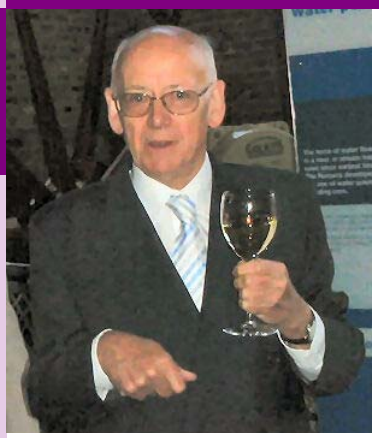
July 2009 Issue 7

Formulation Science and Technology Group Newsletter

Gordon Tiddy—A Lifetime in Formulation Science Review



On May 7th 2009, the FSTG held a one day conference and dinner in honour of Professor Gordon Tiddy for his lifetime achievements in the field of formulation science. The Manchester University Professor, has been and continues to be a prolific figure head for formulation and is an expert on surfactant phase behaviour and liquid crystals. Gordon spent much of his career at Unilever Research where Patrick Warren, one of the speakers at the meeting, informed the delegates that Gordon is the author of Unilever's most cited published research paper.

The meeting, aptly named 'Gordon Tiddy – A lifetime in Formulation Science', was a resounding success comprising 11 oral presentations and over 30 posters, covering fundamentals and recent advances made in formulation science, or as Gordon remarked "B#!"%y marvellous, I'm lost for words. Is that my pint?". The conference was well attended, by over 130 delegates and featured talks from world experts in their fields including Robert Lochhead, Hakan Wennerstrom, Gilbert Schorsch, John Seddon, Patrick Warren, Mike Anderson, Helen Gleeson, John Lydon, Roger Davey, and Unilever old timers Gordon Tiddy and Peter Garrett. Topics ranged from high throughput to foams and included exciting novel research interspersed with tall tales of Gordon's past. Gordon himself presented a sensational theory encountered by all, new to several, "the corner stone of all important research", termed the NBC* theory, whilst also imparting years of wisdom in his "terminology especially reserved for senior managers". The presentation caused uproar in the audience, which had been slightly comatose following the highly intellectual morning session. The presentations ended and the wine reception began, kindly sponsored by Syngenta. To everybody's delight the flow of alcohol had begun and the planet train, which once raced Stephenson's rocket, was pulling a head of steam. All passengers alighted at the Power Hall and with wine uptake nearing saturation, the finer points of formulation science were discussed over spinning wheels and flying hammers. The evening ended with an excellent celebratory meal and the presentation of a commemorative gift from the FSTG to Gordon, a silver spoon, and a recitation by the FSTG poet/ chairman David Higgins:

Your spooning days are over,
Your pilot light is out,
What was once your sex appeal,
Is now your water spout.

*Not a Bloody Clue.

CALENDER OF FORTHCOMING EVENTS

September 17th 2009. Novel Approaches to Formulations—From Concept to Product, Joint FSTG / IChemE Event, Birmingham

October 15th 2009. Analysis of Inhaled products, Royal Society of Pharmaceutical of Great Britain, London

December 16th 2009. Powder Flow 2009, Burlington House, London

December 16th 2009. FSTG AGM

June 7th -10th 2010. Formula VI, Aula Magna—Stockholm, Sweden

Thought for the Month: The important thing in science is not so much to obtain new facts as to discover new ways of thinking of them *Sir William Bragg*

New FSTG Committee members

3 new members of the executive committee of the FSTG have been recently chosen to support the existing committee. We are pleased to welcome:

Joselio Vieira from Nestle (elected)
Simon Gibbon from Akzo Nobel (co-opted)
Marcus Goodhall from Givaudan (co-opted)

We are very grateful to Joselio, Simon and Marcus for their support. We are also very grateful to all members who contacted us to offer their help with the committee. There are regular vacancies on the committee, and anyone interested in helping the formulation community may get in touch with us to discuss any projects they may wish to carry forward with the help of the FSTG. For more information please contact the secretary.

For further information visit or to become a member:
http://www.formulation.org.uk

Member Focus

Mojgan Moddaresi:
Mojgan graduated as a pharmacy doctor (Pharm D) in 1998. After working in pharmaceutical companies as IPQC manager and scientist in R&D, she started her PhD in 2004 with a multidisciplinary approach in developing novel cosmetic delivery systems and evaluating their bioavailability and efficacy, lipid nanoparticles, cosmetic claim substantiation.

Research interest: Developing topical formulation, lipid nanpoarticles, cosmetic claim substantiation

Other interests: Baking, music & gardening

FSTG Student Bursary Scheme

Apply now for a Gordon Tiddy Travel Bursary.

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 Formulation Group 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 member of the FSTG, 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 a travel bursary from the FSTG in the previous 2 years.

Application Process
Applications must be made using the form on this website and will be considered by the review panel (the officers of the FSTG) on an ad hoc basis. For more information, please contact the secretary.

Formulation Focus: Safety of Nanoparticles in Personal Care

by Mojhan Moddaresi

Nanoparticles defined by the Royal Academy of Science and Engineering, are materials which range in size from 100 nm down to the atomic level. The rationale for considering this range is the different or enhanced properties of materials at such scales compared with the same materials at larger sizes. The two main reasons for this difference in behavior are increased surface area and quantum effects.

The cosmetics industry is driven by the need to continually introduce more effective and desirable products to market. Nanotechnology and its applications to cosmetics is projected to be a trillion dollar global business by 2014. As the market grows, the safety or nanoparticles must be demonstrated, especially when reports from organizations such as 'Friends of the Earth' describe nanomaterials used in cosmetics and sunscreens as "small ingredients, big risks" and elsewhere is blamed for environmental pollution. One way to evaluate these claims is to consider the toxicity of nanomaterials.

Certainly, some nanoparticles have been shown to pose a risk to human health through inhalation, but in the field of Personal Care, the question is whether topically applied nanoparticles can overcome the skin as one of the best biological barriers, since one of the most common uses of nanoparticles in cosmetics is in sunscreen. Sunscreens contain insoluble, mineral particles, such as titanium dioxide and zinc oxide which reflect and scatter UV light most efficiently at a size of 60–120 nm and usually are treated with inert coatings such as aluminum oxide or silicone oil to improve their dispersion in formulations. In a review of available studies on skin permeation of titanium dioxide and zinc oxide nanoparticles, it was concluded that these particles do not penetrate beyond the stratum corneum. In the published opinion of the EU Scientific Committee on Cosmetics and Non-Food Products concerning titanium dioxide and zinc oxide nanoparticles, it was concluded that these particles do not penetrate beyond the stratum corneum. In the published opinion of the EU Scientific Committee on Cosmetics and Non-Food Products concerning titanium dioxide nanoparticles used in sunscreen, it was suggested that nano-sized particles remain on the skin's surface or the outer layers and do not penetrate into or through the living skin. Similarly, the permeation of zinc oxide nanoparticles beyond the stratum corneum of the skin was not observed.

Another consideration is the pathway taken by the particle through the skin. It has been found that nanoparticles penetrate mainly via shunt routes such as hair follicles with the hair shaft acting as a "gear pump", resulting in skin absorption. However, considering skin desquamation, hair growth, and the skin sebum flow, nanomaterials can be effectively cleared away from the skin and cannot penetrate into deeper layers such as the dermis.

The available data suggests that healthy, intact skin is a significant barrier to nanomaterials. Cosmetics regulatory bodies such as COSMOS and regulations like REACH adopt a cautious approach and do not categorise cosmetic products containing nanomaterials as natural. However, experimental evidence demonstrates that their use in personal care, especially sunscreens, can provide a huge benefit to the skin and effectively reduce the incidence of skin cancer.

Further details about this subject including references can be obtained from the author via the FSTG LinkedIn group.

FSTG News and Events

Start of InForm
We are pleased to announce that European networking project InForm has now been launched. The first planning of InForm took place on 6 July 2009 in London. InForm is a networking programme sponsored by the European Union through FP7. The InForm project is the brain child of Philippe Rogueda (Novartis) and Flor Siperstein (University of Manchester) under the auspices of the FSTG. InForm stands for integrating the nanoscale in formulations, and is platform to share the best practice on nano-scale formulations. For more information please contact the InForm co-ordinator, Flor Siperstein.

IChemE/FSTG joint meeting on Novel Approaches to Formulation: from concept to product
We are pleased to invite you to the first joint meeting we are organising with the formulation engineering group of the IChemE. This conference brings together industrialists and academics to discuss and share the latest research, experience and successes in formulation and product design. With speakers drawn from pharmaceutical, consumer product, personal care, food industries and academia this event will demonstrate how the exchange practices across different sectors can make a difference to you business.

17th September 2009, School of Sport and Exercise, University of Birmingham, Birmingham

This event is organised jointly by the IChemE Formulated Product Engineering Subject Group and the FSTG. The event will launch the new IChemE subject group and reinforces the multidisciplinary nature of formulated products design and delivery. The talks will reflect this. Attendees will be encouraged to participate in confirming the challenges for the subject groups to deliver, including the themes for future events. For more information, please contact Lyn Daintree.

AGM announcement
The executive committee of the FSTG hereby gives notice that the AGM of the FSTG will take place on Weds 16 December 2009 at the Royal Society of Chemistry, Burlington House, London, at 12:30. All fully paid members of the FSTG can attend and vote at the AGM. For more information, please contact the group secretary.

Powder Flow 2009
We are pleased to invite you to the meeting on Powder Flow we will be hosting on Wednesday 16th December 2009.

16th December 2009, Royal Society of Chemistry, Burlington House, London

This meeting will showcase the latest theory of practice of powder flow measurement and meaning, concentrating on the micro and nano scale. The meeting will be cross-industry and will cover all aspects of powder flow, measurements, visualisation, theory and understanding. It will particular concentrate on fluidisation, handling and aerosolisation mechanisms, and how these reveal inter-particle interactions. For more information, contact the secretary.

Formulation VI
Do not forget to pencil in your calendars THE formulation science event of 2010: FORMULA VI: Formulations for the future - from fundamentals to processing

7th -11th June 2010, Stockholm

Formula VI is the ideal international meeting to update you on research and development of formulated products. Leading industrialists and scientists will present the state-of-the-art for a number of formulation technology topics of broad relevance. If you are looking for one meeting to bring you both the frontiers in science and networking in the area of formulation - the Formula VI conference should be your choice for 2010. Formula VI will be held in Aula Magna located at the campus of Stockholm University, Stockholm, Sweden and is organised by YKI, Institute for Surface Chemistry, Stockholm, Sweden. Formula VI is organised in collaboration with the FSTG.