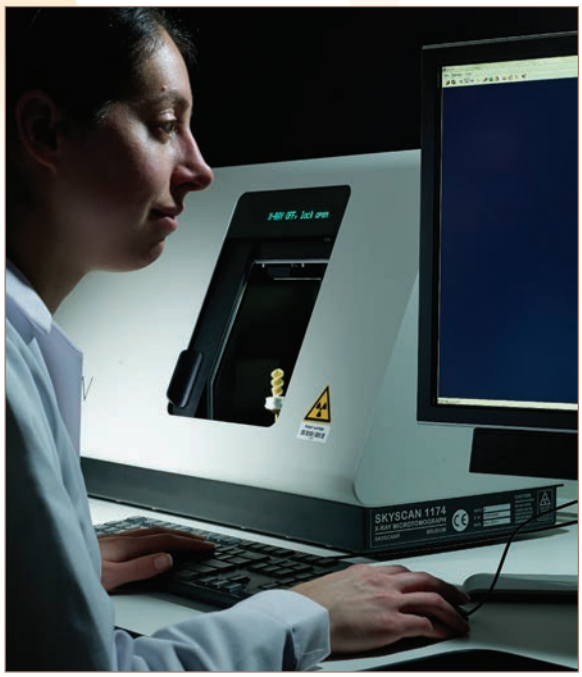
Campden BRI
food and drink innovation

Newsletter

www.campdenbri.co.uk



X-ray system boosts imaging capabilities

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The quality and performance of many foods, ingredients and packaging materials relies heavily on their 3D structure. A new micro-computed tomography (CT) scanner will allow us to look at this in considerable detail, giving clients an insight into the microstructural properties of their food and packaging. The scanner, which works on the same principle as those used for medical CT scanners, but with much higher resolution, will be used to image and measure the internal structure of samples non-destructively. The images can be displayed as freely rotating 3D views or cross-sections, and analysed to provide accurate measurements of 3D structures.

Alix Cornish commented:

"The CT scanner will allow us to investigate the structure of foods without destroying the sample. Investigations will include food structure characterisation, such as porosity measurements of aerated foods, or size and position measurements of individual components within complex multi-component products. The scanner can also be used for packaging analysis, to check that dimensions are within specification and to image packaging faults.

Traditional 2D imaging techniques usually involve destructive sample preparation and the information is often insufficient to draw conclusions regarding the 3D structure. X-ray micro tomography systems allow 3D objects to be visualised and measured without any destructive sample preparation."

Your partner for processing technologies

March 2015

welcome

A toolbox to tackle your needs

In January we published *Innovation for the Food and Drink Supply Chain: Scientific & Technical Needs*. This was the result of an extensive consultation with our members and outlined the food and drink industry's innovation requirements over the next three years. We are now looking at how to refine our support to industry by addressing these needs through our own activities, research and investment priorities.

As part of our strategic focus on the needs, this year's Campden BRI day exhibits will highlight three of the drivers that were identified in the report and demonstrate many of our activities that are helping to address the needs arising from them. These drivers are 'Safety', 'Quality and value', and 'Nutrition, health and well-being'. Through a mixture of exhibits and interactive demonstrations, we will outline how we are helping industry tackle the issues faced in these areas. Our extensive pilot plant and sensory facilities will be open to view and discuss with our experts - so that you can get a first-hand glimpse of the toolbox of expertise and facilities at your disposal.

The day attracts around 500 representatives from across the food and drink industry and is a great opportunity to speak to our experts, find out about our research and network with industry peers over a buffet lunch. I look forward to welcoming you.

For more information and to register to attend please visit www.campdenbri.co.uk/campdenbri-day.php

Steven Walker, Director General

Processing technologies

www.campdenbri.co.uk/processing

Enzymes as processing aids
Blog by Gary Tucker
www.campdenbri.co.uk/blog/campdenbri-blogs.php

Pulsed light processing
Case study by Craig Leadley
www.campdenbri.co.uk/case/pulsed-light-processing.php

Cold plasma
Video with introduction by Danny Bayliss
www.campdenbri.co.uk/videos/cold-plasma.php

Coefficient of friction testing video
www.campdenbri.co.uk/videos/friction

Pilot scale facilities
www.campdenbri.co.uk/services/pilot-plant-facilities.php

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Controlling viruses - new project

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Food borne viruses are a growing area of concern for the industry, and at present there is limited information on their management and control.

A new research project will investigate the survival and persistence of viruses on foods and in the environment, as well as assess the efficacy of food processes against viruses. This complements our new validated assay for the detection of hepatitis A and norovirus in soft fruits, salads and environmental swabs. The assay complies with the recent ISO technical standard ISO TS 15216:2013.

Virus-related foodborne illness is becoming a major issue, as highlighted by the recent outbreaks of hepatitis A in Italy and in the United States. Epidemiological data shows that norovirus is a large cause of infectious intestinal disease throughout the world. Evidence indicates that large outbreaks of norovirus have occurred due to contaminated foods such as soft fruit. Furthermore a 25% rise in the incidence of foods contaminated with viruses in Europe in 2014 was reported through the RASFF food and feeds safety alerts.

This new research is well-timed, as an update report on viruses in the food chain has just been published by the Advisory Committee for the Microbiological Safety of Food (ACMSF).

Hygienic design savings

- food manufacturers' and designers' needs

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Designing-in good hygiene can save significantly on running costs and help prevent problems. Correct hygienic design, maintenance and use of food production equipment is required to achieve operational (personnel and process safety) and hygienic (food safety) requirements. The risk of food contamination during production can be lowered significantly if correct steps are taken in the initial design and specification stages of equipment production.

Designers may not be fully conversant with the operational challenges facing food manufacturers, such as quality management systems, HACCP, hygiene procedures, and retailer requirements. Similarly, food manufacturers may not always consider the constraints faced by equipment suppliers, (e.g. cost pressures, operator safety concerns, and materials of construction constraints). They may not anticipate the effect that the processing environment may have on it, for example from humidity, fluctuating temperature and cleaning chemicals. Emma Maguire describes a typical example:

"Flaking paint in the open food area, which may have been caused by humid atmospheres, may be an immediate hazard to food. The company will need to ask itself: Why is the paint flaking? What paint should be used to replace it? What maintenance procedure should be put in place? How often does it need to be re-painted?

In this example, the food manufacturer is trying to fire-fight a problem that may have been averted with the correct specification when purchasing the equipment. In this scenario can either party be blamed? Perhaps better communication could facilitate a better final outcome."

We can assist you in areas related to equipment design, legislation, specifications and cleaning validation. Hear more at our seminar on 25 September. www.campdenbri.co.uk/production

feature

Oven validation - product quality and energy savings

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Bakery oven validation is vital for being able to consistently and reliably produce high quality products, and is at the heart of the continued success of a bakery business. We can help with knowledge of different ovens and the changes that will affect their performance, as Alex Turner explains:

"Bakery oven performance will change over time as deposits from the products build up on surfaces and physical damage occurs. Even identical ovens will operate at different performance levels as they age, and no two ovens will be set up the same. For example, comparison between the set point and achieved temperature during baking is important. There can be large differences in these temperatures. Core temperatures for yeasted products normally have to exceed 94°C for product structure formation. BRC accreditation requires that oven profiles give appropriate core temperatures for an appropriate amount of time.

We have access to a range of data logger types and temperature checking equipment, enabling us to conduct such tests for clients. Simple adjustments can make positive and significant changes to a finished product, which can be demonstrated as part of a development programme. Optimisation of ovens can save energy and costs too! "

See also our bakery oven energy reduction case study at www.campdenbri.co.uk/case-studies.php

Pasteurising surrogates - in a flash

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Our recently installed Armfield flash pasteuriser is enabling us to expand and improve our range of pilot plant trials to meet client needs, such as the effect of processing on pathogens in products. Stuart Ridgway explains:

"A study was carried out to design a set of thermal processing parameters to target naturally occurring pathogens using microbial surrogate technology - that is, harmless microorganisms that behave in a similar way to the pathogen of interest.

Thermal treatment parameters were first evaluated in a controlled laboratory environment with regards to the microbial lethality in a variety of low viscosity products inoculated with microbial surrogates. The established parameters were then programmed into the Armfield unit to apply the thermal process to the product range, to demonstrate the applicability of data obtained from the lab to pilot scale systems."

Snacks technology:

recent developments in cereal-based snacks

13-14 May 2015 www.campdenbri.co.uk/snacks

Food production machinery

Equipment suppliers may not always fully appreciate the operational challenges facing food manufacturers

25 September 2015 www.campdenbri.co.uk/production

Project reports

Managing ingredients in wheat tortillas

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An improved understanding of the functionality of raw ingredients in the final product will enable manufacturers to specify raw ingredients more accurately for particular applications. There is an increasingly wide range of cereal based products for which the ingredient specifications are not fully understood; this project is looking at their importance.

Wheat tortillas have recently been under the spotlight. Desirable characteristics are long shelf life (maintain flexibility for 2 weeks), opacity, puffiness and appearance (coloration/toast spots). The effect of varying the amount and type of starch and protein in a tortilla product on processing and final product quality was tested. The main findings were:

- Addition of pure starch affected dough rheology and altered tortilla performance.
- The effect of partial substitution of gluten with potato proteins varied with starch type.
- Potato protein had some functionality in dough and seemed to improve tortilla appearance.
- Reduction in tortilla firmness during shelf life might be possible with potato starch.

Improved awareness of ingredient functionality would inform appropriate tests to determine key functional properties pre-production and also management strategies for dealing with raw ingredients that do not meet the specification by modifying the ingredient and/or the process.
www.campdenbri.co.uk/ingredient

Evaluating packaging and product - together

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Packaging plays an essential role in conveying product expectation: a successful packaging design will enhance consumers' overall product experience and satisfaction. We now have a comprehensive set of tools to evaluate holistic product experience for you.

Techniques were applied to assess consumers' perception of packaging designs, and emotional associations with product experience. They also measured the coherence or dissonance between 'packaging evoked expectation' and actual product experience. The techniques included Napping® assessment, three-stage consumer testing (i.e. blind, expectation and informed test), satisfaction assessment, and an implicit association task.

These tools can be used to support your product development process from initial investigation of market needs, through concept development, to the evaluation of prototype or products with an integrated approach to the product and packaging.

knowledge

Training events

A full list of 2015 scheduled courses is available on our website *www.campdenbri.co.uk/training.php* or by requesting a booklet from training@campdenbri.co.uk +44(0)1386 842104

April 2015

14	BRC Standard Issue 7 Briefing Sessions
14	HACCP - foundation (level 2)
14-17	Safe production of heat preserved foods - the essentials (including principles of canning)
15	Documentation and design of quality systems
15-16	Food and drink labelling
20-24	FSSC 22000 Auditor/Lead Auditor course
21-22	An introduction to food law
21	Cooking process validation
21	HACCP - refresher
23	Innovation in soft and alcoholic drinks (seminar)
23	Sensory evaluation - an introduction
28-29	HACCP - intermediate (level 3)
28-29	Supplier quality assurance - foundation
29	Calculating meat content
29-1 May	Practical microbiology - specialist
30-1 May	HACCP auditing - intermediate

www.campdenbri.co.uk/training.php

Snacks technology challenges: conference

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Snacks are a popular component of the diet, addressing the needs of the modern way of life. The snack food sector is subject to the same pressures and challenges as the rest of the food industry, but is often put in the spotlight. This conference, on 13-14 May, will focus on the many different aspects associated with cereal-based snacks, including:

- Diet and health
- Ingredient issues, both novel ingredients and ways of reducing salt and sugar
- Food safety aspects - microorganism control and allergen management
- Extrusion technology and other processing options
- Texture and structure characterisation
- Packaging and shelf life

Register now for this major event.

Soft and alcoholic drinks innovation: seminar

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Retail shelves are stocked with an abundance of new beverage products, including recent launches of flavoured waters, energy drinks, low alcohol fruit drinks and no/low alcohol beers, lagers and ciders. This rapid innovation presents major technical challenges around formulation, stability, shelf life and labelling.

Together with public health policies and changing consumer tastes, keeping ahead of the competition is a significant challenge. This seminar, on 23 April, will present the latest information on current issues relating to the development of soft and low alcohol drinks, including topics such as:

- market trends
- processing and packaging technologies
- microbiological stability
- relevant legislation
- public health issues
- issues with using juices

Places will be limited, so register now!

Visit Member Zone

www.campdenbri.co.uk/memberzone.php

to access privileged member information and services

Latest research slashes the fat

Use of gel-in-oil emulsions has proved to be very effective in reducing fat in bakery products. Following successful work on cakes and biscuits, we looked at puff pastry and fillings:

Development of a reduced fat puff pastry (RD382)

When fat was replaced by an alginate gel-in-oil emulsion, not only did the total fat content decrease, the percentage of saturated fat in the formulation also decreased. Quality wasn't bad, either!

Development of reduced fat icings and fillings (RD383)

The use of similar alginate and fat emulsions in buttercream based icings as a direct replacement for butter led to a calculated fat reduction of 67%. An alginate/butter emulsion produced the most firm and viscous emulsion for use in a buttercream type icing. Replacement of butter with an alginate/butter emulsion in a traditional buttercream product produced an icing with a thick and firm consistency and a buttery flavour.

For a free electronic copy of these reports, send an e-mail to auto@campdenbri.co.uk with the subject line: **send RD382** or **send RD383** (as appropriate).

Campden BRI day - 3 June

Campden BRI Day will be on **Wednesday 3 June**. The theme is 'Driving innovation', based on the 'Innovation needs' document that we published recently (see www.campdenbri.co.uk/industry-needs.php). Exhibit zones will focus on three of the drivers arising from the needs consultation:

- Innovation for product safety
- Innovation for quality and value
- Innovation for nutrition and well-being

There will also be open areas presenting our processing and sensory capabilities - 'Your toolbox for innovation'.

The day also features the student Ecotrophelia competition, and the Annual Campden Lecture will be delivered this year by **Charles Wilson**, Chief Executive of Booker.

To register, visit www.campdenbri.co.uk/campdenbri-day.php

Keep up to date with research

www.campdenbri.co.uk/research/summary.php

Keep up to date with the breadth of our research by reading our Research Summary Sheets. These 2-page synopses are produced on a regular basis - with at least one being scheduled for each ongoing project each year. These projects directly benefit industry by providing our members with a competitive edge. They underpin the skills and knowledge needed to help industry innovate and resolve problems. Research Summary Sheets from the present back to 2003 are available on our website - and include all those covering research done in the last twelve months.

Welcome to new members

Campden BRI is delighted to welcome the following new members who joined recently:

Brighter Foods - manufacturer of cereal bars

Cybake - software developer of a product to help with FIC compliance

Henryson Foods International Ltd - importer and distributor of food products

Malawi Mangoes Operations Ltd - manufacturer of tropical fruit juice and puree

ProMinent Fluid Controls (UK) Ltd - specialist in chem-feed and water treatments

Qatar Aircraft Catering Company - airline catering company

Rich Products Corporation - manufacturer of a wide variety of food products

SMC Pneumatics (UK) Ltd - producer of automation control systems

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

While you're here

If you have a few spare moments when you visit our sites and would like to make the most of the location, there are 50 great ideas on our website:

www.campdenbri.co.uk/50thingscampden
www.campdenbri.co.uk/50thingsnutfield

Social media

Facebook - find out more about our history and our lighter side *www.facebook.com/campdenbripage*

Twitter - regular tweets to keep up to date with our latest news and activities *https://twitter.com/campdenbri*

YouTube - a range of videos providing an insight into the science and technology underpinning food and drink production *www.youtube.com/campdenbri*

LinkedIn - company updates providing our latest news *www.linkedin.com/company/campden-bri*

iTunes - subscribe to our podcasts

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