

# Inkjet Ink Development Conference 2016

## Lausanne, Switzerland

13 - 14 April 2016

Materials, equipment and techniques for  
inkjet fluid development & manufacturing

### Introduction

The IMI Europe Inkjet Ink Development Conference is a new two day technical conference devoted to materials, equipment and techniques for digital printing ink development and manufacturing. The event is aimed at inkjet fluid developers across applications including packaging, textiles, graphics, industrial and functional printing. The conference will give access to key suppliers and technology from the inkjet industry – everything that you need to develop and manufacture inkjet inks.

### Topics

Topics for the event include colorants, material dispersions, resins & polymers, photoinitiators, additives & other materials, analytical equipment and techniques.

The IMI Europe Inkjet Ink Development Conference provides information on creating stable dispersions, the impact of additives on formulation performance, raw material quality and consistency for manufacturing, and other topical themes.

### Conference Format

The conference is a two day event with a complimentary lunch on both days and an evening reception on the first day. The event will consist of twenty technical talks from invited industry experts, as well as networking opportunities during the breaks and meals. Pricing for the event is €995 with discounts for those in academia and under-25s.

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#### SPEAKER COMPANIES

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- BASF
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- Eckart
- Fujifilm Imaging Colorants
- IGM Resins
- ImageXpert
- Malvern Instruments
- Microtrac
- Nippon Kayaku
- Pall
- Printing Inks Technology
- RJA Dispersions
- TU Chemnitz
- University of Leeds
- University of Manchester

Find out more at [www.imieurope.com](http://www.imieurope.com)

# Inkjet Ink Development Conference

Wednesday 13 - Thursday 14 April, 2016

## WEDNESDAY 13 APRIL, 2016

09:00 - 10:00

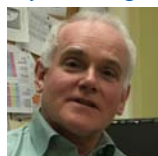
### Registration

#### 10:00 COLORANTS AND DISPERSIONS

Session Chair: Dr Philip Double

#### PIGMENT DISPERSIONS AND TECHNOLOGY FOR AQUEOUS INKJET INKS

Dr Rupert McIntyre, Dispersions Research & Technology Group Leader, Fujifilm Imaging Colorants



Pigmented inkjet inks are important in every market in which the technology operates. Fujifilm Imaging Colorants will give an overview of the technology behind pigment dispersions for aqueous inkjet, highlighting the key performance requirements and what to look out for when selecting or designing dispersions.

#### ORGANIC PIGMENTS FOR SENSITIVE INKJET PRINTING APPLICATIONS

Dr Stéphane Biry, Senior Marketing Manager Digital Printing, BASF



With inkjet showing strong growth in packaging and industrial printing, there are rising concerns over the suitability of inkjet inks for applications where the inks need to meet stringent

toxicological and migration requirements. Pigments for sensitive inkjet printing applications, such as food packaging printing, will be reviewed in the light of changes in legislation.

#### COMMERCIAL AND INDUSTRIAL INKJET DISPERSIONS - A KEY INGREDIENT FOR HIGH QUALITY INKJET FLUIDS

Joe Ward, Vice President, Marketing, RJA Dispersions



Inkjet technology is a precision coating system for industrial applications, and at its heart is a material dispersion. This talk will review commercial and industrial applications and their requirements for ink and dispersion quality. It will also review the technologies to achieve and characterise quality dispersions, as well as looking at future dispersion technology.

#### ADVANCES IN COLORANT CHEMISTRY FOR INKJET PRINTING

Takashi Yoneda, Senior Chemist, Dyestuff Synthesis, Nippon Kayaku



Inkjet technologies using dye-based ink started with consumer desktop printers. Today dye-based inks are well-placed in industrial fields. In this talk we present Nippon Kayaku's inkjet colorant technologies with a focus on dyestuff. Typically, dye-based inks offer high chroma but low ozone and light stability. Our developed products with improved durability are presented.



#### DIGITAL METALLIC INKS - CHALLENGES, PROGRESS AND APPLICATIONS

Volker Jordan, Head of Formulation Technology - Digital Printing, Eckart



In order to increase adoption of inkjet technology for production printing of packaging, tiles or labels, printed silver and gold effects are key. This talk will give an overview of the challenges facing formulators of inks based on metallic pigments. The development hurdles needing to be overcome will be discussed, as well as the acceptance of metallic inks in the market and the opportunities this brings.

13:00 - 14:30

### Lunch

#### 14:30 EQUIPMENT AND TECHNIQUES

Session Chair: Dr Thomas Benen

#### CONTROLLING PIGMENT PROPERTIES FOR OPTIMAL INKJET RESULTS

Dr Thomas Benen, Sales Manager D-A-CH, Microtrac



As inkjet technology progresses, the demand for characterisation of dispersions is increasing, as pigment behaviour impacts printability and end user properties. This talk will review the main characterization techniques used, including laser diffraction, integrated image analysis, heterodyne dynamic light scattering and zeta potential analysis. It will describe what each of these techniques are used for, as well as their advantages and disadvantages.

#### CHARACTERISING AND OPTIMISING PARTICLE SIZE FOR INKJET APPLICATIONS

Dr Anne Virden, Product Technical Specialist, Malvern Instruments



Inkjet inks used for a specific application must meet certain criteria; firstly they must be printable and secondly they must produce the desired decorative effect or functionality when printed. The particle size of pigment or other solid components is critical for meeting these criteria. In this talk we will discuss the use of laser diffraction and dynamic light scattering for evaluating and controlling pigment size.

#### INNOVATIONS IN INKJET ANALYSIS

Yair Kipman, President, ImageXpert



This talk will give an overview of the necessary parameters for success in inkjet printing. As an example it will consider the print-head to substrate distance in greater detail. The presentation will provide techniques for inkjet analysis including drop visualisation and print quality analysis, providing an update on the latest technologies for inkjet R&D and how the top inkjet developers are using them.

#### PRODUCTION CONCEPTS FOR TEXTILE INKJET INKS

Dr Franz Giger, Market Segment Manager, Bühler



Digital textile printing requires disperse dyes and pigments to be milled into the nanometer range and correctly dispersed. Agitated bead mills with high specific energy input and small beads are necessary to reach the required particle fineness, dispersion quality and narrow size distribution. The mills run in recirculation mode. Milling technology and the results from example systems in both laboratory and production mills are presented.

#### SURFACE TENSION AND WETTING - EXPERIMENTAL APPROACHES AND SIGNIFICANCE IN INKJET PRINTING

Dr Maiju Pöysti, Product Manager, Biolin Scientific



Surface tension of inkjet inks and the wettability of the printed substrate are important parameters influencing the final printing quality and process reliability. This presentation will give an overview and practical examples of the available experimental approaches to define surface tension and wetting. It will also look at how to apply these techniques on real-life samples taking into account substrate surface roughness and small size of the inkjet droplets.

17:30-19:00

### Reception

Join us for wine, beer and canapés!

Register online at  
[www.imieurope.com](http://www.imieurope.com)



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## THURSDAY 14 APRIL, 2016

### 09:00 MATERIALS FOR INKJET INKS

Session Chair: Holly Steedman

#### UV RADIATION CURE RAW MATERIAL SOLUTIONS FOR INKJET

Tracey Norton, Technical Product and Services EMEA, IGM Resins



The presentation will outline raw material requirements for UV cure inkjet inks. Photoinitiator chemistry will be presented for free radical type I, type II and cationic initiators. Formulating for LED cure, alignment to spectral output and reducing oxygen inhibition will be discussed. Low migration requirements and products for food packaging applications are also highlighted.

#### POLYMER DEGRADATION AND THE ROLE OF CHAIN ARCHITECTURE IN INKJET PRINTING

Prof Stephen G. Yeates et al., University of Manchester, (in collaboration with ITECH Textile & Chemical Institute and Domino UK)



Polymeric additives have a significant effect on drop ejection and formation in inkjet inks. We have found that long chain polymers exhibit degradation due to the high shear environment, meaning their effect is diminished. We have studied hyper-branched materials with low intrinsic viscosities, allowing larger polymer concentrations while retaining suitable ink viscosity. These polymers are found to have greater stability over time with benefits for printing performance.

#### SUPERWETTING SURFACTANTS FOR WATER-BASED INK APPLICATIONS

Samir el Ajaji, Laboratory Technician, Speciality Additives, Air Products



Printing onto difficult-to-wet substrates such as plastics and contaminated surfaces presents significant challenges for ink formulators. Selecting the surfactant is critical to allow good substrate wetting and adhesion, while minimising defects such as retraction. This presentation looks at the science of substrate wetting and focuses on the performance of superwetting surfactants.

#### INKJET PRINTING BEYOND COLOUR: EFFORTS TO GO LAB-TO-FAB

Prof Dr rer nat Reinhard Baumann, Department of Digital Printing and Imaging Technology, Technische Universität Chemnitz



In this talk we discuss the challenge of formulating inks for functional applications. For industrial application inks must achieve a high level of reliability while still delivering the application performance on the substrate. We will discuss examples of this and present the work at TU Chemnitz on developing functional applications.



#### DISPERSION AND STABILITY IN FORMULATED SYSTEMS

Graham Worrall, Principal Scientist, Centre for Process Innovation



The creation of multi-component, often multi-phase, formulations underpins many high-value manufacturing sectors. Understanding the interactions between different components can lead to more efficient use of ingredients which in turn leads to a reduction in raw material cost and improved product performance. Examples of how interactions affect product stability, quality and performance will be discussed together with different characterisation techniques.

#### FORMULATING INKJET INKS FOR MATERIAL DEPOSITION APPLICATIONS - CHALLENGES AND OPPORTUNITIES

Dr Alan Hudd, Founder & Director Alchemie Technology



The fundamental requirement of a functional ink is that it provides the necessary application performance on the substrate, while still being able to be printed reliably. The requirement often leads to a trade-off in the formulation process calling for extensive development and lateral thinking. This talk covers the principles of functional ink formulation with case studies showing this trade-off in reality, including inks containing graphene, ceramics and metallic flakes.

12:30-13:30

Lunch

#### 13:30 PROCESSES AND APPLICATIONS

Session Chair: Dr Tim Phillips

#### UNDERSTANDING THE INK DRYING PROCESS AND ITS IMPACT ON PRINT PERFORMANCE

Dr Kai Bär, CEO, Adphos



The ink drying process is highly significant for inkjet application performance, including substrate adhesion, rub fastness, substrate penetration and print quality. The effects of porous and non-porous media, substrate coatings, ink bleed and the presence of water are highlighted. Ink drying techniques, their mechanisms, advantages and disadvantages are reviewed. The benefits of near IR drying will be presented and future trends discussed.

#### INKJET INK FILTRATION – PROCESS OVERVIEW AND FILTRATION IN THE LAB

Michael Mehler, Key Account Manager, Pall



Inkjet ink cleanliness is critical, with correctly filtered ink assuring high print quality and long run periods between purge cycles. With the wide variety of inkjet ink chemistries, several different filtration technologies are used to achieve optimum cleanliness in a cost-effective manner. The talk will update you on the state-of-the-art inkjet ink filtration technology for various ink types including dye-based aqueous and UV curable pigmented inks.

#### PARTICLE SIZE – THE KEY INDICATOR IN DEVELOPMENT AND QUALITY ASSURANCE OF INKJET INKS

Alexander Gutsche, Head Business Unit Décor, Printing Inks Technology



Measurement of particle size is fundamental for the development of inkjet inks. This is measured by state-of-the-art devices unleashing laser beams onto the inks. The driver of this development is the literal bottleneck of the technology: the nozzle of the inkjet printheads. In this talk the imperative of particle size determination and control will be highlighted together with the challenge of accurate measurements.

#### SIMULATIONS OF INKJET DROP FORMATION IN COMPLEX RHEOLOGICAL FLUIDS - CAN RHEOLOGY IMPROVE JETTING PERFORMANCE?

Dr Oliver Harlen, University of Leeds



The inkjet drop ejection process is strongly affected by fluid rheology, but non-Newtonian rheology makes jetting behaviour harder to predict. We have developed numerical simulations of drop ejection that allow this behaviour to be modelled and compared with experiments. This allows us to establish the parameters characterising jet break-up and obtain satellite-free drops at higher speeds than is possible with Newtonian fluids.

16:00

Conference ends



Full presentation abstracts & blogs at [www.imieurope.com](http://www.imieurope.com)



Venue for the IMI Europe Inkjet Ink Development Conference 2016  
Aquatris Hotel, Lausanne, Switzerland

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## Registration fees

Registration fees include attendance at all sessions, a link to download PDF presentations during the events, coffee breaks, two lunches and one evening cocktail reception.

- Standard fee €995
- €200 discount for those in academia and under-25s
- 20% discount for additional registrations from the same company
- On-site registration fee €1,195

Email [christine@imieurope.com](mailto:christine@imieurope.com) with any questions.

## Sponsorship opportunities

Sponsorship packages are available enabling your company to be associated with this key technical event and access an audience of technical ink developers. Several packages are available or a bespoke package can be arranged.

## Venue

The Inkjet Ink Development Conference is being held at the Aquatris Hotel in Lausanne, Switzerland [www.aquatris-hotel.ch](http://www.aquatris-hotel.ch). Ideally located in Lausanne-Vennes, this hotel is easily accessible, with direct links to the M2 metro station (which is below the hotel), with connections to the city centre and Lake Geneva. The hotel features an aquatic ambience with 143 comfortable rooms, a restaurant and a fitness centre.

We have negotiated a special room rate of 145 CHF per room, per night, single occupancy and 165 CHF per room, per night, double occupancy. All rates include Wi-Fi and breakfast.

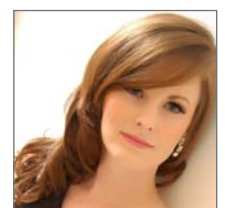
## Interested?

To find out more about the conference and to register to attend, visit [www.imieurope.com](http://www.imieurope.com). With discounts for those in academia and also for under-25s, it is well worth checking out!

## Technical Advisory Board



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