

ICBS

International
Centre for
Brewing Science

BREWING MATTERS ISSUE 9 August 2016



International Centre for Brewing Science,
Division of Food Sciences, School of Biosciences,
University of Nottingham.

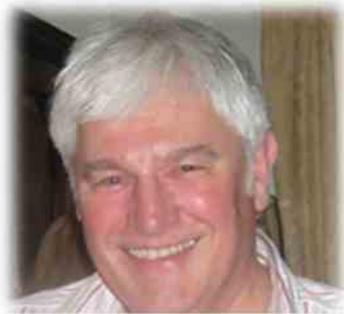
Web: <http://www.nottingham.ac.uk/brewingscience/>
Email: brewing.science@nottingham.ac.uk
Twitter: [@UoNBrewing](https://twitter.com/UoNBrewing)
LinkedIn: ['International Centre for Brewing Science at the University of Nottingham'](#)



Castle Rock, Canalhouse staff & zerogravity project students at the launch

L-R Stefano Occhi, David Quain, Will Brennand, Will Gelder

We have lift off – the launch of zerogravity brewing



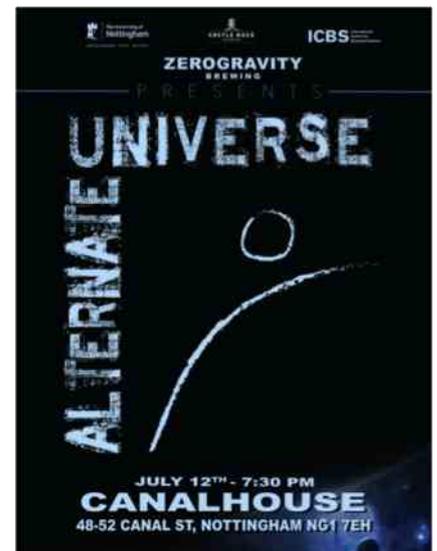
Prof David Quain...

“As part of their MSc in Brewing Science and Practice three students were selected to deliver an unusual dissertation project. The brief was simple; (i) develop a beer for eventual production by Nottingham’s esteemed Castle Rock Brewery, (ii) market the beer without a budget and (iii) come up with an overarching name for

the cuckoo brewery that could be used by a new set of students (hopefully) every year. In passing, the bottom line this time out (and in the future) was that failure was not an option!

The students – Steff Occhi (from Italy), Will Brennand (USA) and Will Gelder (UK) – although very much working as a team had individual leadership roles respectively, ‘project management/quality’, ‘lead Brewer’ and ‘sales and marketing’. First things first the ongoing project is badged ‘zerogravity brewing’ and the first beer – a 4.5% abv Altbier – is branded ‘Alternate Universe’.

The ‘alt’ beer style is relatively unusual (at the moment!) and is associated with Dusseldorf in Germany. Alt translates as ‘old’ and the beer is an ale which is typically has a dark copper colour. The warmish fermentation with a top-fermenting yeast is coupled traditionally with a lengthy cold lager-type maturation.



So ‘hats off’ to the team for coming up with an unfamiliar but legitimate beer style. After lots of small-scale trials to tune the beer, the beer was test-brewed in the SABMiller Pilot Plant (big thanks to Trevor Cowley and team) before the 30 hl production run at Castle Rock under the direction of Head Brewer Adrian Redgrove. Being the first year of hopefully a longer-term collaboration, the packaging formats were kept simple with casks (9 gallon) and upcoming, 330 ml bottles.

MSc Course News.....

The launch at Castle Rock's flagship Canal House on the 12th July was a great success with the two firkins sold by 20.30! The evening – which was open to the public - was attended by the Class of 2016, Castle Rock and ICBS staff together with Charlie Bamforth and students from UC Davis in California.



MSc Brewing Science & Practice students at the launch

The beer is now in the trade, on draught in Castle Rock pubs in Nottingham, Derby and Sheffield with the bottles being sold through specialist shops. Not surprisingly the project has garnered decent coverage in the 'press' with newspaper articles, radio and TV.

As I write, the team still have much work to do, particularly the little matter of writing up their respective dissertations. Ongoing stuff includes sales data, marketing/social media impact and comparative chemical and sensory analysis of the two large-scale beers against two commercial Alt beers. Should you would like to read more check out zerogravity brewing on Twitter (@zerogravitybrew), the blog (<https://zerogravitybrewing.wordpress.com/>), Facebook and, especially, Stef and Will B's interview on the renowned BeerSmith podcast (<http://beersmith.com/blog/2016/07/07/the-zerogravity-beer-project-beersmith-podcast-129/>)”

Other Course News.....

An emotional welcome for Marit Nijman...

Marit Nijman joins ICBS with her PhD project '*Measuring the emotional response to sensory attributes: context effects*'.



Marit Nijman....

“The project is a continuation of the emotion research that was done by Camilla Beyts and Curtis Eaton. Like them, I will work on ways to measure emotions related to beer consumption.

Measuring emotional response has been shown to be more discriminating than simply measuring liking and thus gives more

information on how consumers perceive products. My main focus is to understand how consumption context influences emotions and find ways to study these context effects. In other words, I will look into different situations in which people drink beers and how that affects their emotional response.”

Interested in developing your brewing knowledge, but lack the time to commit to a qualification?

Our short courses now have a new Home/EU rate, with start dates in September and January.

10 credit courses
£570 Home/EU students
£1330 International students

20 credit courses
£940 Home/EU students
£2460 International students

Completed credits can also count towards our postgraduate qualifications.

See our website for details of our short courses and further information:

<http://www.nottingham.ac.uk/brewingscience/index.aspx>

Sensory evaluation workshops...

The University of Nottingham will be running the following workshops in September 2016:

- **Sensory Evaluation: An Introductory Workshop, 20th September**
- **Sensory Methods for Quality Control, 21st September**

These popular workshops are aimed at those who are new to the area but wish to understand and apply basic sensory evaluation and quality control techniques. Both courses are designed to be practical and interactive to enhance learning and have had excellent feedback from previous delegates.

Each workshop costs £350 and ATP bursaries of 50% of the fee are available for those employed in the UK food industry (includes brewing):

<http://www.agrifoodatp.ac.uk/aatp/apply/index.aspx>

To book your place, please contact Dr Becki Ford R.Ford@nottingham.ac.uk

Ola wins again!

2016 Winner Of The Sensory Science Travel Bursary.



Ola Olayide

Following on from the audience choice for the IFST award for best presentation prize, Ola Olayide (PhD student) wins the IFST Sensory Science Travel Bursary for the following publication:

Oladokun, O., Tarrega, A., James, S., Cowley, T., Dehrmann, F., Smart, K. A., Cook, D. J., & Hort, J. (2016). *Modification of perceived beer bitterness intensity, character and temporal profile by hop aroma extract*. Journal of Food Research International, 86, 104-111.

The prize includes £500 towards expenses for attending any conference / meeting with themes relating to food and consumer or sensory science which will occur between July and December 2016. Also, the prize includes one year's membership of IFST at Associate rate. Further details are here <http://www.ifst.org/news/2016-winner-sensory-science-travel-bursary-announced>

Ola is also the winner of the University of Nottingham Graduate School Travel Award for £600.

Well done Ola! Happy travels.

Dates for the diary.....

Catch ICBS next at...

The World Brewing Congress in Denver.

**World Brewing Congress 13-17th August 2016,
Denver, Colorado USA**



Chris Powell

Be sure to catch Chris Powell presenting '*Yeast stress when fermenting at high gravity – sources, damage and the cellular response*'

Full abstract:

<http://www.worldbrewingcongress.org/congress/Abstracts/Pages/026.aspx>

Ola Olayide will present '*Hop aroma extracts add more to beer than hop aroma! Investigating the impact of hop essential oils on bitterness perception*'



Ola Olayide

"The perceived flavour of beverages is key to their acceptance by consumers. In beer, beside bitterness intensity, the character of perceived bitterness i.e. whether 'harsh', 'lingering' or 'round' is a key marker of brand success. This study investigated the impact

of hop aroma extracts on perceived bitterness of beer. Using Sensory analysis, our findings revealed for the first time that hop aroma extracts (lacking any taste) can significantly enhance perceived bitterness intensity and change the bitterness character of beer via taste-aroma interactions. This improved understanding of cross-modal flavour interactions in beer paves the way for a more informed approach to the use of aroma extracts in new product development, and for further potential application of aroma from other sources e.g. herbs in the creation of new and exciting beverages for consumers."

An oral presentation of the full findings will be given at the World Brewing Congress (WBC) conference in Denver. Full abstract:

<http://www.worldbrewingcongress.org/congress/Abstracts/Pages/066.aspx>



David Jenkins

David Jenkins will be presenting '*Yeast uptake of iron, copper and manganese and the subsequent impact on the flavor stability of beer*'.

"During the time it takes for beer to reach the consumer its flavour profile can change, either through the loss of positive attributes or the development of stale characteristics. The mechanisms of flavour instability are the subject of significant current research

and involve both oxidative and non-oxidative routes. Metal ions can catalyse the oxidative instability of beer, although the precise mechanisms and relative importance is still unclear. In this investigation the direct impact that various metal ions have on the oxidative stability of beer was investigated. In addition, the role yeast strain has on the removal of metals during fermentation was assessed, and the impact this may have on the final beer discussed."

Full abstract:

<http://www.worldbrewingcongress.org/congress/Abstracts/Pages/199.aspx>

Dates for the diary.....

Stuart Wilkinson will present '*Phenotypic microarray: A high-throughput screening tool for evaluation of desirable brewing traits in novel yeast strains*'.



Stuart Wilkinson

"Advances in molecular and cell biology, through both genetic modification and classical breeding approaches, as well as for selection of 'natural' strains from novel environments have created

the possibility to generate libraries of new hybrid yeasts with potential for use in beer fermentations. However, screening of large numbers of yeast strains for brewing-specific phenotypes can present a technical problem, as performing traditional assays and small scale fermentations are simply not viable. As such, rapid screening assays are required in order to short-list potential candidate strains for more in-depth analysis. We present the use of a phenotypic microarray (PM) technique as a high-throughput screening tool for evaluation of novel yeast strains. The PM effectively conducts 'micro-fermentations' (ca. 100 µL) in 96-well plates and the system can simultaneously run up to 50 plates (4800 fermentations) at any one time."

Full abstract:

<http://www.worldbrewingcongress.org/congress/Abstracts/Pages/220.aspx>



Eoin Moynihan

Also representing ICBS will be Eoin Moynihan with his presentation '*Mitochondrial development during brewery yeast handling*'.

Full abstract:

<http://www.worldbrewingcongress.org/congress/Abstracts/Pages/209.aspx>

PHD Opportunity.....

A chance to get involved in our research with a PhD studentship...

Supervisors: Prof. Joanne Hort, SABMiller Professor in Sensory Science & Dr David Cook.

Applicants are invited for this exciting 4 year PhD studentship.

The flavour of beer is key to consumer enjoyment and the use of hops to add both bitterness and aroma to beer is a crucial part of the brewing process. Recently there has been renewed interest in the use of new hop varieties and hop products to create exciting new products for the consumer and this has highlighted fresh technical challenges that this study will investigate. In this multidisciplinary PhD the student will combine an understanding of the chemistry of hop aroma and bitterness and sensory science to gain a deeper understanding of the multimodal stimuli (taste/aroma/trigeminal) in hops which contribute to beer flavour and aroma. Based in the International Centre for Brewing Science the student will be supervised by International experts in sensory science (Prof Joanne Hort) and Beer Chemistry (Dr David Cook) and will develop both their analytical and sensory evaluation capability alongside generic research skills.

Applicants must have (or be about to complete) at least a BSc (Hons) 2:1 first degree, or equivalent, in Food Science, Chemistry or a relevant related subject, and show a keen interest in beer flavour perception. The project requires a student who is highly motivated and can work independently and as part of a team. Good time management and organizational skills are also vital. Excellent English language skills, both written and oral, are essential, especially as the student will be working with human volunteers.

The scholarship is open to **UK/EU students only** and covers all fees and an annual stipend of £14,296 per annum.

Candidates should send a covering letter, detailed CV, including university grades/predicted grades together with the names and contact details of two referees to joanne.hort@nottingham.ac.uk.

Closing date: open until filled

Start Date: Oct 2016 or soon thereafter

For Further information contact joanne.hort@nottingham.ac.uk and see our websites www.nottingham.ac.uk/brewingscience & <http://www.nottingham.ac.uk/biosciences/research/research-themes/sensory-science-centre/sensory-science-centre.aspx>

<http://www.nottingham.ac.uk/~saz intra/public/studentship/studentship-open26.html>