and Microbiology I <i>Moderator: Ryan Dunnavant</i> 1:45 M-001. Stephen Gonzalez. A unique approach to brewing traditional sour beers 2:10 M-002. Maria Moutsoglou. Expanding your yeast library: Bench-scale yeast strain screening for performance and organoleptic diversification 2:35 M-024. Gary Heussler. Not just for taste: How fermented foods and beverages provide a valuable tool for understanding microbial communities	<i>Grande Ballroom BC</i>
1:45 – 3:30 p.m.	JS Joint Workshop: Shelf Stability and Instrumental Analysis	<i>Harbor Island 1 & 2</i>
1:45 – 3:30 p.m.	A Technical Session: Malt and Grain II <i>Moderator: David Cook</i> 1:45 A-033. Matthias Baldus. Respiration-derived accumulation of hydrogen peroxide in barley seeds and its impact on malt quality 2:10 A-034. Mogens Andersen. Roasting malt affects the retention of iron and copper during mashing 2:35 A-035. Xiaoxi Li. Study on the correlation between malt quality parameters, modification homogeneity, and filtration performance 3:00 A-036. Glen Fox. Knowledge of barley starch molecular structure puts new insight into better understanding of mashing and fermentable sugars	<i>Grande Ballroom A</i>

3:45 – 5:30 p.m.	M Brewing Fundamentals: Beer Clarity—Clarification and Cloudification in the Brewery I	<i>Grande Ballroom BC</i>
3:45 – 5:30 p.m.	JS Joint Workshop: Demystifying Cannabis: Analysis, Compliance, and Approval as an Ingredient	<i>Harbor Island 1 & 2</i>
3:45 – 5:30 p.m.	A Technical Session: Hops II <i>Moderator: Patricia Aron</i>	<i>Grande Ballroom A</i>
	3:45 A-037. Robert Foster II. Discovery of a bisulfite radical system in dry-hopped and non-dry-hopped beers using a new electron paramagnetic resonance (EPR) method	
	4:10 A-038. Hiroyuki Abe. Behavior of thiols present in hop during brewing process under various brewing conditions	
	4:35 A-039. Cécile Chenot. How to optimize the utilization of hop cysteine and glutathione S-conjugates in late and dry hopping: Focus on dual hops and Saaz	
	5:00 A-040. Andrew Reyes. The impact on whole-cone hop quality from volatile compounds and elemental composition	
5:30 – 6:30 p.m.	Brewing Summit Happy Hour with Exhibits	<i>Pavilion</i>
6:45 – 9:45 p.m.	Brewing Summit Bayfront Party at Coasterra*	<i>Coasterra (offsite)</i>
9:45 – 11:30 p.m.	Afterglow <i>Sponsored by Malteurop North America</i>	<i>Harbor Island 3</i>
9:45 – 11:30 p.m.	Hospitality Room Open	<i>Harbor's Edge</i>

M Master Brewers Opening Session and Keynote: An Artist Gets Invited to Speak at a Brewing Summit...News at 11

8:00 a.m. – 9:45 a.m. • Grande Ballroom BC

Master Brewers Opening Remarks

8:00 a.m. – 8:30 a.m.

Speakers: Toby Eppard, MillerCoors; Andy Tveekrem, Market Garden Brewery; Susan Welch, Westrade Business Consulting

Invited Speaker: J. Nikol Jackson-Beckham, Brewers Association

8:30 a.m. – 9:00 a.m.

Keynote Speaker: Tomme Arthur, Port Brewing Co.

9:00 a.m. – 9:45 a.m.

An Artist Gets Invited to Speak at a Brewing Summit...News at 11

Speaker: Tomme Arthur, Port Brewing Co.

What happens at the intersection of art and science in brewing? Our keynote speaker is widely recognized for the highly imaginative and experimental beers that he has produced in his 22+ years in the brewing business. While he considers himself more avant-garde in his approach to brewing, he has long understood the role of perspective and great fundamental science as being an integral part of the flavors he chases as he knows, those who ignore the science of brewing are destined to fail. Join Tomme as he discusses his brewery operations and how art and science work together in tandem to produce world-class beers.



Tomme Arthur is a San Diego native and has been in the San Diego brewing scene since first getting his boots wet in 1996. Since then he has spent his years chasing “flavor-driven beers” and through the exploration of oak and barrel aging experiments. Today he works as one the co-founders of Port Brewing, The Lost Abbey, and The Hop Concept, a three-headed monster brewery operation that opened WAY back in 2006. When he’s not traveling for great beer or dropping his daughters off at school, you can find him working in San Marcos, CA, trying to determine ways to improve the flavor and stability of the nearly 50 different beers his company produces each year.

Fans, Hands, and Brands: Strategies and Tactics for Being Inclusive and Building Diversity in Craft Beer

Invited Speaker: J. Nikol Jackson-Beckham, Brewers Association

What do a black belt in Jiu Jitsu, a colony of ants, and a recipe for a brown ale have in common? In the real world, very little. But in Dr. J.’s talk, this eclectic list of common objects will inspire attendees to rethink how we approach diversity and inclusion in the craft beer industry. In this interactive presentation, Dr. J. will open the door for an honest and judgement-free conversation about the realities of authentically reaching populations that are underrepresented among beer drinkers and brewery employees. Though there are no one-size-fits-all solutions to the many different challenges organizations face when seeking to diversify, this talk will use established best practices, craft brewing industry data, insights from social science, and consumer research to help attendees begin to craft individualized plans for aligning inclusive practices and diversity outcomes with their overall organizational goals.

An assistant professor of communication studies at Randolph College, Dr. J. Jackson-Beckham has a storied history in the brewing community that began when she attended her first craft beer festivals in San Diego in the early 2000s. In the years that followed, she became an avid homebrewer and worked as a buyer for a homebrew supply retailer with five locations across Virginia and North Carolina. A passion for tasting, making, and digging into the history of beer styles, inspired J. to dedicate her academic career to the study of beer and its place in American culture. While earning a Ph.D. degree from UNC-Chapel Hill, J. conducted in-depth research about numerous aspects of the American brewing industry in general and published social commentary, scholarly journal articles, and academic book chapters about a range of topics relating to the craft beer industry and craft beer culture in particular. Those topics include sustainability, entrepreneurship, brewing history,

and homebrewing, but J. is most passionate about her work on issues of diversity, inclusion, and cultural disparities as they relate to craft beer. In recent years, J. has delivered keynote addresses, presentations, and guest lectures on the culture and inclusiveness of craft beer. She is a frequent guest on radio shows and podcasts and has provided perspective and expertise for a number of news and entertainment media outlets. Her book, *The Value of a Pint*, is forthcoming from the University of Nebraska Press. As diversity ambassador for the Brewers Association, Dr. J. works to provide industry members with effective strategies for aligning inclusive organizational practices with overall organizational goals and tactics for diagnosing and removing barriers to access for populations that are underrepresented among craft beer drinkers and producers.

A Workshop: Sour Beers: New Frontiers

8:00 a.m. – 9:45 a.m. • Harbor Island 1 & 2

Moderators: Caroline Parnin, Lallemand Brewing; Lauren Zeidler, Ballast Point Brewing and Spirits

Speakers: Robert Christiansen, New Belgium Brewing Co.; Jason Perkins, Allagash Brewing Co.; Chad Yakobson, Crooked Stave

Sour beers, once a small niche within the brewing industry, have enjoyed an extraordinary growth in popularity, veneration, and creativity in recent years. However, there remains much mystery behind the science of sour beers. This workshop will help to demystify some long-standing questions surrounding the style. Attendees will engage in fascinating discussions and participate in interactive tastings led by some of the industry's leading sour beer producers. Some of the questions covered in the workshop will include: what are the effects of mixed versus pure “funky” fermentations? How do mixed cultures compare in primary versus secondary fermentation, both with and without secondary ingredients. What acids really have an impact on the sensory perception of sour beer? How do wood and stainless fermentation vessels affect sour beer?

M Workshop: Brewhouse Water Treatment: The Final Frontier to Exceptional Quality Beer

10:00 a.m. – 11:45 a.m. • Grande Ballroom BC

Moderator: Todd Webster, Envirogen Technologies

Speakers: Aaron Justus, Ballast Point Brewing Company; Eric O'Connor, Thorn Brewing Company; John Palmer, Palmer Brewing Solutions Inc.; Paul Sangster, Rip Current Brewing; John Wammes, Water Works Inc.

This workshop will explore the often overlooked concept of water pretreatment for brewery operations and the resulting effects on the beer quality/drinkability. Initially, the workshop will highlight the geographical differences of water quality and briefly detail why certain beers were historically created

in certain parts of the world. Then, the workshop will dive into treatment technology a bit, the burtonization of brewery water, and the effects on the end product. Those attendees who currently do nothing with their feed water will learn what they are missing or what they could gain. As many in the industry always attest, hops, yeast, and malt drive the brewing process, but the modification to the water quality can provide the last detail of refinement that makes a good beer great... the final frontier to exceptional quality beer.

M Workshop: OSHA Emphasis and Resources for Compliance

10:00 a.m. – 11:45 a.m. • Harbor Island 1 & 2

Moderator: Mark Jaeggi, Sabhailteacht Solutions, LLC

This workshop will consist of a panel of safety professionals presenting on the importance of safety in the brewing industry, the top 10 OSHA violations in 2017 and how they relate to the brewing industry, safety resources available to the craft brewer (including Master Brewers resources, apps, websites, etc.), and current OSHA trends and new OSHA regulations.

JS Joint Workshop: Shelf Stability and Instrumental Analysis

1:45 p.m. – 3:30 p.m. • Harbor Island 1 & 2

Moderator: Aaron Golston, Lagunitas Brewing Co.

Speakers: Aaron Golston, Lagunitas Brewing Co.; Elizabeth Humston-Fulmer, LECO Corporation; Thomas Kunz, Technische Universität Berlin

With rapid market growth over the last several years, beer is now commonly distributed beyond the local market of the brewery. Long supply chains increase the time to market making freshness more difficult to sustain. For this reason, the brewer must do everything possible to maintain shelf stability. Raw materials, brewing practices, and packaging process all

play a role in beer shelf life. This workshop will cover raw material and brewing process impacts on shelf stability as well as instrumental analysis of beer over the course of its shelf life.

M Brewing Fundamentals: Beer Clarity—Clarification and Cloudification in the Brewery I

3:45 p.m. – 5:30 p.m. • Grande Ballroom BC

Moderator: Travis Audet, AB Inbev

Speakers: Edward Bridge, General Filtration; Ron Johnson, Pall Corp.; Mustafa Rehmanji, Ashland (retired)

During the Master Brewers Conference, Brewing Fundamentals Sessions bring another type of offering to the already rich tradition that has existed for over a century. A topic is tackled in-depth each year, providing attendees a wide breadth of knowledge not available from just books or journals. The information provided will start with the basics and after a foundation is established then attendees will continue on with an in-depth exploration of the topic.

This year the focus will be on “Beer Clarity—Clarification and Cloudification in the Brewery!” Final beer appearance is a critical parameter for our customers. The classic approach is clarifying either through fining, centrifugation, or filtration of beer. The new challenge for many brewers is to produce beers at a stable turbidity also. These processes can often be taken for granted until there is a reduction in performance. To be able to maintain optimal results it is critical to truly understand the factors that are important to maintain beer clarity or cloudiness. At this year’s conference we will be assembling a veteran team of speakers to help explore this essential subject.

JS Joint Workshop: Demystifying Cannabis: Analysis, Compliance, and Approval as an Ingredient

3:45 p.m. – 5:30 p.m. • Harbor Island 1 & 2

Moderator: Rebecca Newman, Consultant; Lauren Zeidler, Ballast Point Brewing and Spirits

Speakers: David Grelotti, UC Center for Medicinal Cannabis Research, UC San Diego School of Medicine; Scott Hansen, Agricolor Labs; Mark Sorini, McDermott Will and Emery; Stuart Tomc, CV Sciences

Demystify cannabis to understand current culture: medicine, analysis, compliance, and use as an ingredient to consumer goods with national appeal. We have assembled an expert panel from multiple disciplines that will help understand cannabis as an ingredient, analysis, compliance, and opportunity in consumer goods.

Brewing Summit Happy Hour with Exhibits

5:30 p.m. – 6:30 p.m. • Pavilion

Head to the Pavilion, grab a cold beer, and meet with the exhibitors before the Brewing Summit Bayfront Party kicks off at Coasterra.

Brewing Summit Bayfront Party at Coasterra*

6:45 p.m. – 9:45 p.m. • Coasterra (offsite)

Within walking distance of the Sheraton, join your colleagues from ASBC and Master Brewers during Monday night’s joint party at Coasterra. Unwind with live entertainment, cool beer, and Mexican tapas from the tip of Harbor Island on North San Diego Bay. Enjoy dessert on the floating barge as the sun dips below the horizon, affording breathtaking views from this open-air venue.

Afterglow

9:45 p.m. – 11:30 p.m. • Harbor Island 3

After the Bayfront Party, join your colleagues for a nightcap with Irish coffee and networking. The Afterglow Party is a conference tradition sponsored by



** This is a ticketed event—you must present your ticket to gain access*

Schedule: Day-by-day

Tuesday, August 14

A ASBC Meeting **M** Master Brewers Conference **JS** Joint Session

7:00 – 8:00 a.m.	Master Brewers Speaker Breakfast	<i>Harbor Island 3</i>
8:00 – 9:15 a.m.	A Technical Session: Yeast, Fermentation, and Microbiology III <i>Moderator: Chris Powell</i> 8:00 A-041. Richard Preiss. Considerations for serial repitching of craft-beer-relevant ale production yeast strains 8:25 A-042. Tobias Fischborn. The impact of lactic and acetic acid on yeast during fermentation and bottle conditioning 8:50 A-043. Nichole Bryant. The effect of high-gravity and highly hopped fermentations on yeast viability	<i>Grande Ballroom A</i>
8:00 – 9:45 a.m.	M Workshop: Inside and Outside the Black Box: A Practical Approach to Achieving Quality in Draft Packaging	<i>Grande Ballroom BC</i>
8:00 – 9:45 a.m.	A Technical Session: Hops III <i>Moderator: Joseph Casey</i> 8:00 A-044. Maria Moutsoglou. Impact of dry hopping at different stages of fermentation on the physical and organoleptic quality of beer 8:25 A-045. Christina Schoenberger. What matters for flavor extraction during dry hopping? 8:50 A-046. Roland Novy. Impact of filtration and other processes on hop aroma and dry-hopping yields 9:15 A-047. Scott Lafontaine. Identifying aroma hop quality harvest factors that predict hop aroma quality/intensity in dry-hopped beers	<i>Harbor Island 1 & 2</i>
9:45 a.m. – 2:00 p.m.	Posters and Sponsored Stations Open	<i>Nautilus Level</i>
9:45 a.m. – 2:00 p.m.	Exhibits Open	<i>Pavilion</i>
10:00 – 11:15 a.m.	A Technical Session: Malt and Grain III <i>Moderator: Aaron MacLeod</i> 10:00 A-048. Martina Gastl. Process analysis of malt production—Influence on gelatinization temperatures of malt 10:25 A-049. Aiko Hiromasa. Improvement of mouthfeel by controlling low-molecular-weight astringent polypeptides of low-malt beer 10:50 A-051. Euan Thomson. Snowglobes and powdermouth: The dynamics of condensed tannin solubilization in barley maltinG	<i>Grande Ballroom A</i>
10:00 – 11:45 a.m.	M Workshop: A Conversation on Late Hopping: Flavors, Aromas, and Effects	<i>Grande Ballroom BC</i>
10:00 – 11:45 a.m.	JS Joint Workshop: Meditations on <i>Saccharomyces cerevisiae</i> var. <i>diastaticus</i>	<i>Harbor Island 1 & 2</i>
11:45 a.m. – 2:00 p.m.	Lunch with Exhibits	<i>Pavilion</i>
12:30–1:15 p.m.	JS Joint Book Signing Event	<i>Nautilus Level</i>
2:00 – 2:30 p.m.	Poster Take-Down	<i>Nautilus Level</i>
2:00 – 3:15 p.m.	M Technical Session: Malt and Grains <i>Moderator: Susan Welch</i> 2:00 M-004. Aaron Hyde. What's 20 SRM taste like? Diversity of specialty malt at a single color, and the different malting processes that create them 2:25 M-005. Johannes Preiss. Farmer => maltster => brewer? What will happen to the U.S. malt supply chain in the upcoming years? 2:50 M-006. Crispin Howitt. Kebari gluten-free barley: Lab to supermarket	<i>Grande Ballroom BC</i>
2:00 – 3:45 p.m.	M Workshop: Brewhouse Engineering	<i>Harbor Island 1 & 2</i>

2:00 – 3:45 p.m.	A Technical Session: Novel Methods <i>Moderator: Christine White</i> 2:00 A-052. Michael Billon. Hacking PCR: A guide to making PCR affordable for the craft beer industry 2:25 A-053. Benjamin Schottle. Cavitation sensation: Ultrasonic and hydrodynamic cavitation in the brewery and distillery 2:50 A-054. Azusa Asai. Development of a novel technique for evaluating beer foam color 3:15 A-055. Takako Inui. Development of supercritical CO ₂ extracts for flavored beer	<i>Grande Ballroom A</i>
2:00 – 6:00 p.m.	Exhibitor Move-Out	<i>Pavilion</i>
2:00 – 6:00 p.m.	Sponsored Station Move-Out	<i>Nautilus Level</i>
4:00 – 5:15 p.m.	M Technical Session: Packaging <i>Moderator: Chris Williams</i> 4:00 M-007. J. David Duff. Brewery packaging can line rinsing 4:25 M-008. Ellen Lehman. Too much of a good thing: The organoleptic impact of highly dosed peracetic acid rinse on bottled beer 4:50 M-009. Travis Audet. Flash pasteurization—Everything you forgot to ask!	<i>Grande Ballroom BC</i>
4:00 – 5:15 p.m.	A Technical Session: Yeast, Fermentation, and Microbiology IV <i>Moderator: Dawn Maskell</i> 4:00 A-056. Shigekuni Noba. Elucidation of the formation mechanism of 2-mercapto-3-methyl-1-butanol (2M3MB) in beer 4:25 A-057. Boris Stambuk. New insights into maltotriose utilization by <i>Saccharomyces cerevisiae</i> 4:50 A-058. Martin Zarnkow. Mixed fermentations with <i>Saccharomyces pastorianus</i> strains as a tool to improve beer quality	<i>Grande Ballroom A</i>
4:00 – 5:45 p.m.	JS Joint Workshop: A Plant, a Process, Safe Access, and Flavor	<i>Harbor Island 1 & 2</i>
5:45 – 7:00 p.m.	Master Brewers Happy Hour*	<i>Bayview Lawn</i>
5:45 – 11:00 p.m.	Hospitality Open	<i>Harbor's Edge</i>

* *This is a ticketed event—you must present your ticket to gain access*

M Workshop: Inside and Outside the Black Box: A Practical Approach to Achieving Quality in Draft Packaging

8:00 a.m. – 9:45 a.m. • Grande Ballroom BC

Moderator: Pulkit Agrawal, The 5th Ingredient

Speakers: Steven Bradt, Micro Matic Packaging; Chris Nimptsch, Profamo Inc.

Moderator Pulkit Agrawal will guide this workshop, which will include presentations from Chris Nimptsch from Profamo and Steve Bradt from Micro Matic's Packaging Division. These industry veterans' presentations will focus on the Critical Control Points (CCP) in draft beer packaging. Chris will open up the black box with a presentation of the data collected from high-tech monitoring kegs that can tell brewers information they may never have known existed and help them interpret the results to fine-tune their process. Steve will offer a practical view of common failure points in the hardware that can lead to safety, process, and quality challenges as well as some best practices for safe service and disassembly of your kegs so you can see inside the "black box."

M Workshop: A Conversation on Late Hopping: Flavors, Aromas, and Effects

10:00 a.m. – 11:45 a.m. • Grande Ballroom BC

Moderator: Molly Browning, Lallemand Brewing

Speakers: Joe Mashburn, Night Shift Brewing Company; Daniel Sharp, Ninkasi Brewing Co.; Thomas Shellhammer, Oregon State University

Late hopping, or the addition of hops at the end of the boil, or whirlpool, has become an increasingly popular technique with the rise of session IPAs and their hazy cousins. The theme and goal of this workshop is to explore and have a conversation on late hopping and dive into the mechanics of why this is such a popular practice. Our presenters, with a range of academic and practical experience, will each give a short presentation followed by a more intensive question and answer session.

JS Joint Workshop: Meditations on *Saccharomyces cerevisiae* var. *diastaticus*

10:00 a.m. – 11:45 a.m. • Harbor Island 1 & 2

Moderator: Lauren Torres, Bell's Brewery, Inc.

Speakers: Matthew Farber, University of the Sciences; Tobias Fischborn, Lallemand Inc.; Owen Lingley, Craft Canning LLC; Matt Linske, Brewing and Distilling Analytical Services; Kara Taylor, White Labs Inc.; Lauren Torres, Bell's Brewery, Inc.; Gudrun Vogeser, PIKA Weihenstephan GmbH

Saccharomyces cerevisiae var. *diastaticus* has been a hot topic in the beer industry. Much of the hype centers on this yeast's ability to produce the glucoamylase enzymes that can break down dextrin into fermentable sugars. This yeast can be difficult to detect. This workshop will cover general information about this yeast strain, various detection methods (including PCR), validating CIP post a contamination, and will culminate in a panel of industry experts!

JS Joint Book Signing Event

12:30 – 1:15 p.m. • Nautilus Level

Join your colleagues in the Nautilus Foyer for a joint book signing event. Meet Dr. Charles W. Bamforth and get your copy of his new book, *Color and Clarity*, signed in ASBC Booth 901. Also, visit Master Brewers Booth 903 and join Thomas Kraus-Weyermann and Horst Dornbusch to get your signed copy of their new book, *Dark Lagers: History, Mystery, Brewing Techniques, Recipes*.

M Workshop: Brewhouse Engineering

2:00 p.m. – 3:45 p.m. • Harbor Island 1 & 2

Moderator: Fred Scheer, Paul Mueller Company

Speakers: Jaime Jurado, Independent; Fred Scheer, Paul Mueller Company; Konstantin Ziller, Ziemann Holvrieka GmbH

This workshop will give basic insight into brewhouse vessels and maintenance. First, Konstantin Ziller will discuss the layouts of newly develop lauter tuns and the importance of lautering (i.e., speed of lautering, quality parameters, etc.). Then, Jaime Jurado will talk about right-sizing the brewhouse and utilities for your brewery. Finally, Fred Scheer will discuss mash vessels, agitators, and the importance of choosing the right materials.

JS Joint Workshop: A Plant, a Process, Safe Access, and Flavor

4:00 p.m. – 5:45 p.m. • Harbor Island 1 & 2

Moderators: Alex Byelashov, John I. Haas, Inc.; Rebecca Newman, Independent

Speakers: Jahan Marcu, Safe Access Now; Jeremy Marshall, Lagunitas Brewing Co.; Paul Matthews, Hopsteiner; John McKay, New West Genetics

Cannabis and beer are beginning to share space on the shelf and in the consumers' sight lines. Understanding the use of cannabis, how it is bred for brewing processes and used at a brewery, and how it can be safely accessed are among this workshop's highlights. Assembled are the folks "doing the work." Gain perspective for how this plant may be the next "hop" addition, not only for flavor but also for other active ingredients of value to the brewer.

Master Brewers Happy Hour*

5:45 p.m. – 7:00 p.m. • Bayview Lawn

After being inside all day, soak up the breeze in view of San Diego's vibrant palm trees during the Master Brewers Happy Hour on Tuesday. Kick off the evening with beer and snacks among friends and colleagues before heading off to dinner.

* *This is a ticketed event—you must present your ticket to gain access*

Schedule: Day-by-day

Wednesday, August 15

A ASBC Meeting **M** Master Brewers Conference **JS** Joint Session

7:15 – 8:00 a.m.	Master Brewers Speaker Breakfast	<i>Spinnaker</i>
8:00 – 9:15 a.m.	M Technical Session: Sustainability <i>Moderator: Tom Eplett</i> 8:00 M-010. Jaime Jurado. Understanding the environmental footprint of the beer can vs. the beer bottle from first principles 8:25 M-011. Walker Modic. Surfactant and quaternary ammonia toxicity in anaerobic fluidized bed reactors, a novel mechanism of inhibition and strategies for recovery 8:50 M-012. Leon Fyfe. A novel vacuum pump design for reducing water usage during bottling	<i>Grande Ballroom BC</i>
8:00 – 9:15 a.m.	M Technical Session: Yeast, Fermentation, and Microbiology II <i>Moderator: Benjamin Smith</i> 8:00 M-013. Matt Linske. Case study using microbiology techniques to assess fermenter CIP efficacy 8:25 M-014. Taku Irie. Control of flavor quality with multi-filling fermentation procedures in large-scale brewing 8:50 M-015. Christoph Neugrodda. Application of yeast extracts in the brewery	<i>Grande Ballroom A</i>
8:00 – 9:45 a.m.	M Workshop: Packaging: Common Errors in Filler Air Pickup	<i>Harbor Island 3</i>
10:00 – 11:45 a.m.	M Workshop: Ask the Brewmasters: Cold Side Operations	<i>Grande Ballroom A</i>
10:00 – 11:45 a.m.	M Brewing Fundamentals: Beer Clarity—Clarification and Cloudification in the Brewery II	<i>Harbor Island 3</i>
10:00 – 11:45 a.m.	M Technical Session: Hops <i>Moderator: Doug Wilson</i> 10:00 M-016. Aaron Justus. Tracking IBU through the brewing process: The quest for consistency 10:25 M-017. Martin Steinhaus. Odor-active compounds in the German special flavor hop variety Huell Melon and their impact on beer aroma 10:50 M-018. John Maye. Hidden secrets of the New England IPA 11:15 M-019. Matheus Aredes. Developing a new bittering model: Considering new variables that influence isomerization to better calculate the IBU	<i>Grande Ballroom BC</i>
11:45 a.m. – 1:00 p.m.	Volunteer Opportunity Fair	<i>Spinnaker</i>
1:00 – 2:45 p.m.	M Workshop: Brewer and Supplier Partnerships for a Safe, Quality Brew	<i>Harbor Island 3</i>
1:00 – 2:45 p.m.	M Workshop: Brewery Automation and Inline Instrumentation Considerations	<i>Grande Ballroom A</i>
1:00 – 2:45 p.m.	M Technical Session: Brewery Operations <i>Moderator: Larry Horwitz</i> 1:00 M-020. Gary Nicholas. Integrating safety programs and expectations into orientation, training, and process change systems 1:25 M-021. Konstantin Ziller. New wort, new beers?—A novel brewhouse design sheds a new light on beer quality 1:50 M-022. Joseph Trombley. Brewery master planning: The importance of strategizing growth 2:15 M-023. Michael Koppelman. Fermentation analytics and automation using cloud-based, continuous, high-resolution, multi-variable real-time data of beer production acquired with low-cost sensors and Arduino-class microcomputers	<i>Grande Ballroom BC</i>
3:00 – 4:15 p.m.	M Master Brewers Closing Session: The State of a Changing Craft Brewing Industry	<i>Grande Ballroom BC</i>

M Workshop: Packaging: Common Errors in Filler Air Pickup

8:00 – 9:45 • Harbor Island 3

Moderator: Brian Hollinger, Dogfish Head Craft Brewery

Speakers: J. David Duff, BW Integrated Systems; Joseph Trombley, Design Group Facility Solutions; Andy Tveekrem, Market Garden Brewery

This workshop will be divided into two parts. Part one will cover dissolved oxygen in bottling and canning, strategies to identify points of ingress, and ways to reduce overall package oxygen content. Part two will focus on packaging line planning, layout, and execution. Packaging is the most mechanically complex and labor-intensive part of most brewing operations, so planning a new line or modifying an existing line deserves due diligence.

M Workshop: Ask the Brewmasters: Cold Side Operations

10:00 a.m. – 11:45 a.m. • Grande Ballroom A

Moderator: Andy Tveekrem, Market Garden Brewery

Panelists: Molly Browning, Lallemand Brewing; Ashton Lewis, BSG CraftBrewing; James Ottolini, Brew Hub; Mitch Steele, New Realm Brewing Co.

A moderated panel discussion with four brewing experts will offer observations and answer questions on the subject area of cold side operations. All questions ranging from wort cooling through to the bright beer tank will be considered. This expert team has over 100 years of combined brewing experience in operations ranging from small brewpubs to large multinationals and just about everything in between.

M Brewing Fundamentals: Beer Clarity—Clarification and Cloudification in the Brewery II

10:00 a.m. – 11:45 a.m. • Harbor Island 3

Moderator: Travis Audet, AB Inbev

Speakers: Ueli Ernst Schrader, LSI Logical Systems, LLC; Al Worley, optek-Danulat, Inc.

During the Master Brewers Conference, Brewing Fundamentals Sessions bring another type of offering to the already rich tradition that has existed for over a century. A topic is tackled in-depth each year, providing attendees a wide breadth of knowledge not available from just books or journals. The information provided will start with the basics and after a foundation is established then attendees will continue on with an in-depth exploration of the topic. This year the focus will be on “Beer Clarity—Clarification and Cloudification in the Brewery!” Final beer appearance is a critical parameter for our customers. The classic approach is clarifying either through fining, centrifugation, or filtration of beer. The new challenge for many brewers is to produce

beers at a stable turbidity also. These processes can often be taken for granted until there is a reduction in performance. To be able to maintain optimal results it is critical to truly understand the factors that are important to maintain beer clarity or cloudiness. At this year’s conference we will be assembling a veteran team of speakers to help explore this essential subject.

M Volunteer Opportunity Fair

11:45 a.m. – 1:00 p.m. • Spinnaker

Join us at this exciting event! Learn about all the different committees and other volunteer opportunities within Master Brewers, chat with committee chairs, and find out how you can get involved in committees and other opportunities. Beer and light snacks provided.

M Workshop: Brewer and Supplier Partnerships for a Safe, Quality Brew

1:00 p.m. – 2:45 p.m. • Harbor Island 3

Moderator: Tatiana Lorca, Ecolab, Inc.

Speakers: Dustin Hesel, Founders Brewing Co.; Alberto Jimenez, MaltEurop; Andy Roy, Roy Farms, Inc.; Daniel Voce, Matt Brewing Co.

Brewers have been implementing food safety and quality controls in response to customer requirements and the changing regulatory landscape. But restricting control measures to the interior of the brewery leaves an operation vulnerable to food safety and quality issues that may be introduced through its supply chain. Supplier partnerships are essential to providing materials and services to enable the production of a safe, quality beer. But where do you start? What should you be asking your suppliers to do? Will you “trust but verify?” Join our panel of brewers and suppliers as we discuss common-sense approaches to supplier management in the brewing industry.

M Workshop: Brewery Automation and Inline Instrumentation Considerations

1:00 p.m. – 2:45 p.m. • Grande Ballroom A

Moderator: Darren Goodlin, Goodlin Process Solutions LLC

Speakers: Joel Boisselle, Rockwell Automation; Darren Goodlin, Goodlin Process Solutions LLC; Ken Robbins, McRae Integration Ltd.

This workshop will provide a general overview and understanding of the traditional locations of automation points and inline instrumentation and analyzers in brewery processes and the challenges each present. When considering inline instrumentation selection and location, each location has its own challenges: from environmental to process influences and hydraulic conditions, to the need for sanitation, the need to periodically validate the inline measurement, and of course to measurement accuracy. Other



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factors include being prepared for the reoccurring cost and skill set to maintain, the needed standard reference device, and the consideration of the total cost of ownership (TCO). Various means of record-keeping and log books as a way to monitor instrument measurement performance along with indications of a sensor nearing end of life will also be discussed. There are trade-offs to having process automation and inline measurements versus using a portable meter or grab sample, so being aware and knowing these exist, and total ownership, must be considered when selecting and implementing.

M Master Brewers Closing Session: The State of a Changing Craft Brewing Industry

3:00 p.m. – 4:15 p.m. • Grande Ballroom BC

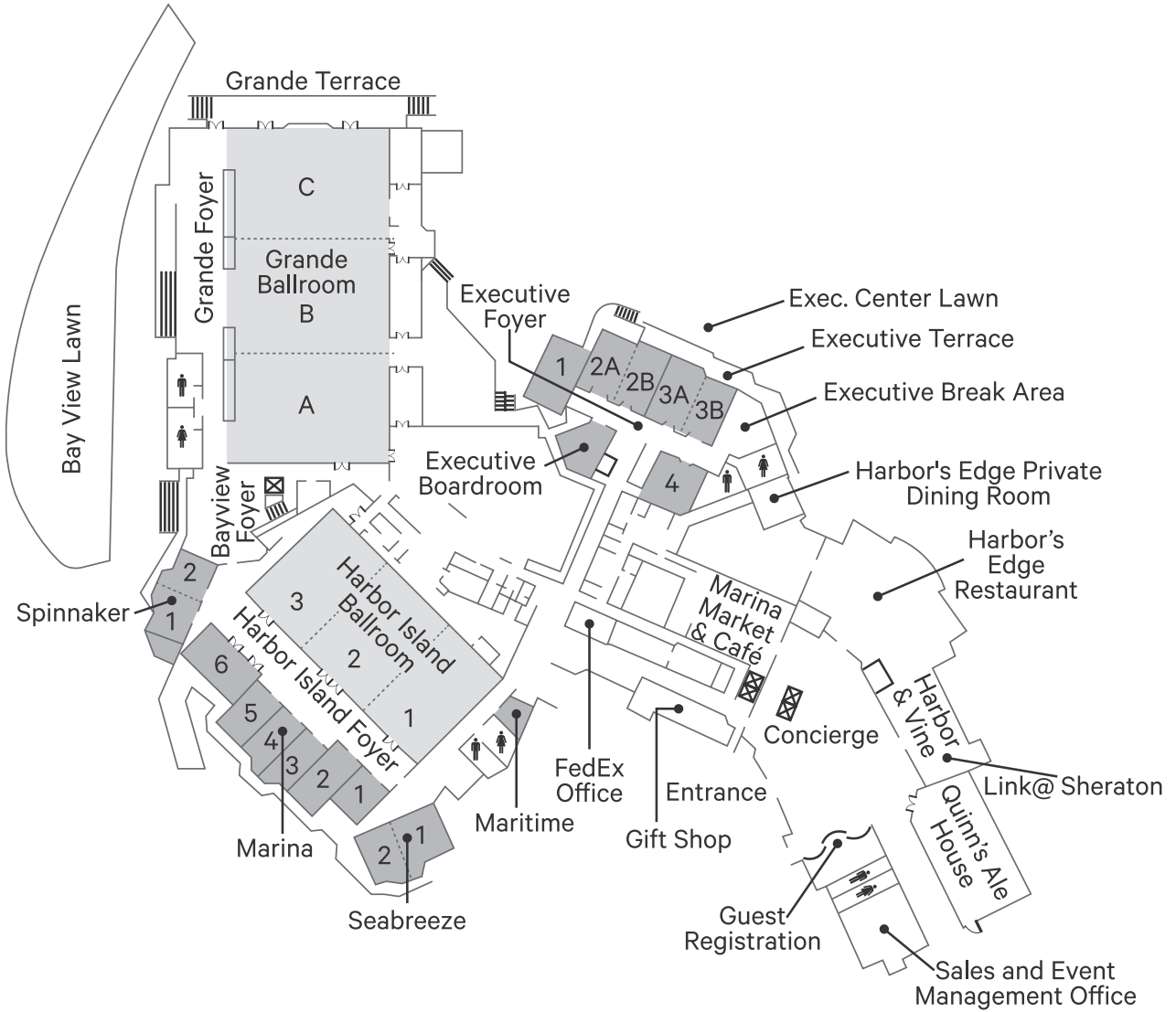
Speaker: Bart Watson, Brewers Association

This presentation will run through recent shifts in the business of craft brewing, looking at large structural changes in the beer industry, changing brewery numbers and production, demographics within beverage alcohol, and the evolution of craft growth by size and channel.



Bart Watson is chief economist at the Brewers Association. Prior to his position with the BA, he was a lecturer at the University of California, Berkeley, and a visiting assistant professor at the University of Iowa. His academic research focused primarily on the political and economic effects of increasing market consolidation in distribution channels. He holds a B.A. degree from Stanford University and a Ph.D. degree from the University of California, Berkeley, and is a Certified Cicerone.

Sheraton Floor Plans



Marina Tower Lobby Level

Sheraton Floor Plans

Sponsored Station & Other Hours:

Sunday, August 12

2:00 – 8:00 p.m.

Sponsored Station Set-Up

Monday, August 13

7:45 – 11:30 a.m.

Sponsored Station Set-Up

11:45 a.m. – 6:30 p.m.

Sponsored Stations Open

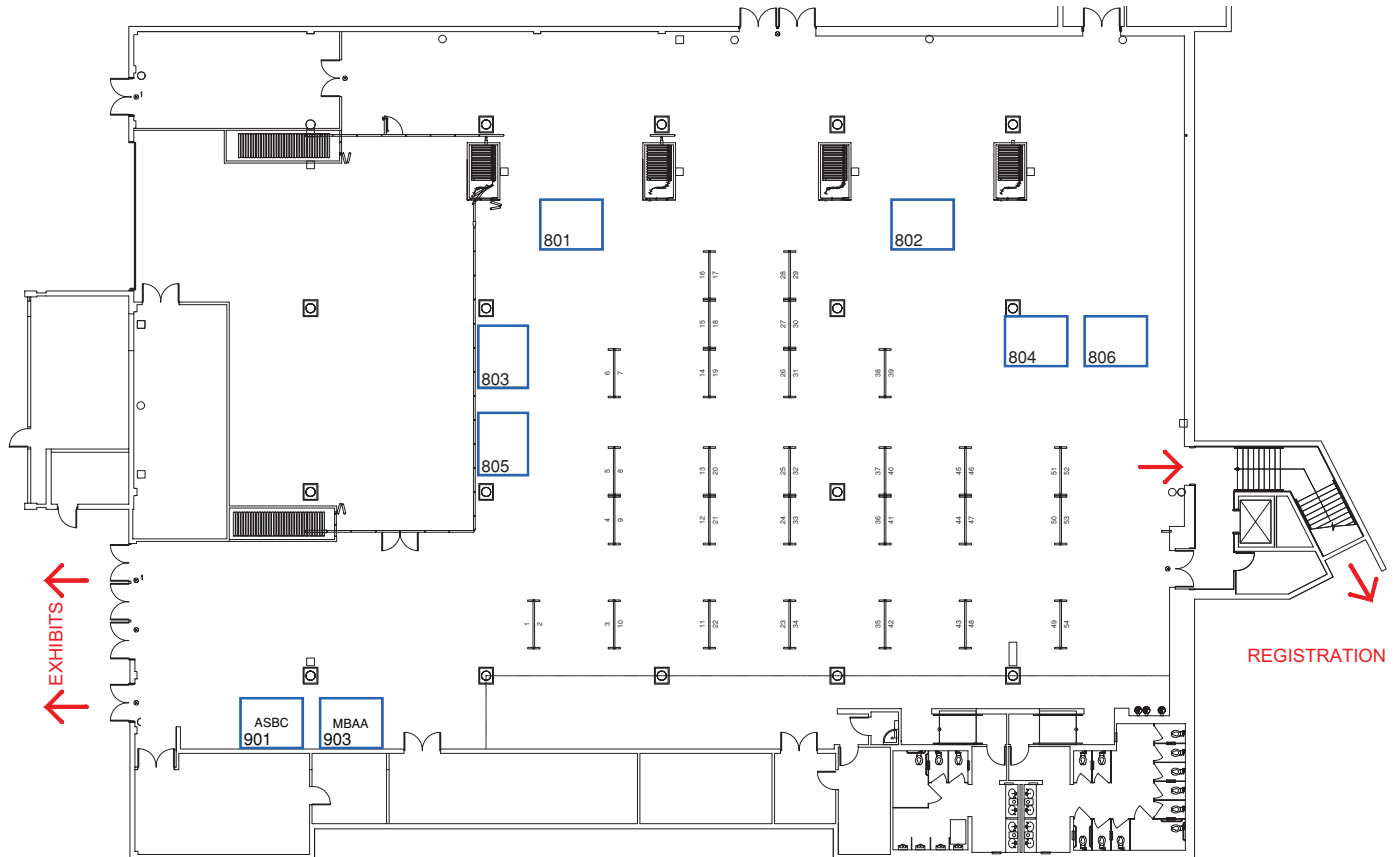
Tuesday, August 14

9:45 a.m. – 2:00 p.m.

Sponsored Stations Open

2:00 – 6:00 p.m.

Sponsored Station Move-Out



Nautilus Level

Sponsored Station & Other Listings

901	ASBC	asbcnet.org
802	AFCO/Zep	afcocare.com
805	Ballast Point Brewing Company	ballastpoint.com
806	Baswood Corporation	baswood.com
803	EnviroLogix Inc.	envirolgix.com
804	LGC Standards / API Group	lgcstandards.com
903	Master Brewers	mbaa.com
801	Taylor & Francis Group	taylorandfrancis.com

Sheraton Floor Plans

The Exhibit Hall is located in the Pavilion room and will be open at the following times:

Exhibit Hall Hours

Sunday, August 12

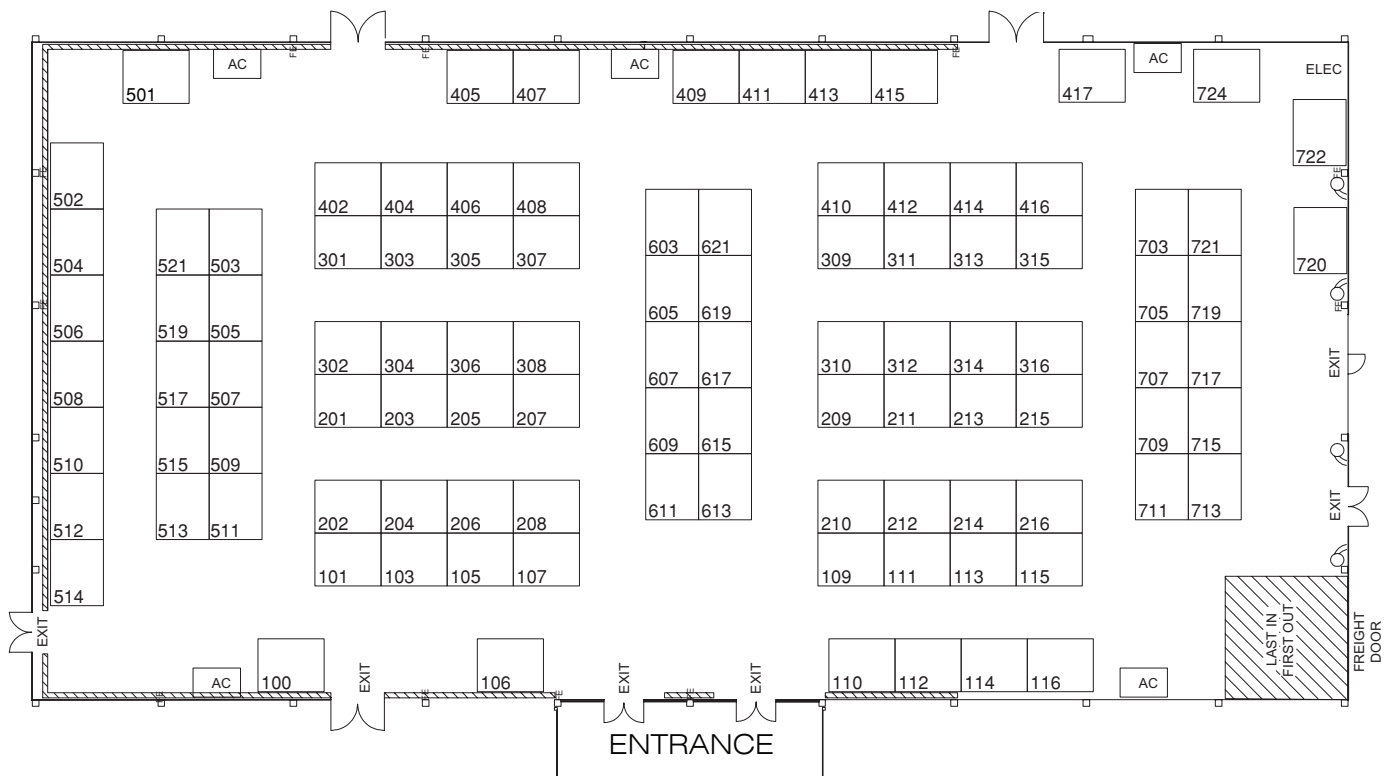
2:00 – 8:00 p.m.
Exhibitor Set-Up

Monday, August 13

8:00 – 11:00 a.m.
Exhibitor Set-Up
11:45 a.m. – 6:30 p.m.
Exhibits Open

Tuesday, August 14

9:45 a.m. – 2:00 p.m.
Exhibits Open
2:00 – 6:00 p.m.
Exhibitor Move-Out



Pavilion

Exhibitor Listings

115	3M Separation and Purification Sciences Division	3mpurification.com
506	ABS Commercial	abs-commercial.com
303	Albert Handtmann ArmaturenFabrik GmbH & Co. KG	handtmann.de
607	Alfa Laval Inc.	alfalaval.us/brewery
212	Amoretti	amoretti.com
703	ANDRITZ Separation Inc.	andritz.com
410	Anton Paar	anton-paar.com
519	Astoria-Pacific	astoria-pacific.com
109/111	ATPGROUP	atpgroup.com
508	Barnum Mechanical Inc.	barnummech.com
306	BayWa Hops	baywa.eu/en

507	BioGill North America	biogill.com
304	BIOTECON Diagnostics	bc-diagnostics.com
504	Birko Corporation	birkocorp.com
216	BMT USA, LLC	bmtusa.com
402	Bratney Companies	bratney.com
107	BSG	bsgcraftbrewing.com
211	Briggs of Burton, Inc.	briggspc.com
202/204	Bühler Inc	buhlergroup.com
110	Cargill Craft Malt	cargill.com
407	Cellix Limited	wearecellix.com
722	Centec LLC	centec-usa.com
713	Chai Bio	
415	Charm Sciences, Inc.	charm.com
513	ChemTreat	chemtreat.com
314	Cloud-Sellers	cloudinc.com
106	Coldbreak Brewing Equipment	coldbreakbrewing.com
210	Commodity Specialists Company	csc-world.com
502	D.I. Engineering Corporation	diec-america.com
720	Diversey	diversey.com
619	DSM Food Specialties USA, Inc.	dsm.com/food
605	Ecolab, Inc.	ecolab.com
503	EMG International	emgint.com
617	Esau & Hueber GmbH	esau-hueber.de
206	Fermentis - BU of LYC	fermentis.com
512	FILTEC, Ltd.	filtec.com
404	Five Star Chemicals & Supply, Inc.	fivestarchemicals.com
412	FlavorActiV (Bruker)	flavoractiv.com
101	Flottweg Separation Technology, Inc.	flottweg.com
312	Fulton Steam Solutions	fulton.com
205/207	GEA North America	gea.com
711	GKD-USA	gkdusa.com
417	GlycoSpot	glycospot.dk
615	Gusmer Enterprises	gusmerbeer.com
511	Hach	hach.com
214	Hamilton Company	hamiltoncompany.com/beverly
113	HEUFT USA, Inc.	heuft.com
409/411	Hopsteiner	hopsteiner.com
203	Hygiena	hygiena.com
313	InnovaPrep	innovaprep.com
209	Invisible Sentinel, Inc.	invisiblesentinel.com
517	J. Tech Sales, a Maroon Group LLC Company	jtechsales.com
510	John I Haas, Inc.	johnihaas.com
310	Kagetec Industrial Flooring	kagetecusa.com
405	Kusters Water	kusterswater.com
609	Lallemand Brewing	lallemandbrewing.com
308	Malteurop North America	malteurop.com
416	McRae American Corp.	mcraeamerican.com/
406	Metrohm USA	metrohm.com
705	Micro Matic	micromatic.com
311	MIDI Labs, Inc.	midilabs.com
717	Munzing	magrabar.com
414	National Honey Board	honey.com
302	Nexcelom Bioscience	nexcelom.com
603	optek-Danulat Inc.	optek.com
515	Pall Corporation	pall.com/foodandbev
501	Palmer Canning Systems	palmercanning.com
307	Pentair	foodandbeverage.pentair.com
709	PerkinElmer	perkinelmer.com
301	Polytech Industrial Inc.	polytechfloors.com
613	Ponndorf Anlagenbau GmbH	ponndorf-gmbh.com

521	PQ Corporation	pqcorp.com
719	Precision Fermentation	precisionfermentation.com
100	Profamo Inc.	profamo.com
309	ProLeiT	proleit.com
116	Prominent Fluid Controls, Inc.	prominent.us
413	Proximity Malt	
715	QuickLabel	quicklabel.com
114	r-biopharm Inc.	r-biopharm.com
105	Rahr Malting Co.	rahr.com
315	Rheonix, Inc.	rheonix.com
514	Rockwell Automation	rockwellautomation.com
213	Schaefer Container Systems	schaefercontainers.com
721	Separator Technology Solutions	sts200.com
611	Siebel Institute of Technology	siebelinstitute.com
208	Simpsons Malt	
621	Skalar Inc.	skalar.com
305	Symbiont Science, Engineering, and Construction, Inc.	symbiontonline.com
316	Thermo Fisher Scientific	thermofisher.com/discreteanalysis
707	Unison Energy	unisonenergy.com
724	University of Nottingham	nottingham.ac.uk/brewingscience/index.aspx
505	WarrierTech	warriertech.com
408	Weber Scientific	weberscientific.com
103	Weyermann Specialty Malts	weyermannmalt.com
112	White Labs	whitelabs.com
509	Xavo Software AG	xavo.com
215	Zee Company, Member of Vincit Group	vincitgroup.com
201	ZIEMANN HOLVRIEKA	ziemmann-holvrieka.com

Exhibitors listed as of July 24, 2018.

Posters

ASBC Posters Presentations

- A-060. Dagan, L., Identification of new odorless thiol precursors in hops and malts
- A-063. Hernandez Espinosa, M., Acetaldehyde analysis: Enzymatic method improvement
- A-064. Hornback, M., A rapid and efficient sample preparation method for spoilage organism detection in American lager beer
- A-065. Hoxmeier, C., Comparison among the recommended analytical methods for testing acidity and sensory perception of sour beer
- A-066. Humston-Fulmer, E., Analytical characterization of hot steeped malt flavor and fragrance volatiles by GC-MS
- A-067. Kunz, T., Evaluation of metal chelators in wort- and beer-simulating buffer solutions
- A-068. Kunz, T., Application and evaluation of a new color-independent enzymatical method for α - and β -glucan determination in colored wort and beer
- A-069. Kunz, T., Optimization, standardization, and evaluation of the tristimulus $L^*a^*b^*$ system for color determination in beer and wort samples
- A-070. Kunz, T., Detection of mold fungi on barley grain based on headspace investigations of VOC with GC-soft X-ray-APCI-MS
- A-071. Kurniawan, Y., Evaluation of a microbiological reference standard for proficiency testing scheme as a quality control method in the breweries
- A-072. Muro, M., Alcohol concentration analysis in yeast slurries and samples during fermentation by Anton Paar Alcolyzer—BCOJ collaborative work
- A-073. Noba, S., Improvement of (E)-2-nonenal analysis method and discovery of (Z)-2-nonenal in beer
- A-074. Paluszynski, J., Leveraging Gene Disc real-time PCR technology for the identification and quantification of microorganisms for the advanced production of unique barrel-aged beer
- A-075. Rettberg, N., Profiling brewing samples by UPLC-ESI-Q-ToF-MS
- A-076. Russell, S., Iso-alpha-acid and humulinone profiling, at all hop additions, for two IPAs via reversed-phase HPLC with correlations to IBU values
- A-077. Williams, S., Development of a gas chromatography mass spectrometry (GC-MS) analytical method used to measure different aroma components in beer in a quality control environment
- A-078. MacLeod, A., Accurate measurement of beer and wort color in the presence of haze using integrating cavity spectroscopy
- A-079. MacLeod, A., Levels of glycosidic nitrile in North American malting barley cultivars
- A-080. Bettenhausen, H., Omics analysis of malt from heirloom barley: The potential for new traits and new flavors from an old world
- A-081. Kihara, M., Malting and brewing characteristics of β -amylase-deficient barley
- A-082. Li, Y., Malting in 2038
- A-083. McMillan, T., Effect of plant growth regulator application on the quality of barley and malt
- A-084. Tynan, S., Malt varietal free amino nitrogen profiling in relation to beer flavor and flavor stability
- A-085. Huerta Zurita, R., Simplifying the spectrophotometric soluble protein analysis in unhopped wort through the use of BSA
- A-086. Guadalupe Daqui, M., The effect of vacuum pressure on a pilot-scale lager fermentation
- A-087. Minami, H., Brewing non-malt beer with excellent flavor utilizing the Maillard reaction: Optimization of sugar composition and characteristics of Maillard reaction products
- A-088. Kanauchi, M., The effects of foaming hydrophobin by proteolysis
- A-090. Barnette, B., Evaluating the impact of dissolved oxygen on dry-hopped beer flavor and aroma
- A-091. Oehlschlaeger, M., Influencing factors on hop isomerization beyond the conventional range
- A-092. Chou, P., In search of the next big thing in beer flavor: A primer on the development of experimental hop varieties HBC 438 and HBC 682
- A-093. Jensen, P., Measuring the hop components of Cryo Hops and American noble hops and the beers dry hopped with them
- A-094. Gomez-Lopez, J., Development of a statistical model to predict hop blending sensory profiles in dry-hopped beers
- A-095. Gomez-Lopez, J., Exploring fast descriptive sensory methods for assessing beers and ciders

- A-096. Algazzali, V., Hop Lexicon—An industry-sourced sensory language to describe hop flavor
- A-097. Algazzali, V., Development and implementation of hop flavor reference standards in hop sensory training
- A-098. Bissmeyer, D., Validating the sensitivity of the tetrad test versus the triangle test
- A-099. Ford, R., The impact of ethanol on sensory perception of beer during consumption
- A-100. Seewald, T., Hop aroma profiling in beers produced with the new German flavor hop varieties using Napping with ultra-flash profiling
- A-101. Jordan, B., Development of a novel beer clarification product suitable for vegan diets
- A-102. Hu, S., The impact of beer drinking on the degree of stomach fullness and the curve of urine excretion
- A-103. Johnson, R., Beer sterile filtration—An alternative to pasteurization
- A-104. Daigaku, Y., Development of six-can beverage packs while considering the environment and usability
- A-105. Wu, D., Chitosan coatings on lecithin-stabilized emulsions to inhibit mycotoxin production by *Fusarium graminearum*
- A-106. Kunz, T., Water purification using freeze crystallization as a promising next-generation technology
- A-107. Schüchel, J., Novel analytical tools for testing endogenous enzyme activity in raw materials
- A-108. Baer, R., State-related hybrid modeling and simulation of energy and media demand in the brewery
- A-109. Gluck, S., Biochemical oxygen demand (BOD) removal from wastewater for small craft breweries
- A-110. Addeo, F., Comparison of the biodiversity of yeast from three different habitats
- A-111. Aldrich, B., Sour about bacteria: Using koji as an alternative in sour beer production
- A-112. Cummings, B., Isolation and characterization of yeast isolates from a wild-harvested house yeast
- A-113. Dawson, D., Developing a practical method for determining dissolved oxygen levels in knockout wort and its effects on the health of *Saccharomyces* strains in the brewery
- A-114. DeMichele, G., GY7B is a novel yeast capable of rapidly producing sour beer
- A-115. Drosou, F., Brewing with different non-*Saccharomyces* yeast strains
- A-116. Fischborn, T., Detection of low concentrations of *Saccharomyces cerevisiae* var. *diastaticus* in a high population of *S. cerevisiae*
- A-117. Harrison, K., Kombucha genetics: Unraveling the mysteries of the SCOBY microbiome
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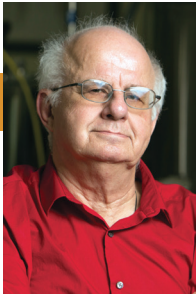
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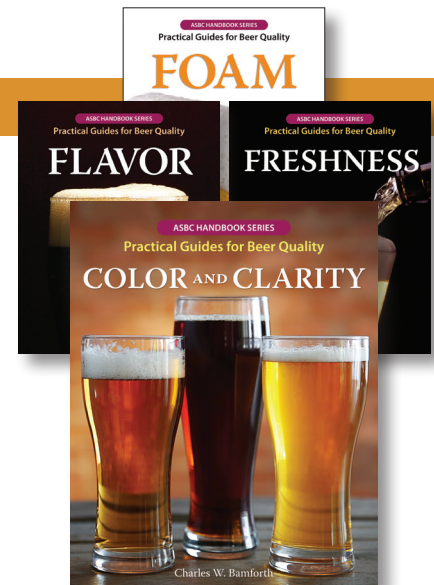


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