# 36th Congress of the European Brewery Convention (EBC 2017)

Ljubljana, Slovenia 14 - 18 May 2017

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## — SCIENTIFIC PROGRAMME

Monday, 15 May 2017				
	Opening Session – Tiago Brandão, HR Director, Unicer Bebidas, S.A., Porto, PT, and EBC President			
08:30 - 09:00	Opening: Opening address by ZPPP chairman Matej Oset, President of the Association of Slovene Brewers 1			
09:00 - 09:30	L1: Key-note 1: Paul Bruijn (Heineken, Zoeterwoude, The Netherlands): 7 The PEF project at The Brewers of Europe. An Update			
09:30 - 10:00	L2: Key-note 2: Larry Nelson (Brewers' Guardian, Reigate, UK): The continued craft brewing phenomena: Industry competitive responses			
10:00 - 10:30	Refreshment Break			
	Plenary Session – Tiago Brandão, HR Director, Unicer Bebidas, S.A., Porto, PT, and EBC President			
10:30 - 11:00	L3: Key note 4: <b>Henrike Vorwerk</b> (VLB, Berlin, Germany): N/A  Joint Euromalt/Gushing Project: Conclusions			
11:00 - 11:30	L4: Julien Billard, et al. (IFBM-Qualtech, Nancy, France): Identification of factors at the origin of the phenomenon of beer gushing and development of a premature detection technique of the gushing risk			
11:30 - 12:00	L5: Takahiro Yamazaki (Kirin, Yokohama, Japan): Development of novel hop-derived bitter acid oxides with body fat-reducing effect  4 2			
12:00 - 12:30	L6: Key note 3: Peter Kraemer (AB-Inbev, US): 56 A better future to beer market			
12:30 - 14:00	Lunch			
	Myriam Shingleton, VP Group Development, Carlsberg Breweries A/S, Obernai, FR Yeast & Fermentation   (Parallel   I)  Paul Bruijn, Senior Global Lead Safety & Environment, Heineken Supply Chain, Zoeterwoude, NL Environmental (Parallel   II)			
14:00 – 14:30	L7: Krogerus, et al. (VTT, Espoo, Finland): Construction of novel lager yeast strains through a fertile allotetraploid intermediate. 72  L8: Blomenhofer, et al. (Ziemann-Holvrieka, Ludwigsburg, Germany): An energy self-sufficient brewery – the flagship project becomes a reality. 86			
14:30 –15:00	L9: Aritomo, et al. (Sapporo, Yaizu, Japan): 99 High-throughput mechanical measurement of brewing yeast cells by atomic force microscopy  L10: Ritala, et al. (VTT, Espoo, Finland): Reuse of second steeping water improves eco-efficiency of malting. 115			
15:00 – 15:30	L11: Gosselin, (Université Libre de Bruxelles (ULB), Brussels, Belgium): Shelf-life and consistency of active dry yeast for breweries.  L12: Offenbacher, (BDI BioEnergy, Grambach, Austria): Spent grain to energy - biogas plant Göss.			
15:30 – 16:00	L13: Noba, et al. (Asahi, Moriya-shi, Japan):  Elucidation of the formation mechanism of 2-mer-capto-3-methyl-1-butanol (2M3MB) in beer. 145  L14: Folz, (Pentair, The Netherlands):  The role of a beer membrane filter in an environmental friendly brewery. 163			
16:00 - 16:30	Refreshment Break			
17:00 - 17:30	TOUR at the UNION BREWERY and MUSEUM OF BREWING, Ljubljana			
17:30 - 23:00	RECEPTION at the UNION BREWERY, Ljubljana			

	Clemens Forster, Supply Chain Support Manager, Brau Union Österreich AG, Linz, AT Analysis I (Parallel I)	Carsten Zufall, Gen. Corporativo de Technol. e Innov., Cervecería Polar, Caracas, VE Process Development (Parallel II)
08:30 - 09:00	L16: <b>Oomuro</b> (Asahi, Moriya-shi, Japan): 179 Genetic analysis of bottom-fermenting brewer's yeast imparting good kire (crispness) to beer	L17: Sparacio (Simatec, Vaie, Italy): Scaling & logistics rethought: multi-function mashtun, kettle & whirlpool.
09:00 - 09:30	L18: Lafontaine, et al. (Oregon State University, Corvallis, USA): Understanding the impact hopping rate has on the aroma quality and intensity of dry hopped beers.	L19: Jörg, et al. (Centec, Maintal, Germany): Improved dealcoholization process of beer and its market potential. 238
9:30 – 10:00	L20: Peterherr (Anton Paar, Graz, Austria): Alcolyzer beer ME – Results of alcohol analysis on beer samples with an alcohol content lower than 0.4% v/v. 268	L21: Michel, et al. (GEA Brewery Systems, Kitzingen, Germany): The use of hops in brewhouse and cold block.
10:00 - 10:30	Refreshn	nent Break
	Martin Ketterer, Chief Technical Officer, Brauerei Schützengarten, St. Gallen, CH Analysis II (Parallel I)	Sandra Stelma, Head of Science, Diageo, Dublin, IE Product Development (Parallel II)
10:30 - 11:00	L22: <b>De Clippeleer</b> , et al. (KU Leuven, Ghent, Belgium): Towards a new comprehensive methodology for the evaluation of free and bound aldehydes in malt, wort and beer.	L23: Kunov-Kruse, et al. (SpecShell, Valby, Denmark): Perspectives of real-time carbohydrate profiling. $N/A$
11:00 – 11:30	L24: Steinhaus (Leibniz Institute, Freising, Germany): Influence of variety, provenance, and processing on the concentrations of 4-mercapto-4-methyl-2-pen- tanone (4MMP) in hops.  N/A	L25: Ito, et al. (Asahi, Moriya-shi, Japan): Development of a non-alcoholic beer with a novel idea undertaken by casting off preconceptions about beer. 279
11:30 – 12:00	L26: Watson, et al. (UGent, Belgium):  Approach for quantitative analysis of hordein peptides in gluten-free malt beers with High-Resolution-Orbitrap-MS.	L27: Steffen, et al. (University College Cork, Ireland): Polyols as natural sweeteners from lactic acid bacteria in oat wort-based beverages.
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12:30 - 14:00	Lu	nch
	Anneli Ritala, Principal Scientist, VTT Technical Research Centre of Finland Ltd., Espoo, Fl Sensory (Parallel I)	Monica Mandrutiu, Brewing Lead Europe & Innovation Brewer, Asahi Breweries Europe Ltd., RO Yeast & Fermentation II (Parallel II)
14:00 – 14:30	L30: Gadzov (FlavorActiv, Chinnor, UK): Off-flavours due to microbiological problems in speciality beers in Europe. 322	L31: Meier-Dörnberg, et al. (TUM WZW, Freising, Germany): Genetic and phenotypic characterization of different top-fermenting Saccharomyces cerevisiae ale yeast isolates. 332
14:30 –15:00	L32: Baldus, et al. (TU Berlin, Germany): Chemical-analytical characterization of potential prooxidative effects of malt and beer-derived antioxidants. $N/A$	L33: Schmitt, et al. (IFBM-Qualtech, Nancy, France): EBC wort turbidity: nature and impact of malting and brewing process. $344$
15:00 – 15:30	L34: <b>Oladokun</b> , et al. (University of Nottingham, UK): New insights into bitterness perception of beer. 366	L35: <b>Preiss</b> , et al. (Guelph University, Ont., Canada): Characterization of Kveik, traditional Saccharomyces yeasts domesticated by Norwegian homebrewers.
15:30 – 16:00	Refreshment Break	Posters
16:00 – 17:00	Poster presenters to	

#### SCIENTIFIC PROGRAMME

Tuesday, 16 May, 17:00 - 20:00

#### Public lectures (held only in Slovenian)

Congress Venue

Public lectures about precious beer accompained with the degustation of Slovenian beers: the aim of these lectures is to bring the science and love for beer to the general Slovenian public.

The main message: The beer Congress is in our town, Ljubljana in Slovenia, not any Congress but one of the most important World Beer Congresses ... What do we know about beer in general, what do we know about Slovenian beer and about our green gold: hops? The red line in the lectures will be hops and Slovenian beers, guests will be able to learn the basics: how beer is made, where the hops joins the beer, what can Slovenia offer in the hops world, the influence of hops on the beer as a product – the varieties, basic techniques for tasting beer, ending with the final lecture about Beer & Health and clear message for responsible drinking. Tasting of the Slovenian beer samples, gift for each participant.

#### **Price:** € 10,00

Tickets are available from 20. April 2017, can be purchased on-site at the Congress Venue or via internet sales. No pre-registration required.

Tickets will be available one month before the lectures will take place.

#### Max: 220 Pax









	Anna Diatornalia Proming Saionas and E	Daniz Dilgo Car Consultant & Danut, Hard Describ	
	Anne Pietercelie, Brewing Science and Fermentation Technology, Institut Meurice – HELB, Brussels, BE Beer Quality (Parallel I)	Deniz Bilge, Snr. Consultant & Deputy Head, Research Institute for Beer & Beverage Production, VLB Berlin, DE Brewhouse (Parallel II)	
08:30 - 09:00	L36: Voigt, et al. (Univ. Appl. Sc., Trier, Germany): A new analytical approach to malt aroma compounds. $N/A$	L37: Harmegnies, et al. (Meura, Péruwelz, Belgium):  MEURASTREAM - A global concept of wort  production with reduced consumptions of energy and process water. 391	
09:00 - 09:30	L38: De Roos, et al. (VUB, Brussels, Belgium):  The role of acetic acid bacteria (AAB) in lambic beer production processes is underestimated. $N/A$	L39: Becher, et al. (Ziemann-Holvrieka, Ludwigsburg, Germany): The transformation of old tradition – a novel brewhouse concept. $403$	
09:30 - 10:00	L40: Neiens (Leibniz Institute, Freising, Germany): $ \begin{array}{cc} \text{Aroma-active compounds in novel German flavor} \\ \text{hops.} & N/A \end{array} $	L41 Zarnkow, et al. (TUM WZW BLQ, Freising, Germany): Influence of the grist fractions on the final beer quality. $417$	
10:00 - 10:30	Refreshm	ent Break	
	Roland Folz, Hygienic Process Solutions, Pentair Process Technologies, Venlo, NL Filtration & Packaging (Parallel I)	Stefan Hanke, Leiter Versuchsbrauerei, Bitburger Braugruppe, Bitburg, DE Raw Materials (Parallel II)	
10:30 - 11:00	L42: Zacharias, et al. (Krones, Neutraubling, Germany): Solving the challenges of natural compressible filter aids for processing precoats on candle filters.	L43: <b>Decloedt</b> , et al. (UGent, Belgium): Industrial feasibility of the production of gluten-free barley malt beers on a day-to-day basis using differ- ent technologies.	
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12:30 - 14:00	Lui	nch	
	Benet Fité Luis, Director de Calidad, I+D+I y Medio Amb Generalist Session	iente, Madrid, ES, and EBC Vice-President	
14:00 - 14:30	L50: Sirrine (Michigan State University, Suttons Bay, USA): Hop production in re-emerging U.S. growing regions: How craft beer is reshaping the raw material supply sector.		
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15:00 - 15:30	L52: <b>BiendI</b> (Hopsteiner, Mainburg, Germany): How to analyze dry hopped beer? 528		
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16:00 - 17:15	Tiago Brandão, John Brauer CLOSING CEREMONY:  1) Summary of papers and impressions 2) Announcement of best paper and best poster 3) Acknowledgements to session chairs and LOC/Interplan 4) Announcement of congress 2019 5) Organisational announcements re. farewell party		
		ner at the National Gallery	

## —— POSTER LIST • POSTER SESSION

POSTERSESSION ON TUESDAY, 16 MAY 2017 AT 16:00 PM			
	Abstract Title	First Author	Institute, City, Country
Analysis	and methodology (raw materials, product, research)		
P001	Development of a mycotoxin screening sensor system usable in industrial grain sorting – OptiScreen – $N/A$	Frank-Jürgen, Methner	Technische Universität Berlin, Berlin, Germany
P002	An improved beer color independent enzymatic method for $\alpha-$ and $\beta-$ glucan determination in beverages $$N/A$$	Thomas, Kunz	Technische Universität Berlin, Berlin, Germany
P003	Improved HS Trap GC-MS analysis of hop aroma compounds in dry hopped beer 568	Annika, Lagemann	Bitburger Braugruppe GmbH, Bitburg, Germany
P004	Improved PCR detection of beer spoiling bacteria – optimized enrichment with NBB and innovative lateral flow detection $569$	Agnes Johanna, Huber	Döhler GmbH, Darmstadt, Germany
P005	Key–role of humulinones, polyfunctional thiols and and terpenols in Belgian dry–hopped beers $\ N$	Carlos, Silva Ferreira /A	Université catholique de Louvain, Louvain-la- Neuve, Belgium
P006	Volatile fingerprinting of coriander and orange peel in view of improved flavour-consistency of specialty beers and distilled spirits $570$	Filip, Van Opstaele	KU Leuven, Ghent, Belgium
P007	A new RT-PCR-based method for the direct monitoring of spoilage bacteria in beer samples $N/A$	Daniel, Gerhards	Pall GeneDisc Technologies, Bruz, France
P008	LC-MS/MS analysis of hop flavonoids in dry-hopped beers 571	Christina, Schmidt	Hopsteiner - HHV, Mainburg, Germany
P009	Chemical studies on bitter acid oxides derived from stored hops (Humulus lupulus L.) $572$	Yoshimasa, Taniguchi	Kirin Company Limited, Kanazawa-ku, Yokoha- ma-shi, Japan
P010	State of the art solutions for beer analysis ${ m N/A}$	. Uwe, Oppermann	Shimadzu Europa GmbH, Duisburg, Germany
P011	Development of a carbohydrate mass balance during malting and mashing $573$	Niels Albert, Langenaeken	KU Leuven, Heverlee, Belgium
P012	Application of a central composite design for optimization of an HS–SPME–GC–MS method for determination of volatiles in beer $574$	Jakub, Nešpor	University of Chemistry and Technology, Prague, Czech Republic
P013	Comparative study of accelerated shelf-life tests on physical ageing of beverages containing weighted flavour emulsions $575$	Sören, Rossmann	Institute of Food Technology ILT.NRW, Lemgo, Germany
P014	Sensory and analytical changes in beer-mix beverages during shelf life $$576\ $	Helmut, Klein	Brau Union Österreich AG, Linz, Austria
P015	The language of hops – How to implement and apply a common description of hop flavours $57$	Elisabeth, Wiesen 7	Joh. Barth & Sohn, Nürnberg, Germany
P016	First identification of cysteinylated and glutathio- nylated precursors of 3-mercaptohexan-1-ol in Barley. What is the influence of malting process?	Aurélie, Roland $578$	Nyseos, Montpellier, France
P017	Investigation of mycotoxins in different beers with the Mycotoxin Screening System using several cleanup techniques $579$	Carola, Schultz	Shimadzu Europa GmbH, Duisburg, Germany
P018	Evaluation of a rapid haze stability measurement for beer $N/A$	Kevin van Koerten	NIZO, Ede, Netherlands

P019	Open your eyes: In microbiological results some important information may be hidden 580	Marta, Orive Camprubí	Mahou S.A., Lleida, Spain
P020	Comparison of rapid methods for detection of spoilers in low alcohol beer mixes $581$	Nuria, Feliu Besora	Mahou S.A, Lleida, Spain
P021	Development of new method for classification of non-volatile nitroso compounds in beer using GC with chemiluminescence detection $582$	Tomáš, Vrzal	Institute of Brewing and Malting, Inc., Prague Czech Republic
P022	Pesticide residue analysis in Hops: analysts' night- mare or a unique opportunity to advance 583	Martin, Dusek	Research Institute of Brewing and Malting, Prague, Czech Republic
P023	Comparison of different dosage criteria when using aroma hops $584$	Florian, Schuell	HVG eG., Wolnzach, Germany
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P025	FTIR characterisation of sorbent-polyphenol interactions involved in beer stabilization $585$	Marcel, Karabín	University of Chemistry and Technology, Prague, Czech Republic
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P030	Spent hop material rich in xantohumol: an overlooked foam stability enhancer $590$	Lukáš, Jelínek	Institute of Chemical Technology, Prague, Czech Republic
P031	Foam standard 591	Petr, Kosin	Budeweiser Budvar, N.C., Ceske Budejovice, Czech Republic
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P040	Effect of retronasal aroma on kire of beer $\mathbb{N}/\mathbb{A}$	Seiko, Miyashita	ASAHI BREWERIES, LTD., Moriya, Japan
Beer, so	ciety, health and nutrition		
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P042	Impact of dry hopping techniques on xanthohumol content of beer $597$	Armindo, Melo	Pharmacy Faculty of University of Porto, Porto Portugal
P043	Evaluation of $\alpha\text{-acids}$ content of beer produced by dry hopping techniques $598$	Julio Cesar, Machado Jr	Pharmacy Faculty University of Porto, Porto, Portugal
P044	Antagonistic effects of tetrahydro-iso-alpha acids on breast cancer cells $N\!\!\!/A$	Dominique, Gallo	Institut Meurice - Commission Communautaire Française (Cocof), Brussels, Belgium
P045	Antiproliferative activity of hop-derived compounds against human colon cancer Caco-2 cells	Miguel A., Faria $\mathrm{N/A}$	LAQV-REQUIMTE, Porto, Portugal
P046	Brewing yeasts secrete trophic, anti-inflammatory and antioxidant biomolecules in their surrounding medium: why not in beer? $N/A$	Monique, Dillemans	Meurice R&D - Institut Meurice, Brussels, Belgium
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P056	Studying fouling in crossflow microfiltration of rough beer $605$	Áron, Varga	Szent István University, Budapest, Hungary
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P059	Are different hop pellet properties for dry hopping and hop dosing in the brewhouse justified? $60\%$		HVG eG., Wolnzach, Germany	
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P061	Recent hop varieties from Slovenian breeding program $610$	Andreja, Čerenak	Slovenian Institute of Hop Research and Brewing, Žalec, Slovenia	
P062	Speeding up hop breeding through in vitro seed germination and precocious sex determination $$ $$	Claudia, Liberatore $11$	UNIPR, Parma, Italy	
P063	Dry Hopping – a new look at techniques, utilisation and economics $612$	Ray, Marriott	Totally Natural Solutions Ltd, East Peckham, United Kingdom	
P064	Description and classification of two new huell aroma breeding varieties $613$	Andreas, Gahr	Hopfenveredlung St. Johann GmbH, Train – St. Johann, Germany	
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P065	Selective steering of roasting processes to reduce prooxidative effects of roasted malt products N	Thomas, Kunz /A	Technische Universität Berlin, Berlin, Germany	
P066	Varietal comparison of cytolysis of barley during malting $614$	Xiang S, Yin	Rahr Malting Co., Shakopee, United States	
P067	A study on advanced DON reduction technologies in malting $615$	Patricia,Aron	Rahr Malting Co., Shakopee, United States	
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P073	Investigation of a new crystallizer with included post-treatment for ion depletion of spring water for the brewery industry $619$	Lars, Erlbeck	Mannheim University of Applied Sciences, Mannheim, Germany	
P074	Development of a membrane assisted bioreactor for the continuous fermentation of wort into beer	Brecht, De Causmaecker $\mathrm{N/A}$	KU Leuven, Faculty of Engineering Technology, Technology Campus Ghent, Ghent, Belgium	
P075	Strategies to improve lactic acid production from brewing–relevant lactic acid bacteria strains in wort substrates $N\!\!\!/\!\!\!/ A$	Konstantin, Bellut	University College Cork, Cork, Ireland	

P076	Flash pasteurization: How long is the optimal heat-holding time/temperature for achieving the best beer quality? $620$	Roland, Feilner	Krones AG, Neutraubling, Germany	
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P078	Monitoring the ${\rm CO_2}$ purity level during fermentation as a parameter of quality monitoring and control $621$	Martin, Jörg	Centec GmbH, Maintal, Germany	
P079	"Asahi Super Dry" development strategies for beer dispensers challengingly contributing to the increase in its brand value $\ N \ / \ A$	Junichi, Kitano	Asahi Breweries, Ltd., Moriya-Shi, Ibaraki, Japan	
P080	Hop citrus character – why are all the molecules floral? $622$	Ray, Marriott	Totally Natural Solutions Ltd, East Peckham, United Kingdom	
P081	Mini-oak chips: a promising tool for development of flavour enriched beer $623$	Vojtěch, Hanko	University of Chemistry and Technology, Prague, Czech Republic	
P082	Insight into the American IPA. A deconstruction of America's popular beer style	Thomas, Shellhammer	Oregon State University, Corvallis, United States	
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P087	Characterization of free and esterified phenolic compounds in blue corn malt beers $\mathrm{N/A}$	Alex M. Daniela, Flores- Calderon	Metropolitan Autonomous University, Mexico City, Mexico	
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P088	Analysis of significant factors in the formation of sugars during the mash process in beer production and its modeling with neural networks $628$	Héctor, Rivera	Tecnológico Nacional de México Instituto Tecno- lógico de Celaya, Celaya, Mexico	
P089	Evaluation of poly phenols and bitter substances derived from hops and their yield by producing hopped wort concentrates for the production of beer and beer type malt beverages 629	Jean, Titze	Anhalt University of Applied Sciences, Koethen, Germany	
P090	Monitoring of an onion-like off-flavor component and its precursor in large-scale brewing $630$	Taku, Irie	Asahi Breweries, Ltd., Moriya, Japan	
Yeast and fermentation				
P091	Characterization of ale yeasts – a study of technological, analytical, biological and sensory attributes $631$	Fabian, Webersinke	Brau Union Österreich AG, Linz, Austria	
P092	Genetic and phenotypic changes in brewing yeast Saccharomyces pastorianus during long term serial re-pitching $632$	Neža, Čadež	University of Ljubljana, Ljubljana, Slovenia	
P093	The use of selected strains of Lachancea thermotolerans for brewing of sour beer $633$	John, Sheppard	North Carolina State Brewery, Raleigh, United States	

P094	Impact of Brettanomyces bruxellensis on the flavour profile of wort primary, secondary, and copitch fermentations $634$	Caroline, Tyrawa	University of Guelph, Guelph, Canada
P095	Recent notable microbiological contaminations of craft beer in the United States $-635$	Wade, Begrow	Founders Brewing Company, Grand Rapids, United States
P096	A rapid high throughput quantitative polymerase chain reaction (qPCR) based diagnostic test for premature yeast flocculation (PYF) in malts 63	Mandeep, Kaur	University of Tasmania, Hobart, Australia
P097	Combined effect of $\text{CO}_2$ saturation and alcohol content on yeast performance during beer refermentation $637$	Anne-Catherine, Vandeville	Meurice R&D - Institut Meurice, Brussels, Belgium
P098	Use of probiotic yeast in production of beer $638$	Tomás, Brányik	University of Chemistry and Technology Prague, Prague, Czech Republic
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P100	Modification and differentiation of ale yeast $$\mathrm{N}/\mathrm{A}$$	Isil, Cöllü	Versuchs- und Lehranstalt für Brauerei Berlin e. V., Berlin, Germany
P101	Development of surface-engineered brewing yeast for acceleration of maturation and improvement of colloidal stability of beer $640$	Pavel, Dostálek	University of Chemistry and Technology, Prague Prague, Czech Republic
P102	Sour brewing: a comparison of acidification methods in the brewing process on wort and beer qualities $641$	Lorenzo, Peyer	University College Cork, Cork, Ireland
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P103	Microbial beer stabilization 642	Reiner, Gaub	Pall GmbH, Dreieich, Germany
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