

3D printing of food

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We have recently invested in a 3D printer to investigate the potential for, and the limitations of, 3D printing when applied to food.

The 3D printer will be used to assess:

- the printability of foods
- the creation of complex designs
- the potential for personalised nutrition
- the impact on food texture

Interest in 3D printing has increased in recent years and the technology is now being applied to the food sector. Fused deposition modelling can print any paste-like food material that sets (e.g. chocolate, dough, batter and food purees). The process works by using software to create 3D shapes and printing 'slices' of the shapes, one after another, to build up the final 3D product.

3D printing may reduce process development and NPD time. It could also reduce food waste by printing on demand, and by utilising imperfect perishable food that would otherwise be wasted. ■

Search '3D printing' at campdenbri.co.uk or get in touch to find out more about the project and the potential of 3D printing.



Newsletter



Campden BRI
100 years
With industry for industry



Collaboration

HUNGer research consortium

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www.imperial.ac.uk/hunger-project/

We are collaborating with world leading researchers to address the United Nations (UN) Sustainable Development Goal 2: end hunger, achieve food security and improve nutrition, and promote sustainable agriculture. The HUNGer (health outcomes in undernutrition: the role of nutrients, gut dysfunction and the gut microbiome) consortium is comprised of multi-disciplinary, multi-national researchers.

The consortium believes there are unanswered questions regarding the role of the gut in undernutrition, which if answered could significantly

improve the effective management and prevention of undernutrition. It is planning to look at legumes as a possible solution to undernutrition by providing nutrients, improving the gut microbiome and restoring the gut function.

HUNGer has released a white paper on the key challenges that currently limit the effective management and prevention of undernutrition and the most promising potential solutions. ■

Read the white paper at www.imperial.ac.uk/hunger-project/

Contact us

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For other sites, see
www.campdenbri.co.uk/campdenbri/contact.php

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New members

We are delighted to welcome the following new members:

Costa UK & Ireland - chain of coffee shops

Croda Europe Ltd - creating, making and selling speciality chemicals

Fevita Hungary cPlc - producer of frozen fruit and vegetables

Frank King (Wigan) Ltd - cooked meat manufacturer

Keith Spicer Ltd - blending and packing of tea

Luss Fine Foods - hot and cold smoking of fish and associated products

OP Chocolate Limited - chocolate wafer biscuit, mallow and chocolate tablet manufacturer

Pannonia Bio - bioethanol fuel for vehicles

Sea Value Atlantic - processing of tuna and other seafood for the food service market

Seahawk Marine Foods Ltd - importer and distributor of frozen seafood

Yeo Valley Farms (Production) Ltd - manufacturers of sweet dairy products

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Please notify the Membership Department of any changes to your company's name or address to allow us to keep our records up to date.

New Director of Finance

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We are pleased to welcome Chris Ikpeme as our new Director of Finance. Chris joins Campden BRI after four years as Head of Finance at an internet and IT services company in

Gloucester and several senior roles in science and technology companies, including a period at DuPont.

As Director of Finance, Chris will also be responsible for the departments of Finance, Facilities and Engineering Services, IT and Governance Risk and Compliance, as well as safety. ■

Client survey - thank you!

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Thank you to everyone who responded to our recent client survey. Your help has been invaluable. We had some very positive feedback as well as very valuable constructive suggestions to help improve our services and client interactions. We are particularly grateful to those of you who offered the opportunity for follow-up discussion and the additional feedback this provided. ■

Campden BRI Day 2019

campdenbri.co.uk/campdenbri-day.php

Campden BRI Day 2019 will be on [Wednesday 12 June](#); attendance is free. The annual event will allow you to explore how science and technology is being used to tackle industry needs. You will have the opportunity to network with industry peers, view scientific and technical exhibits, attend briefings, take the pilot plant tour and hear the annual Campden Lecture. ■

Register at campdenbri.co.uk/campdenbri-day.php

Just launched:

Campden BRI Brexit Hub

Single point of information and resources for food and drink organisations - search 'Brexit hub' at campdenbri.co.uk

Why test disinfectants?

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Effective cleaning and disinfection are key to maintaining safe environments for the handling, processing and packaging of foods. Food business operators rely on proven effective products and traditional methods, including wet and dry cleaning, cleaning in place (CIP) systems and antibacterial hand washing. New technologies, chemistries and delivery methods including whole room disinfection, antimicrobial surfaces, and disinfectants with residual activity also need to be effective.

Manufacturers of disinfectant formulations, antimicrobial technologies and active ingredients must be able to substantiate the claims they make regarding the efficacy of their products. This involves submission of technical dossiers detailing their product's performance in recognised, standardised laboratory tests.



We carry out a range of UKAS-accredited tests of disinfectants for many companies following standard ISO procedures, and are involved in the development of standards and testing of emergent antimicrobial technologies at both UK and international level.

Our disinfectant testing capabilities allow us to assess, both qualitatively and quantitatively, the antibacterial, antifungal, antiviral and antibiofilm properties of disinfectants or their constituent active ingredients. We can help you to determine the efficacy of your formulation against a large range of standard indicator organisms, pathogens and application-specific microorganisms, as well as how the product performs under differing environmental conditions, or its efficacy on a range of surface types. ■

We can also offer bespoke field trials, as well as equipment washing, CIP and fresh produce washing assessments within our containment level 2 microbiology process hall. Get in touch to find out more.

Pilot scale testing of novel ingredients

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Developing new drinks products - be they carbonated or still soft drinks, beers, lagers, ciders or spirits - requires technical input from many sources. Trialling the new formulation or process in a way that replicates full production conditions as closely as possible is vital. Our pilot plant facilities allow you to do just that, with a range of equipment to suit varied needs. Here are three recent examples of how they have been use to explore novel ingredients:

Creation of a Scottish Rye whiskey

We worked with John Fergus & Co to help them produce a new whiskey which met the legal definition of Scotch whisky and Rye whiskey in the US. For this project we made rye malt according to the client's specification and then mixed it with distillers malt before brewing it using a mash filter to separate the wort. The fermented wash contained more than 51% rye. The resulting spirit is now maturing in their distillery.

Gluten-free rice beer

We used rice as an alternative to other traditional grains to make beer. Rice is a gluten-free ingredient and, as there is no legal definition of beer in the UK, rice could potentially be used to make a 100% rice beer. We performed several trials with rice from Italy, including malting and brewing, and built up our knowledge for the development of novel gluten-free food and beverages.

This research has been published on the Science Direct website <https://bit.ly/2E4eFFL>

Speciality rice malts

We made specialty rice malts (such as crystal, dark and chocolate malt) and used them to develop an Irish red 100% rice beer with coffee, liquorice and caramel notes,



an ABV of 3.8% and no gluten. This beer was showcased at Campden BRI Day 2018 and led to further projects with clients to develop new beers using rice.

Our pilot maltings and pilot brewery

Developing beers requires knowledge of how a product will react to scale-up. Our 50kg pilot maltings were built to bridge the enormous gap between conventional micro-malting systems and the 'real world' of full-scale production. Steeping and germination are carried out in malting drums, and the kilning takes place in dedicated units which accurately simulate modern deep bed kilning systems. The whole maltings are automated and can operate over a very wide range of temperatures and humidity. This enables us to mimic the many different conditions found in malting plants all over the world. As well as product development, it can also be used for research into process, health and safety issues, and training. We also have pilot roasting facilities.

Once the malt has been produced, it can then be used in our pilot brewery. The brewhouse comprises a mashing station, stirred mash conversion vessel and cereal cooker, wort separation by lauter or Meura mash filter, stirred kettle, and trub separation by whirlpool or hop back. Fermentation is in 100 litre cylindro-conical FVs, which can also be used as unitanks. Among the many special features installed in the brewery are carbon dioxide and nitrogen bulk gas tanks, a gas blender, a hydrophobic gas control rig to produce deaerated liquor and for carbonation/nitrogenation of beer, and a flash pasteuriser. ■

Explore our pilot plant at
www.campdenbri.co.uk/tours/drinks.php

Get in touch to find out more about new product development with novel ingredients

Pilot plant facilities - for food and drink

We have a large range of food and drink pilot plant facilities covering over 3000m² on two sites

Search 'pilot plant' at campdenbri.co.uk



Does your product look and taste as it should?

www.campdenbri.co.uk/training/OnsiteTraining

Bespoke sensory training can help you make a product that meets its specification and looks, smells and tastes as it should. Sensory training can also help to instil confidence in the product and processes. Our tailored consumer and sensory training courses are focused on your company's objectives and requirements. Topics include:

Training for sensory assessors

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Having competent sensory assessors is an important aspect of monitoring product targets and specifications, and can help improve product quality and reduce customer complaints. Our training for sensory assessors covers sensory principles, best practices and screening procedures for in-house taste panels.

New sensory methods training

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There is a large variety of new sensory methods that can be used to reduce product development lead times and help address specific research objectives. We also offer tailored training in these methods alongside discrimination test methods.

Our training courses last from two hours to four days depending on the levels of training required and the topics of choice. The courses can be conducted at your own site or a venue of your choice or at Campden BRI. We also offer advice and consultancy on specific sensory and related issues. ■

Get in touch to find out more.

Member zone

to access privileged member information and services

New R&D reports on reformulation for health and nutrition

Search 'RDs 2019' at campdenbri.co.uk

Development of a sausage roll with vegetables - RD446

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A member-funded research project redeveloped a sausage roll with a boosted nutritional content by incorporating vegetables. A series of tools were used to screen concepts, develop concept samples and then assess their acceptability by consumers. Two sausage rolls were produced, including one that allowed a 'one of your five a day' claim.

Review of sugar reduction and clean label approaches - RD447

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There are many aspects to consider when reducing sugar in food and beverage products, including physical properties of ingredients, naturalness (if it is clean label) and legislation regarding permitted applications. This review highlights these considerations, allowing food manufacturers to make an informed selection of ingredients/technologies when reducing the sugar content of their products. ■

Research summary sheets 2018 published

Search 'rss' at campdenbri.co.uk



Cereals and Cereal Applications Testing (CCAT) Working Group

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CCAT provides a forum for our members across the cereals industry, including wheat and barley, to discuss emerging topics and issues, share concerns, solutions and good practices. The group meets to discuss:

- standard methods for the testing of cereals and related products, including relevant ingredients and additives
- evaluation of new techniques and methodologies to quantify and qualify aspects of cereal or ingredient quality, functionality or fitness for a particular end-use
- evaluation of new techniques and methodologies for measuring the quality of cereal products

CCAT plays a significant role in steering work undertaken on the Campden BRI member-funded research (MFR) project 'Quality and Safety of Cereal-based Products and Ingredients for the Food and Brewing Industry'. It reports to the Fermented and Alcoholic Drinks and the Cereals, Milling and Baking MIGS.

The next CCAT working group meetings are:

- 17 April 2019 (Chipping Campden)
- 5 November 2019 (Chipping Campden) ■

For further information on the group's activities search 'ccat group' at campdenbri.co.uk or get in touch

Regulatory affairs

Mandatory flour fortification in the UK

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Last year, the Department for the Environment, Food and Rural Affairs (Defra) announced its intention to launch a consultation on the mandatory fortification of flour with folic acid. All interested parties - consumers, industry and academics - will have the opportunity to voice their opinions on this suggested amendment to UK legislation and ultimately on the nutritional intake of UK consumers.



If mandatory fortification happens, will it lead to improved protection of unborn foetuses? Will it mean that food labels will have to be amended wherever wheat flour is used in compound products and will it present an obstacle to trade with the EU following Brexit? Your input is essential in forming decisions around these and other flour fortification questions, so please ensure you have your say.

To support the industry in this legislative area, we offer in-house or bespoke training courses. This year, for the first time, we ran a three-day 'Pick'n'Mix' programme of training in Ireland. This was in response to demands from food and drink manufacturers based in Ireland and Northern Ireland. The programme included training on additives used in foods, food labelling, and nutrition and health claims. ■

Get in touch to find out more about bespoke training

Potential new regulations for food supplements

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In 2017 the GCC (Gulf Cooperation Council) Standardization Organization circulated draft legislation proposing a new regulation for food supplements. If published, the finalised standard would be a major new development in the GCC food law sector as food supplements were not previously regulated as food.

The draft legislation covers vitamin and mineral supplements and excludes extracts and other medicinal supplements. It specifies which forms of vitamins and minerals can be used and provides a list of the permitted chemical compounds. It also proposes some new labelling requirements, most of which will follow GSO 9/2013 on mandatory labelling requirements, but the proposed new legislation also includes some additional requirements such as providing RDA percentages for the vitamins and minerals concerned.

Health claims linked to the consumption of food supplements is strictly prohibited and the products must bear instructions on safe dosages to prevent any potential toxicity. Besides labelling requirements, the draft legislation also outlines other regulatory requirements - specifically product registration and health certificates for food supplements sold in GCC.

The draft legislation is currently being discussed and the GCC is welcoming comments. ■

Get in touch to find out how this new legislation could affect your business and what actions you might need to take



Training and events

A full list of scheduled courses is available on our website campdenbri.co.uk/training.php or request a brochure from training@campdenbri.co.uk +44(0)1386 842104

New training courses

Food and drink labelling refresher

21 May 2019

www.campdenbri.co.uk/training/food-drink-labelling-refresher-intensive

This course is designed to give previously trained participants in food labelling an update on the essential requirements of mandatory food and drink labelling for EU Harmonised and UK legislation. Food labelling legislation has changed substantially over the past few years, most recently and fundamentally with the introduction of the EU Food Information to Consumers Regulation. Labellers need to be fully aware of these changes and of other laws that relate to aspects of food labelling to produce legally compliant labels.

Wheat and flour testing for bakery products

25-27 June 2019

www.campdenbri.co.uk/training/wheat-flour-testing-bakery-products

The course provides a balance of theory and hands-on activities to explore wheat composition, flour production and testing. It will cover the most common methods used in the industry to assess quality.

The importance of using the appropriate flour for a given process and end-product will be illustrated through practical exercises, including baking. The relationship between flour quality and impact on main bakery products is also covered. ■



Skills and knowledge

April 2019 events

- 1-4 Sensory evaluation workshop
- 1-5 FSSC 22000 auditor/lead auditor course
- 2 HACCP - refresher
- 2-3 ~~Food and drink labelling~~ - full
- 2-4 Food processing hygiene management (course in two modules)
- 2-4 Brewing - an introduction
- 2-5 Principles of baking
- 3-4 Practical microbiology - advanced
- 9-10 Understanding microbiology
- 9 Food additives, flavourings and enzymes: food improvement agents package
- 11 Food authenticity testing and the detection of adulterants - insights into analytical methods
- 30 TACCP/VACCP (Food Defence and Food Fraud) - foundation
- 30-3 May Safe production of heat preserved foods - the essentials (including principles of canning)

www.campdenbri.co.uk/training.php