

# Product, processing and packaging innovations

**T**he Society of Dairy Technology's Spring Conference on Product, Process and Packaging Innovations for Dairy Applications, held on 9-10 May 2019, proved to be successful for a variety of reasons. The programme was topical and well balanced while the choice of venue was the MacDonald Hill Valley Hotel and Country Club, near Whitchurch in Shropshire, which provided an aesthetically attractive environment with ample accommodation and a geographically central location. However, irrespective of these factors, the single defining reason for the conference's success was its organisation – from conception to realisation – and credit for this goes to Marian Pusey, the executive director of the Society of Dairy Technology.

The conference was well attended with 80 delegates from a variety of countries in which dairy technology helps to underpin economies and food cultures, including the UK, Ireland, France, Germany, Denmark, Sweden and the US. The proceedings were chaired by Paul Bouchier, president of the Society, whose gentle Irish tones and good humour carried each day effortlessly. He ensured that each speaker was introduced with alacrity and that they kept to the programme's timing.

The opening presentation of day one was made by Oliver Bluring of Kantar. He provided a range of insights into market behaviour and trends, explaining that one



Tabletop exhibitors provided further insights into the industry at the conference

**The Society of Dairy Technology's Spring Conference, 9 and 10 May 2019 offered everything from clotting ratios to sustainable packaging.**

**Ralph Early reports from Shropshire in the UK**

in two NPD launches are detrimental to their category, harming overall category performance because they fail to accord with consumers' expectations. He elaborated how NPD does not necessarily need to be cutting edge but must satisfy consumers' needs. Bluring stated that there are uncertain times ahead for the grocery sector with growth declining over the last year as Brexit creates market uncertainty, but he highlighted potential for growth in premium dairy products which are both healthy and indulgent.

Dr John Tuohy, former president of the Society, gave an absorbing talk on the importance of process technologies in new product development. His wide-ranging presentation covered various technologies including the use of selective heat-treatments and membrane technologies to extend the shelf-life of milk as well as discussion of spreads, desserts and low-fat cheese developments. Dr Tuohy highlighted the value of whey to the food industry and finished with a review of the development of the famous liqueur, Bailey's Irish Cream.

Karl Kieffer, from Tetra Pak, discussed centrifugal separation and explained the need to improve the environmental status of milk processing by reducing energy and water consumption. He described how Tetra Pak's Encapt separator technology can reduce energy consumption by 40 per cent through operation in a vacuum to reduce air friction and use of the company's polynode technology separator discs to increase separation surface area.

Neil Andrews, supported by Aldo Galbusera, both of Sealed Air – the bubble wrap company among other things – discussed premium and sustainable



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packaging as a challenge for the cheese industry. The need for the packaging industry to engage with sustainability through innovation, such as reducing materials use and developing post-consumer recycled (PCR) materials, formed the basis of the presentation.

Mathieu Nicey of Amcor also focused on plastic packaging in a very informative session. He stated that while polyethylene and polypropylene are recyclable, challenges to recycling are presented by dark plastics, which NIR sorting systems cannot differentiate, and by aluminium which pollutes recycled materials. A key challenge for the industry is replacing polystyrene, which is not recyclable. Amcor is committed to moving from a linear packaging economy to a circular economy by 2025, when all of its products will be recyclable.





The future of dairy – this year's Eden students

Following the morning's presentations, the first day was concluded with delegates choosing to visit during the afternoon either the Müller Dairy in Telford or an on-farm clotted cream producer at Clotton, in Cheshire. During the evening the delegates enjoyed the social gathering at the conference dinner.

## Day Two

Day two began with Daryl Craven discussing Chr Hansen's role as a bio-sciences company and its cheese coagulant developments. He explained the importance of a high C/P (clotting to proteolysis) ratio as a measure of the performance and suitability of coagulants. Some coagulants can result in the loss of peptides in cheese whey due to cleaving both  $\alpha$ - and  $\beta$ -caseins, whereas proteolysis should concern only k-casein. Hansen's Chy-Max Supreme coagulant has been developed to increase the C/P ratio, thereby increasing yields – an extra 0.5 per cent in cheddar production – and decreasing  $\alpha$ - and  $\beta$ -casein cleavage, so avoiding bitterness in cheese due to the presence of peptides.

Dupont's Kristen Lauridsen held the attention of delegates by explaining current trends in fermented products and the factors influencing market evolution: clean label, organic, natural/GMO free, reduced sugar, sustainable and ethical production, and plant-based products.

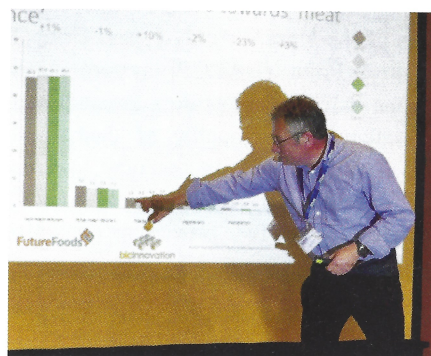
She explained that consumers want to make mindful food choices, with one in two consumers in the UK, US and Australia believing that products with fewer ingredients are more natural. Lauridsen offered a toolbox for design and development that includes novel starter cultures, the use of texturants, fruit preparations that modify the characteris-

tics of fermented products, and process technologies.

Corinna Faustmann of Ingredion also considered market behaviour and consumers' interest in clean labels, plant-based and healthy but indulgent products. Interestingly, she stated that clean label is not a priority for vegan consumers. Her presentation focused on the use of starches to modify the texture of dairy products, for instance in fat reduction. She explained that emulating the performance of milk protein is difficult, but that starches are available that can recreate dairy textures, mouthfeel and various physical behaviours in products such as Greek style yogurt and cheeses used as pizza toppings.

Dr Michael Rose of Aberystwyth University took the delegates back to the first principles in the modification of milk composition. He explained how the cow's rumen works and that the fat content of milk can be increased by feeding cows with fibre, but not starch.

The rumen is poorly adapted to fat so feeding oil will reduce milk's fat content. Milk protein is however formed from amino acids created by bacterial fermentation in the rumen, and by increasing



BIC Innovation's John Taylerson discussed growth in the plant-based drinks market

rumen efficiency milk protein levels can be increased.

BIC Innovation's John Taylerson discussed growth in the plant-based drinks market and considered the threat to the dairy industry. He explained that three in 10 savoury evening meals have no fish or meat and one billion meals a year in the UK are plant-based, which is 3.8 per cent of all savoury main meals. He noted key drivers now influencing consumers are concern for the environment, animal welfare and plastic packaging. But he sees opportunity for the dairy industry in the fact that milk is far healthier than plant-based products, being a complete food suitable for all stages of life, and something the industry should shout about.

Tracey Sanderson's presentation revealed the fascinating work undertaken by her company, Sensory Dimensions, and its new product development (NPD) support services. She described how qualitative and quantitative methods in sensory science reveal that how consumers feel affects their choices and, conversely, that food products themselves affect the way consumers feel, with both phenomena being of instrumental value to guiding product development.

Such understanding, as well as that derived from ethnographic studies of how consumers use food products, can enhance NPD project design and, consequently, the outcomes of product innovation activities.

The final speaker, Ralph Early, provided a brief overview of food ethics explaining that ethical evaluation needs to be built into each stage of the NPD process if dairy companies are to develop ethical and ecologically sustainable businesses.

The SDT's Spring Conference 2019 generated a valuable educational forum with presentations that held the attention of delegates. Significantly, and in keeping with the aims of the Society, it brought dairy industry specialists together to learn from each other, so to reinforce understanding of the importance of the industry to consumers and specifically the key role that dairy technology plays in underpinning the food marketplace. **Dii**

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