



Introduces...



Process Control and Formulation

David Calvert - iFormulate Limited

David Hood – The Excellence

Partnership

An



iFormulate
Skills
Formulation
Training 2017

Webinar

Overview:

- Introduction
- What is Process control?
- What are costs of poor process control?
- What tools can I use?
- Where to learn more

● This webinar is being recorded and will be made available

The audience is muted and you may ask questions using the question function in GoToWebinar

This webinar will last about 30 minutes

Your Speakers



David Hood
The Excellence Partnership



Dr David Calvert
iFormulate Ltd

A Little About iFormulate

A company founded in 2012 by two experienced industry professionals...

Combining diverse experiences, knowledge and wide range of contacts:

...polymers, materials science, chemistry, imaging, dyes, pigments, emulsion polymerisation, biocides, anti-counterfeiting, environmental, formulation, consultancy, marketing, business development, strategy, regulatory, training, events, R&D, innovation

Complementary network of Associates

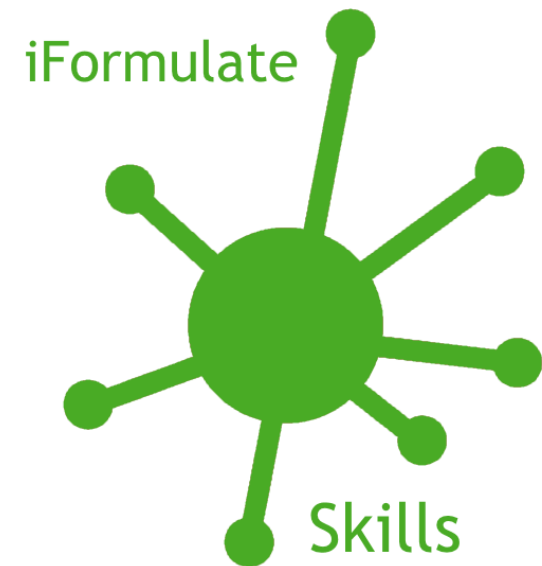
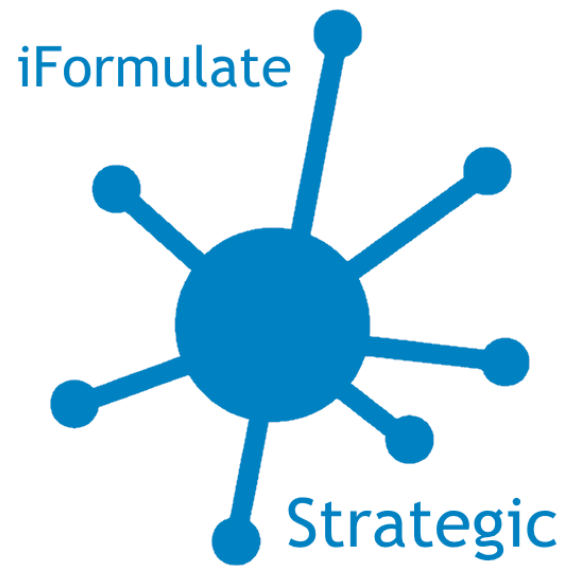
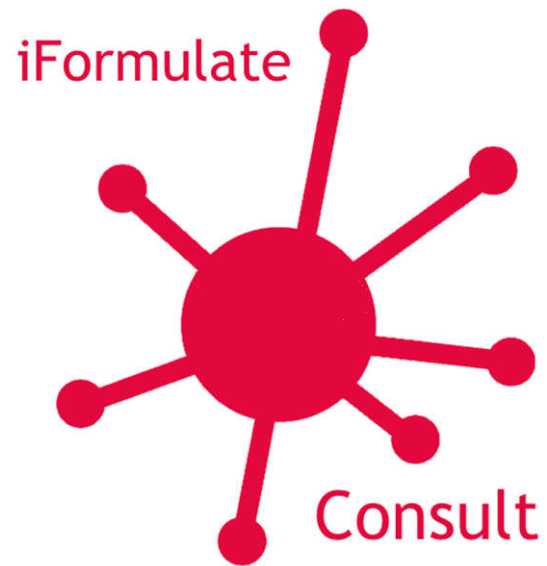
www.iformulate.biz
info@iformulate.biz

[Dr Jim Bullock](#)
E: jim@iformulate.biz
M: +44 (0)7450 436515

[Dr David Calvert](#)
E: david@iformulate.biz
M: +44 (0)7860 519582



Our Services



The Excellence Partnership Ltd

- A firm of Improvement Specialists....
- who enable businesses to significantly & sustainably improve performance
- A team of highly experienced professionals, experts in developing excellent organisations
- Our mission is to challenge and drive UK industry, to significantly change the way it works, and maximise it's true performance potential.

David Hood – 07910 379 666
The Excellence Partnership Ltd

E: info@excellencepartnership.co.uk **W:** www.excellencepartnership.co.uk



WHAT IS PROCESS CONTROL?

What is Process Control?

It is:

The main approach businesses take to understand and manage the variability of processes, in order to minimise all forms of waste encountered in production. (time, money, material, resources etc.)

What are Formulators trying to achieve?

- Product understanding and knowledge base
 - Basis of INFORMED decisions
 - Foundations of new products
- AGAINST a background of TIME and RESOURCE pressures
 - *we need to improve our productivity!*



WHAT ARE THE COSTS OF POOR PROCESS CONTROL?

The Costs

- Obvious
 - Excess raw materials
 - Out of spec product
 - Re-work
 - Reduced product life
 - Waste disposal
 - Excess inventory
 - Over-production
- Hidden
 - Lost production / capacity
 - Increased maintenance
 - Troubleshooting costs
 - Lost development time in R&D
 - Reputation

= Reduced Profitability



What TOOLS CAN I USE IN Process Control?

- *A New Product Development process – NPD / NPI*
- *Clarity of Customer's Requirements (Voice of the Customer)*
- *Quality Function Deployment – QFD*
- *Design of Experiments – DoE*
- *Process Capability Measures – Cp & Cpk*
- *Control Charts*

What TOOLS CAN I USE IN Process Control?

Process capability measures Cp and Cpk:

$$C_p = (USL - LSL) / 6s$$

$$C_{pk} = \text{Lowest value of } (USL - \text{mean or mean} - LSL) / 3s$$

USL = Upper specification limit

LSL = Lower specification limit

s = Standard deviation

Questions

“How can you define the
Process Variability?”

Enrico Zambelli
Chiesi Farmaceutici

“What would make the flow
from innovation team to
factory easier?”

Ruth Dolby Food Science Fusion

“Could you share an example
of process control used in
formulation R&D?”

Federico Henke
Agrofina



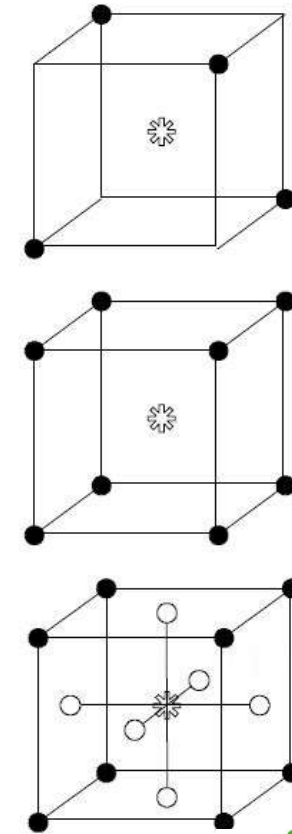
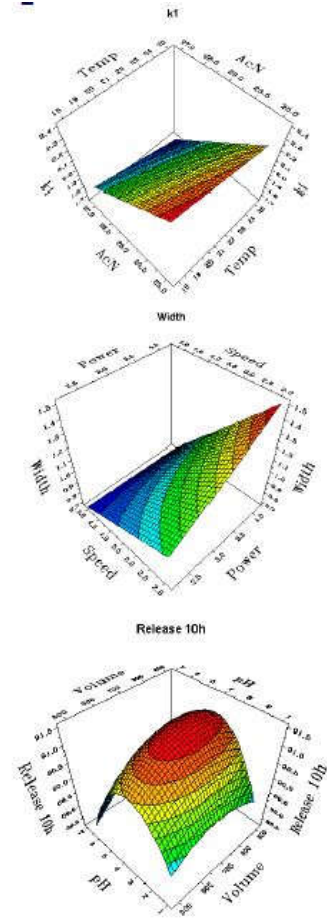
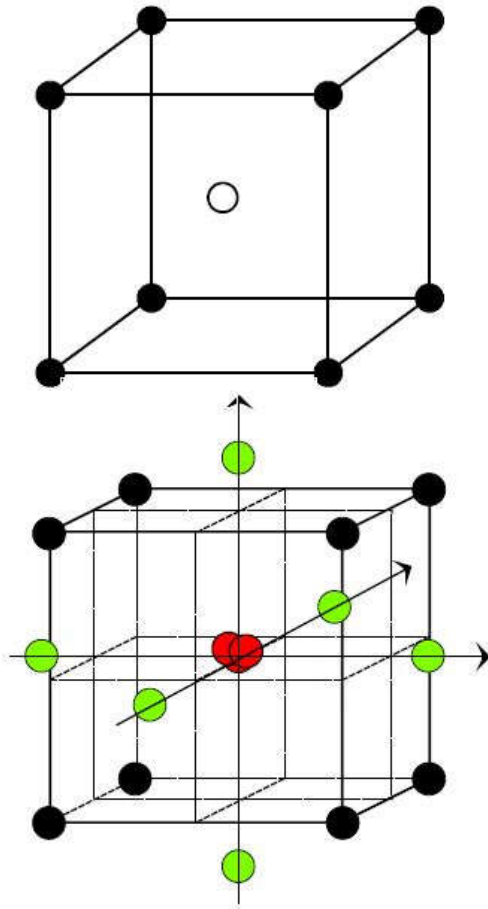
iFormulate
Skills
Formulation
Training 2017

Questions

“How can you understand or determine what interactions are present between components of a formulation during blending?”

Paul Wilson
Infineum

Determination of Interactions



Understanding Interactions

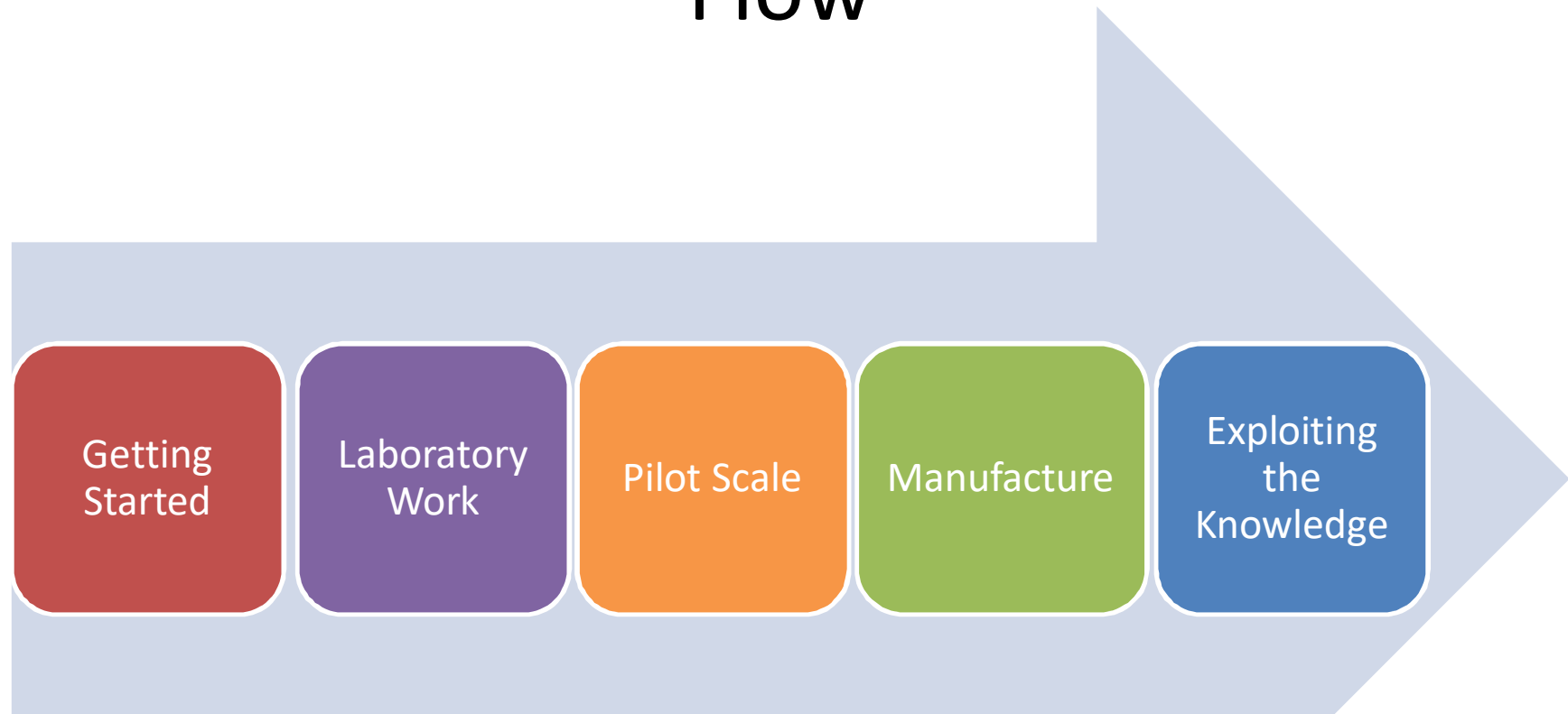
- Science underpinning formulation
 - Colloid Science
 - Crystallisation
 - Zeta Potential
 - Etc..
- Competitive adsorption
 - Surfactants
- Rheology
 - Salt concentration
 - pH
 - Surfactants

Questions

“What Process Parameters are critical to consider for scale-up of a coated tablet?”

Dave Willoughby
Sanofi

The Product Development Process Flow



Summary:

- *Understand and measure customer's requirements*
- *Understand and measure our processes*
- *Use key tools to improve process capability*
 - *Cp / Cpk*
 - *Control Charts*
- *Apply an NPD / NPI process*
- *Focus on the long term*

Learning More: Design For Formulation – Products and Processes

- Two-day Training Workshop:
- 19th – 20th September 2017, Jury's Inn Hotel, East Midlands Airport, Castle Donington, UK.
- Early Bird £675 plus VAT before August 1st.
- See: <https://iformulate.biz/training-and-events/design-formulation-2017/>

W: www.iformulate.biz

E: info@iformulate.biz



Other Webinars

- A Quick Guide to Hansen Solubility Parameters
- A Quick Guide to Adhesion Science
- Powderology – An Introduction to the Mysteries of Powders
- A Quick Guide to Ink-Jet Formulation
- Spray Drying for Formulations
- Crystallisation Science and Agrochemical Formulations
- Malcolm McKechnie on Open Innovation
- Formulating Particles in Suspensions
- Ian Jolliffe on Design for Formulation
- <https://iformulate.biz/training-and-events/>



Any Questions?

- Participants remain muted
- Please use the GoToWebinar question boxes
- Any follow up questions or other enquiries: info@iformulate.biz
- Participants will be sent details of how to access a recording of this webinar
- Training and webinars: <http://iformulate.biz/training-and-events/>



W: www.iformulate.biz
E: info@iformulate.biz

