



Spray Drying and Atomisation of Formulations

Tuesday 31 March – Thursday 2 April 2020

Provisional Programme

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Spray Drying and Atomisation Basics

09:00 *Registration and coffee*

09:30 **Welcome and group introduction – what do delegates want to get from the course?**

Dr Jim Bullock, iFormulate Ltd

09:40 **Introduction to spray drying, how does it compare with other drying techniques, mechanisms and impact of the formulation on process and plant design**

Professor David York, University of Leeds (formerly of Procter and Gamble)

10:20 **Fluid properties and rheology**

Professor Andrew Bayly, University of Leeds (formerly of Procter and Gamble)

11:00 *Coffee*

11:20 **Atomisation**

Professor Phil Threlfall-Holmes, TH Collaborative Innovation & Visiting Professor at the University of Leeds (formerly of AkzoNobel)

12:00 **Drying the particle**

Filip Van der Gucht, ProCept

12:30 **Modern approaches towards explosion safety in spray dryers**

Francesca Vincenzi, REMBE

13:00 *Lunch*

13:45 **Hands-on laboratory demonstration sessions**

(a) Feedstock/rheology: Soyeb Manga, University of Leeds

(b) Atomisation: Professor Phil Threlfall-Holmes, TH Collaborative Innovation & Visiting Professor, University of Leeds, (formerly of AkzoNobel)

(c) Characterisation of spray dried powders: Professor David York, University of Leeds

(d) Single droplet: Professor Andrew Bayly, University of Leeds

(e) Particle sizing: Ben Douglas, University of Leeds

(f) Drying parameters: Filip Van der Gucht, ProCept

15:35 *Tea*

15:55 **Spray drying: basic models, energy balance**

Professor Andrew Bayly, University of Leeds

16:20 **Scale up of spray drying processes**

Henrik Schwartzbach, GEA Process Engineering A/S

16:50 **Water in our World, Water in our Materials**

Dr Daryl Williams, Imperial College London

17:25 *End of day one*

19:00 *Course Dinner*

Wednesday 1 April 2020

Industrial Formulation Case Studies

08:45 *Coffee*

09:00 **Welcome**

Dr Jim Bullock, iFormulate Ltd

09:10 **Phase changes in spray drying**

Professor David York, University of Leeds

09:35 **Spray drying with two-fluid nozzles; atomisation, scale-up and modelling**

Ian Kemp, Consultant, previously GSK

10:20 *Coffee*

10:40 **Engineering particle structure**

Professor Andrew Bayly, University of Leeds (formerly of Procter and Gamble)

11:15 **Spray drying of pharmaceuticals**

Dr Andrew Naylor, Upperton

11:50 **Spray Drying an Alternative to Freeze Drying**

Dr Sune Klint Andersen, Janssen Pharmaceuticals, Beerse, Belgium

12:25 **Modelling of the spray drying process using empirical inputs**

Henrik Schwartzbach, GEA Process Engineering A/S

13:00 *Lunch*

13:45 **Hands-on laboratory demonstration sessions**

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15:35 *Tea*

15:55 **Processing science in an infant milk formulae factory**

Dr Koen van Dijke, Danone

16:30 **Spray drying for encapsulation and congealing**

Filip van der Gucht, ProCept

17:00 **Trouble shooting forum/expert consultation session and networking drinks reception**

18:30 *End of day two*

Thursday 2 April 2020

Powder finishing, modelling and future developments

08.45 *Coffee*

09:05 **Welcome**

Dr Jim Bullock, iFormulate Ltd

09:15 **Agglomeration and build-up in the spray drying tower**

Stefan Egan, Procter and Gamble

09:45 **Managing moisture in practice**

Sophie Samain, Nestlé Switzerland

10:20 *Coffee*

10:40 **Product design by fluid bed systems as downstream units of spray dryers**

Henning Falck, Neuhaus Neotec

11:10 **Modelling and scale up of spray drying**

Dr Pedro Valente, Hovione

11:40 **Future directions in atomisation technologies for pharmaceutical applications**

Dr Pedro Valente, Hovione

12:15 *Lunch*

13:00 **Mechanistic model enhanced digital design and digital operation of spray drying processes**

Dr David Slade, Process Systems Enterprise Ltd (PSE)

13:30 **Innovative electrostatic spray dryer**

Dr Audrey Maudhuit, Spraying Systems Co. & Fluid Air

14:05 *Tea*

14:25 **Dryer operation and operational challenges**

George Svonja and Deon Pistorius, Dedert

14:55 **Particle separation; cyclones, filters etc**

Professor David York, University of Leeds

15:30 *Close of course*