

## Formulate Seminars

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*Formulate is an annual event held in Britain for the benefit of cosmetic formulators and others involved in the industry. It is a chance for suppliers to exhibit their ingredients and to present them to delegates in a series of short presentations. Unfortunately the presentations run concurrently so what follows is an overview of those that the author was able to attend.*

Surfactants and the move away from ethoxylates and sulphates continues to gain momentum and Tony Gough, **Innospec**, discussed the driving forces behind this movement and the technical and cost challenges that it presents. He then brought delegates up to date by describing advances in formulating high performance sulfate-free cleansing products. Finally Gough described Iselux [INCI: Acyl methyl isethionates] as a material developed by **Innospec** that overcomes the difficulties of foam quality and product thickening, that is mild on the skin and is cost effective.

There was a presentation about the mechanisms governing deposition of conditioning agents on hair from shampoo given by Emmanuel Everaert, **Ashland**. It appears that to be effective the conditioning agent needs to flocculate from solution during shampoo application and dilution on the hair. Everaert compared deposition of traditional conditioning polymers with N-DurHance A-1000 Conditioning Polymer [INCI: Polyacrylamidopropyltrimonium chloride] from **Ashland** that is specifically recommended to be used in hair conditioners. It is highly substantive to hair, providing long-lasting conditioning throughout multiple washes.

There is a trend towards the use of pure oils such as argan oil and oil mixtures instead of emulsions in skin and hair care and for sun care. However the oily sensory is not suited to everyone and the application can be messy.

Adam Young and James Humphrey, **Croda**, gave a dual presentation about the use of Oleocraft polyamide polymers for building structured oils. These oil-rheology modifying polymers can be used to provide viscosity from a thickened oil to a gel and even a solid stick structure. By giving structure to the oils the application is easier and it is possible to create novel formulations that are crystal clear. The film forming properties of OleoCraft polymers work by acting on top of the epidermis as a protective layer of a non-water soluble cohesive film. These properties help deliver long-lasting and wear-resistant benefits along with a boost in SPF performance and water-resistance in sun care.

**BASF** claimed that for facial oils to gain acceptance among consumers these products must be non-greasy and absorb easily. In a presentation by Andrea Tomlinson about the evolution of natural skin care on behalf of **BASF** she recommended coco-caprylate, caprylyl-caprylate/caprinate and a mixture of undecane and tridecane as efficient alternatives to volatile silicones and petrochemicals. They are light and non-greasy and accepted as natural by Cosmos.

Tomlinson also described natural emulsifiers including those based on APGs such as a mixture of cetaryl glucoside and cetaryl alcohol that can produce a biomimetic lamellar cream with a structure similar to skin lipids. Eumulgin VL-75 from **BASF** is an emulsifier comprising a mixture of lauryl glucoside, polyglyceryl-2 dipolyhydroxystearate and glycerin that provides shear thinning rheology for easy spreading, light skin feel and sprayable formulations.

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Formulating with natural emulsifiers was also the subject of Caroline Recardo's talk on behalf of **Alfacos**. After a brief introduction to the different types of emulsion and emulsifier Recardo described chemically and physically processed emulsifiers starting with natural materials. Favoured were sucrose esters, polyglycerol esters and Quillaja extract, which were more fully described. Thickening or stabilising natural-based emulsions could be achieved using xanthan and other natural gums, cellulose based thickeners, modified starch, and bentonites.

Providing texture to products was a theme running through many of the presentations and discussed on exhibitors stands. Lorna Radford, **Aston Chemicals**, discussed creating innovative formulations with novel textures inspired by South Korea, which was the source of BB and CC products. Radford took current products and created similar effects; for example a powder foundation with a really unique bouncy texture that feels silky and smooth, and a moisturiser with texture halfway between a gel and a cream that refreshes and invigorates. Radford fully described the formulation and mixing of these products and the materials required to make them.

Jennifer Cargil, **Alfa Chemicals** also took oils as the basis of a number of textural products using Sucragel as the thickening agent, Sucragel can gel almost any oily ingredient into a stable oily gel, said Cargil. The oil is held in place in a stable microemulsion and when water is added the oily gel emulsifies to create leave on and wash off products. Cargil also introduced Sucraclear as a natural alternative to carbomers. This Ecocertified material is a synergistic mixture of cellulose, carrageenan and locust bean gum that creates a thick clear gel with water without the need for neutralisation. It can also be used to thicken surfactant systems of all types and it provides shear thinning rheology with good suspending properties.

Trevor Barker, **Cornelius**, invited delegates to come and have another feel with reference to a number of quirky products with unique differences in texture. Ev Seus, **Symrise**, hosted a formulation Masterclass on textures and skin feel and Ecosmooth Delight was offered as a new sensorial enhancer by **Dow**. There were also presentations from **Momentive**, **Innospec and IMCD** about silicones and the special feel and unique properties that these can impart to cosmetic products.

Rheology was the subject of the interactive Masterclass given by Bernice Ridley, **Croda**, who said that it's not just about thickening, it's about delivering effects to the consumer. Ridley went on to demonstrate the properties of various rheology modifiers from **Croda** including ViscOptima and VisCaress liquid dispersion polymers and Volarest F, which can be used to create a sprayable gel. Rheology modification is used to create stable emulsions containing pigments and Florence Pecqueries, **Lubrizon**, recommended Carbopol Aqua-SF-OS polymer for this application.

**Revolymmer (UK) Ltd.** is a technology company that designs polymers tailored to their intended application and examples were described by Tom Castle. Revcare Skin Sense is a multifunctional polymer designed to impart moisturising properties to skin care products but it is also a film former that provides emolliency and is shown to improve fragrance retention and the substantivity of actives to skin. Test results to support these claims were shown before Castle described his company's encapsulation technology. **Revolymmer** also explores

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natural polymers and delegates were shown the curl retention properties of Revcare Natural Effects.

**Formulate** provides suppliers with the opportunity to showcase its latest materials; in **Greentech**'s case this was Probiophyte Fresh, a Lactococcus ferment extract designed to counteract axillary odour by inhibiting the activity of Corynebacterium that break down odourless long-chain fatty acids into short-chain versions, which are volatile and responsible for axillary odour. It has no effect against staphylococcus, which has a beneficial effect by inhibiting the growth of pathogenic organisms.

Emmanuelle Costi, **Exsymol** introduced Arct'Alg, an extract of Chondrus crispus, a red alga found in Arctic regions that survives under extreme conditions, made possible by its content of the peptide, Citrullyl-arginine. L-arginine is source of energy capable of optimising different metabolic reactions such as regeneration and lipolysis. L-citrulline is a natural moisturising factor (NMF) and it reinforces the skin's barrier function. Exsymol grows the seaweed under controlled conditions in an Arctic biotope and harvests it when the peptide content is at its maximum. Costi showed the results of in-vitro and in-vivo testing, which demonstrated its moisturising properties and beneficial effects on the skin's barrier function, luminosity and radiance.

**Principium** is a Swiss company specialising in providing active ingredients created using fermentation technology. It claims that research carried out on its actives demonstrates higher and more refined results by adapting the signals generated by their local microenvironment to the cells function. Biological markers are naturally occurring molecules and changes caused by application of personal care products are measured by **Intertek** as a proof of claim.

Other presentations about natural actives included those given by Barbara Brockway, **IMCD**, on bud therapy and also a group of materials trade-named Cosme-phytaxis; Irina Deloire, **Southern Cross Botanicals**, who described the rich biodiversity of Australian flora; Kathryn McNeil, **Croda**, who gave a talk on cosmetic applications of superfoods and Miguel Cabello, **Lipotec**, who introduced Acti'gym as a marine ingredient that helped tone the body.

Magali Borel of **Lucas Meyer** described means of enhancing active ingredient efficacy using novel phospholipid technology. Phospholipids are polar lipids with a hydrophilic head and two lipophilic tails and this bipolarity is responsible for their emulsifying properties. They are restructuring, repairing and soothing agents; reduce TEWL and increase moisture levels in the skin. Their high bio-affinity with stratum corneum induces optimised penetration and bioavailability of active ingredients.

**BASF** introduced its Beauty Box concept; six different formulations for a range of applications, each of which comprises selected high-performance ingredients. This included a formulation for a sun protection product for wet skin that rids the skin's surface of water, does not feel greasy and leaves no white marks or residues on the skin or clothes.

Suncare is always a topic of interest with formulators; Nicolas Marjorei, **Stearine Dubois**, discussed an investigation into finding the optimum solubilisers for four oil-soluble UV filters. Those selected were diisopropyl sebacate, propanediol dicaprylate and C12-15 alkyl benzoate, all of which are available from **Stearine Dubois**.

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When a cosmetic formulation is complete it needs to be stability tested and making sense of stability testing was the subject of the presentation by David Clarke of **Emsworth Stability**. Clarke discussed the requirements related to safety and stability outlined in the Cosmetic Regulations and the actual purpose of stability testing; including definitions and the various tests that can be conducted. Clarke said that not all tests are applicable to all types of cosmetics and showed how the information obtained can be interpreted into data regarding the durability of the product.

There were many other presentations of interest to formulating chemists but time and programmes running concurrently precluded my attendance at all of them.

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