



Formulation Science and Technology Group Newsletter

CALENDER OF FORTHCOMING EVENTS 2011

Molecular Interactions in Biopharmaceutical Formulations, October 18th 2011, GSK House (Collaboration with the APS) www.mibio2011.org

Secrets of Formulation III, 16 Nov 2011, London www.formulation.org.uk

Powder Flow, 6 December 2011, London www.powderflow2011.com

CALENDER OF FORTHCOMING EVENTS 2012

NanoFormulation2012, 28 May - 1 June 2012, Barcelona

For further information visit:
www.formulation.org.uk

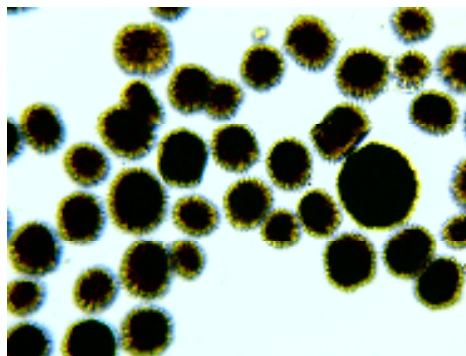
Tools for Sustainable Formulation - Black and Green II by Simon Gibbon

The FSTG held its second Black and Green conference in York, where 50 people enjoyed a day of sustainable formulation, aided by the Intelligent Formulation workshop on the practicalities of carbon footprinting. The day was arranged as two sessions of lectures split by lunch and the workshop. The meeting was held at the National Science Learning Centre in York, which aided the networking opportunities with refreshments and lunch in the airy light central space within the centre.

Simon Gibbon from AkzoNobel kicked off the day by highlighting the challenges which face the formulating industries, recapping how FSTG's previous conference Black and Green I had focused on the pressures both regulatory and consumer, given examples of novel sustainable ingredients, formulations and approaches, which are built on in Black and Green II. Simon suggested that the 1987 Brundtland Commission Report definition of Sustainable Development is a good model for a definition of Sustainable Formulation as "formulation that meets the needs of the present without compromising the ability of future generations to meet their own needs." Many of the talks echoed this theme.

Simon Breeden from the University of York Green Chemistry Group explained how the group was applying green chemistry to supply key ingredients for sustainable formulations, showing how the group has been using renewable raw materials

combined with microwave chemistry, pyrolysis and super critical carbon dioxide to make new materials, for example using starch to make microporous materials that are replacement for non-sustainable ingredients. It was interesting how an understanding of the whole formulation was used to drive the green chemistry and thus enable the production of a sustainable formulation, rather than just improving one component which would be the case if a drop in replacement approach had been taken.



Chris Pask from DyeCat in collaboration with the University of Leeds has developed a range of dyes based on natural products which are able to effectively dye fibres based on polylactic acid (PLA) and hair. PLA is a fully biodegradable polymer and the use of DyeCat dyes allows the fabrics produced to be composted, without concern over the toxicity caused by the use of synthetic dyes. The natural dyes produced by DyeCat for hair, show none of the potential toxicity issues which can be present with synthetic dyes.

Thought for the Month: "You cannot control what happens to you, but you can control your attitude towards what happens to you, and in that, you will be mastering change rather than allowing it to master you"
Brian Tracy

Become a Member:

<http://www.formulation.org.uk>

Member Focus

FSTG Student Bursary Scheme

We want YOU to tell us about yourselves in this section– if you'd like to take part and you have anything particularly exciting to tell us contact me, Lyn Daintree on our website

www.formulation.org.uk/contacts.html

Organization:

Job title:

FSTG member for:

Research interests:

The **Gordon J. Tiddy bursary** is an award made for the purpose of assisting in travel to conferences in the UK and overseas. Bursaries are provided solely to offset the costs of travel and accommodation and are normally limited to a maximum of £500. The bursary scheme does not cover meetings organized wholly by the FSTG within the UK, for which alternative grant or discount schemes may be organized by the meeting committee as it sees appropriate.

Applicant Eligibility: Applications may be made by any FSTG member, and will be considered on the basis of merit and need. Applicants must be members of at least six months standing and must not have already received an FSTG travel bursary in the previous 2 years.

Application Process: Applications must be made online using the form on the FSTG website (www.formulation.org.uk) and will be considered by the review panel (the officers of the FSTG) on an *ad hoc* basis; there are no fixed application deadlines. Applicants' attention is drawn to the requirements detailed in the notes on the website by which applications are bound.

Some conditions may be waived at the discretion of the review panel, and applicants are always encouraged to contact the current secretary or chairman of the FSTG for advice. All awards are made at the discretion of the review panel whose decisions are final and binding.

Tools for Sustainable Formulation cont.—Black and Green II cont.

AkzoNobel have developed a new sustainable chelate glutamic acid-N,N-diacetic acid (GLDA) derived from sugar beet waste produced by a biochemical which is fully biodegradable. Tony Minshull explained how this overcomes many of the issues seen with the currently used chelates, while maintaining the performance of formulated washing products

The workshop on Carbon Footprinting hosted by Jim Bullock from Intelligent Formulation took the group through the experiences of a couple of companies, explained the new CCalc tool and concluded with an exercise to improve the sustainability of a range of formulated consumer products. The small company perspective was explained by Brian Watt from Innospec, showing how different markets make substantial demands on new ingredients making introduction potentially cost prohibitive, sustainable additives for biofuels are a current requirement due to the increasing ethanol content resulting in more severe corrosion challenges, but sustainable additives for personal care products are more challenging due to the amount of information required outweighing the benefits sustainability brings. For GlaxoSmithKline the ratio between kg of active pharmaceutical intermediate produced and the kgs of raw materials required is a key sustainability measure – mass efficiency, Richard Henderson explained how concentrating on decreasing solvent use and increasing the efficiency of reactions drives the process development from pre-clinical to full commercialization. Mike Pitts from Chemistry Innovation demonstrated the use of the CCalc tool to calculate the carbon footprint of his evening meal – lasagna – this was a nice example of how choices of ingredients have a direct impact on carbon footprint and how through their choices formulators can drive sustainability, this was backed up a more serious example based on paint formulation. CCalc is able to give a rapid appraisal of carbon footprint for a diverse range of products as it includes a substantial database of carbon values for a wide range of raw materials. The workshop was rounded off with a fun exercise as the attendees were split into teams, each team had to produce a 3 minute presentation on how to improve the sustainability of a range of consumer formulation products from washing power to sun cream, using a flip chart, example products and magazine pictures. The winning team walked away with a large collection of Green and Black Chocolate bars.

A very practical example of the use of carbon footprinting in consumer products was provided by Phil Taylor from ICI Dulux (AkzoNobel Paints). Dulux have a vision that “Our innovative products and services will create sustainable value by systematically reducing the ecological footprint of the whole-life decorating process/cycle and making a real and positive difference to the environment and the well-being of people’s lives, communities and their surroundings.”



Tools for Sustainable Formulation cont.—Black and Green II cont.

To demonstrate that they are moving towards this vision, they have developed with Forum for the Future an Environmental Impact Analyser, which calculates the carbon dioxide released, waste produced and water used in the production and use of a fully formulated paint. This tool is both used to demonstrate the improved sustainability of new paints, but also by AkzoNobel paint scientists and formulators to direct the development of sustainable paints.

Geoff MacKey gave a strategic overview of BASF's approach to sustainability. BASF see that you need to balance society, ecology and economy in order to run a successful business. BASF do this at 3 levels, taking a base strategic approach, making sure that BASF actually walks the talk and is transparent in reporting what it is doing. So BASF's large strategic assets follow best chemical engineering practice, being highly integrated, the waste from one process is the feedstock of another, exothermic reactions are used to drive endothermic reactions. BASF concentrates on the true impact, not the perceived impact of products it produces and provides ingredients to, communicating its actions fully and taking pride in its ranking on indices such as Dow Jones sustainability index, FTSE4Good etc..

Eddie Owen from GlaxoSmithKline has developed a benchmarking tool to accurately calculate the cost of cleaning between chemical batches which is then able to direct material and process choices to minimize the cost in terms of energy, waste and money that a given product requires. Reducing this cost significantly improves the sustainability of the formulations produced. To produce such a tool has required the development of a full computational fluid dynamics model by University of Birmingham to be able to model the complex cleaning process.

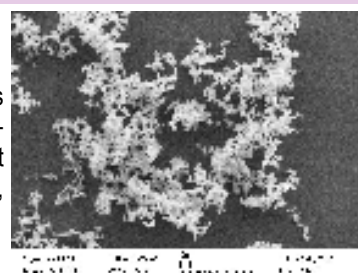
Edward Lester explained how Promethean Particles using a continuous hydro-/solvo-thermal microfluidic synthesis route developed by the University of Nottingham is able to manufacture dispersed, formulation, high quality nanomaterials - (g' s - kg' s - tn' s/annum scale). The approach gives very accurate control over chemistry, particle size, particle size distribution as well as morphology, allows formulated particles to be made by coating or capping particles ready for use and gives easy scale-up without change in properties.

All the presentations are available on the FSTG website – www.formulation.org.uk.

Forthcoming conferences

Molecular Interactions in Biopharmaceutical Formulations, October 18th 2011, GSK House (Collaboration with the APS), UK

This one day event is being developed jointly with the Association of Pharmaceutical Scientists will be of interest to formulation scientist working in the field of understanding molecular interactions of biomolecular formulations whilst the primary focus on the pharmaceutical scientist such knowledge is also applicable to other industrial sectors such as cosmetic, personal care, agrochemical etc



Secrets of Formulation III, 16 Nov 2011, London, UK

Designing colloidal formulations is an exceptionally complex process that requires a combination of scientific knowledge, experimental skill, experience, imagination and enthusiasm. Combining these with the correct inspiration can produce innovative colloidal systems and solutions to problems. We invite you to participate in SOF-III where our excellent line up of speakers will introduce to you the latest science, show how this can be used to create innovative colloidal systems and give you new knowledge, ideas and inspiration to take away with you.

Powder Flow, 6th December 2011, London, UK

This one day program will journey through the latest, most up-to-date knowledge and experience on powder flow measurement, building on Physical Chemistry, Chemical Engineering and Colloid knowledge to control, regulate and modify powder flow.

Disclaimer: The views presented in this newsletter do not represent those of the collective memberships of either the RSC or FSTG or individual members. Unless otherwise stated, the views solely represent those of the authors.