

Formulate seminars 2017 – an Overview

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Once again, the SCS organised Formulate at the Ricoh Arena, Coventry, and the author attended many of the Inspire and Inform presentations. Following is an overview of those presentations.

With such close ties between the British cosmetic industry and the EU it is not surprising that the presentation on Brexit and the Cosmetics Industry by Olivia Santoni, **CTPA**, was given to a packed lecture theatre. The impact of Brexit on the cosmetics industry and its supply chain was discussed and suggestions were made about what can and should be done now to ensure business continuity when the UK finally withdraws. To export to the EU, British cosmetic products will need to comply with EU regulations and this could mean having a responsible person residing in Continental Europe. Key points were that no decisions had been reached between the UK Government and the EU and that disentangling the UK from EU Cosmetic Regulations would take more than two years.

The subject of the presentation by Lauren Kempen and Paul Sutcliffe, **Surfachem**, was trends in beauty and personal care and the technologies that make them possible and this was a reoccurring theme throughout the two days of presentations. The Surfachem presentation focused on analysis of the personal care and cosmetics market to gain an insight into the most influential new trends. Formulation concepts were provided for each trend, highlighting the latest and most innovative ingredient technologies available with a technical description of the key materials within each concept and the features they contribute. It appears that nearly 2/3rds of the adult British population lead an active lifestyle. Surfachem claims this leads to the need for sweat and wear resistant cosmetics and for protection against UV radiation and pollution, but products should also be convenient to use and impart an overall feeling of health and well-being. A second trend discussed in the Surfachem presentation was that consumers can now Google the ingredients in their beauty products and are looking for honesty in product claims. This is causing a reduction in obfuscation and unnecessary ingredients appearing in products and therefore to less cost.

Helen Hill, **Azelis**, discussed adding value to cosmetic products by following the trends in formulations and raw materials in a changing world. Consumers are increasingly socially and environmentally aware and have high expectations. They are looking to reduce and refine their use of declining resources, use sustainable traceable natural ingredients and make a stand for the social issues that are important to them. With innovative technologies and clever formulations, it's possible to move with the times and future proof formulations, said Hill. The suggestions were more pollution protection, novel textures and unisex products and to use innovative ideas from food production, including fermentation. Hill said in a world suffering from water poverty formulators should be looking at technologies that have a reduced reliance on water, either in the formulation or in their end use and Hill suggested products and the ingredients needed to make them that addressed each of these concerns.

Water scarcity also concerned Felix Wilson, **Aston Chemicals**, who suggested that many brands are now offering anhydrous products or items with reduced water content such as non-rinse off or low foaming cleansers and there is also a focus on oils and water-free sheet masks. One example given by Wilson were cleansing powders comprising a mixture of powdered surfactants and natural extracts. The powder format saves water and also the energy cost of transporting them is significantly less. The title of Wilson's presentation was The Water Paradox, which is that cosmetics with a high-water content are also gaining popularity. Water is associated with natural and is synonymous with hydration and purification and using water in formulations has the advantage of being cheap. It gives more options in relation to texture and feel, solubilises a vast range of materials due to its unique chemistry and it can improve skin penetration and absorption of active ingredients.

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Atmospheric pollution, its effects on skin and the use of ingredients to mitigate its effects is also seen as a trend in skin care. A presentation about novel approaches to environmental protection by Ruth Borner, **Lehvoss**, described how air pollution is a major environmental health risk with 92% of the world's population living in polluted areas. Its effects on the skin include damage to the skin barrier, dehydration, inflammation and pigmentation, dark spots and premature skin ageing. It also causes an imbalanced microbiome, or skin dysbiosis, which is associated with many diseases, including psoriasis, eczema, contact dermatitis and rosacea. Borner showed how pollution triggers pro-inflammatory responses, activates aryl hydrocarbon receptors and modulates endogenous cell defences against reactive oxygen species (ROS). Urbalys by **Greentech** is suggested as an ingredient to combat the effects of pollution. It is an extract of *Schinandra chinensis* berries with antioxidant and anti-inflammatory properties. It increases epidermal thickness and improves the skin barrier in response to pollutants, thereby limiting skin penetration.

The other major cause of skin damage is solar radiation and Olivier Garnier, **Laboratories Expanscience**, explained how molecules from wheat germ oil combined with lupin oil can protect skin cells DNA and skin cell membranes against its harmful effects. Trade named α -Lupaline, the combination of *Lupinus albus* seed oil and *Triticum vulgare* (wheat) germ oil unsaponifiables inhibits UV and IR-induced ROS release and helps to preserve skin elasticity. According to Stacey Moore, **DSM**, while 46% of skin damage is caused by solar radiation 66% is due to lifestyle and 38% the environment [She is not good at sums]. Lifestyle includes the effects of blue light emitted from smart phones, tablets, and computers and on average, people in the developed world are exposed to it for more than three hours per day. DSM has introduced Pepha-Age, an extract of the freshwater microalgae, *Scenedesmus rubescens*. It contains a unique mixture of amino acids, vitamins (B3), algal saccharides and minerals to stimulate the skin's own defence against UV and blue light.

Working with computers was also named as one of the causes of skin damage in the eye area by John Lofthouse in his presentation about new actives and concepts from **CLR Berlin**. The skin under the eyes is particularly thin and translucent with many capillary blood vessels, lymph vessels and muscles but is prone to sluggish blood flow, is sensitive and susceptible to inflammation. JevenEye CLR is a mixture of extracts from *Hieracium pilosella* (Hawkweed) and *Bellis perennis* (Daisy) flower that decreases melanin deposition and increases cellular metabolic activity to visibly reduce the appearance of dark circles by a reduction in colour and surface area.

A presentation that the author found particularly fascinating was that by Arnita Wofford, **Univar**, about staying ahead of the curve in beauty evolution. Wofford described how technology was challenging traditional innovation and creation of beauty offerings and went into the realm of augmented reality, which enables users to try on a range of beauty products digitally in real time using virtual make-up. Virtual artistry makes it possible to try far-out colours and patterns on the face and virtual reality transports shoppers to experience exotic locations such as a Moroccan spa. Wofford predicted that by 2020, 100 million consumers would use augmented reality to shop and the shopping experience would take consumers down a shopping mall, past interactive shop windows and into the shops where personalised make-up and skin care products would be offered to the shopper. The author wonders how much the user will be exposed to blue light while experiencing this new technology?

Going natural is hardly a new trend but it remains as strong as ever and almost every new ingredient has some claim to being of natural origin. Trevor Barker, **Cornelius**, gave a presentation to help formulators navigate their way through the various organisations that offer to certificate "natural" ingredients and the cosmetic compositions made from them. Cosmos brought together the

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cosmetics arm of the Soil Association and Ecocert and is thought to be the most widely recognised standard for natural and organic materials in the UK. It has a pragmatic approach to the subject whereas Natrue is far more onerous if trying to comply to its standards. Barker summarised Fairtrade's vision as a world in which all producers can enjoy secure, sustainable livelihoods, fulfil their potential and decide on their future. Nordic Swan aims for "lowest environmental impact" to include biodegradability, bioaccumulability, aquatic toxicity and sustainability. Barker also mentioned RSPO, Halal cosmetics and "Free From" products and CSR (Corporate Social Responsibility). CSR is a business approach that contributes to sustainable development by delivering economic, social and environmental benefits for all stakeholders.

Making natural products is a company decision but regulations governing the manufacture and sale of cosmetic products apply to every company wishing to enter a particular market place. Grace Abamba and Neil Coole, **BRC Global Standards**, discussed how to ensure products are manufactured and delivered intact, safe and legal and with the expected quality. They described brand reputation and compliance and the importance of supply chain audits and introduced the BRC Global Standards Certification Scheme. Stephen Kirk, **SK-CRS** said cosmetovigilance is a method of ensuring that products are designed and manufactured to high standards of cosmetic safety and is arguably one of the most important attributes in the lifecycle management of cosmetic products. Cosmetovigilance is a mandatory requirement in the European cosmetic regulatory framework and the concept can also provide brand owners with valuable insights into consumer perceptions of their cosmetic products.

Marketing departments make claims for cosmetic products; the formulator has to create compositions that comply with such claims and somehow the claims have to be substantiated. There were several presentations regarding claims substantiation including one by Stewart Long, **Cutest**, who said that it was important to prove consumer relevant claims, to avoid generating claims data that does not differentiate products and to work within the regulatory guidelines whilst maximizing product impact. This was the second of two presentations by Long; the other asked where next for claim substantiation testing and advised thinking beyond lines and wrinkles to meet the needs of future consumers. Interestingly, while Europeans are primarily interested in wrinkle-reduction consumers in the Far East look more at overall skin health and require imaging and other technologies that quantitate aspects such as skin radiance and translucency. Also tested are evenness of skin tone and holistic visual measurements that link to consumer satisfaction of product performance.

Hair was under the microscope in the presentation by Liam Henry, **Croda**, who said that everything from bleaching and colouring to everyday combing and styling imparts damage onto the hair fibre and it is necessary to provide protection to ensure that a short-term look doesn't have longer-term implications. The damage was illustrated by photomicrographs that showed abrasion and lifting, longitudinal cracking and bulges and craters in the cuticle and hair fibre breakage. Approximately 90% of the hair is comprised of protein, but the remaining components are also of importance; pigments give rise to the colour of the hair and naturally produced lipids present on the surface and within the fibre structure provide lubrication and flexibility. By understanding the causes of hair damage, it is possible to target them and protect the hair. For example, chemical dyes and bleaches weaken hair fibres due to bond breakage in the cortex and by damaging the surface of the cuticle. Reactive products, such as those in the CrodaPlex regime, help to minimise damage caused by these treatments. Straightening irons produce temperatures in excess of 180^o C, which causes surface cuticles to lift. Using a protective polymer such as MiruStyle X-HP can prevent this happening and the hair is kept in better condition.

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Stephanie Neplaz, **Solvay**, was also concerned about hair damage and particularly the problem of split ends caused by mechanical, chemical and thermal treatments. Neplaz presented Polycare Split Therapy, described as a durable cure for split ends. It is vegetable-based, easy to process and compatible with shampoo, conditioners and serums. David Popplewell, **Ashland**, offered FiberHance bm solution as a molecule designed to penetrate the hair fibre to provide superior strengthening in shampoos and other hair care products. This molecule is based on glucoside chemistry and creates new ionic and hydrogen bonds inside hair fibres, to strengthen with each wash and give back natural manageability. It is compatible with colour treatment systems and strengthens hair during and after colouring and repairs hair fibres that have been damaged by chemical treatments.

Safic Alcan markets natural thickeners based on xanthan gum, guar gum, carob gum, alginates and carrageenan and understanding the thickening, suspending, and gelling properties of these natural texturizers was the subject of the presentation by Olivier Paquette. Xanthan gum is a polysaccharide prepared by bio-fermentation of sugars by bacterium *Xanthomonas campestris* and is available in various grades suitable for cold processing. It shows high stability in extreme conditions of pH and temperature with a high degree of pseudoplasticity. It works in synergy with other polysaccharides but is sensitive to cationic surfactants. Guar gum is galactomannan extracted from *Cyamopsis tetragonolobus* seeds and is a thickening agent with pseudo-plastic properties. Carob gum [INCI: *Ceratonia siliqua* gum] is a galactomannan used as a thickener and gelling agent and to prepare a wide range of textures. Paquette also explained the difference between iota and kappa carrageenan; the former forms smooth, transparent and elastic gels and kappa provides strong, translucent and brittle ones.

Controlling rheology was also the subject of the talk by Silke Valentin-Burzynski, **Elementis**, who said that developing innovative and elegant textures is key to meeting consumer needs and market trends. Valentin-Burzynski introduced Bentone Luxe WS as a rheological innovation specifically developed for colour cosmetics and personal care for the manufacture of W/Si and W/O emulsions with shear thinning behaviour. Bentone Luxe WS [INCI: Cyclopentasiloxane, PEG-10 dimethicone, disteardimonium hectorite] is recommended as an emulsifier and suspending agent and for improving the texture and feel of compositions. It allows the formulation of very light, thin emulsions with good droplet dispersion while avoiding a sticky film after application. Valentin-Burzynski also presented Bentone Luxe WO [INCI: Polyglyceryl-2 Isostearate, polyglyceryl-6 polyricinoleate, disteardimonium hectorite] for emulsification and rheology control for W/O systems and the preparation of elegant textures with thixotropic flow. These materials were the subject of a laboratory demonstration in the Create section of Formulate.

If the internal phase of an emulsion exceeds 74% it is known as a high internal phase emulsion or HIPE and instead of forming spherical droplets the internal phase forms close packed polygons. Caroline Recardo, **Alchemy Ingredients**, described HIPEgel Aqua [INCI: Isopropyl palmitate, polyglyceryl-3 oleate, coco-caprylate/caprates, sorbitan sesquioleate] as an emulsifier system capable of forming stable HIPE emulsions with up to 95% internal phase. No homogeniser is required, and the resultant compositions are thick rich creams with a very light after-feel on application. Another emulsifying system, Olivem 2020 [INCI: Ethylhexyl olivate, sodium acrylates copolymer, polyglyceryl-4 olivate] was introduced by Simona Morlacchi, **Hallstar**, who described it as a next generation cold process emulsifier that combines olive oil chemistry with both excellent emulsification performance and natural emollient functionality. It provides cushioning and spreadable performance and its biomimetic origin provides high compatibility with the hydro-lipidic skin and increases skin hydration, said Morlacchi.

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There were many other presentations designed to inform and inspire delegates to create new and innovative products but the practice of running them concurrently limited the number that the author could attend.

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