

6 Tutorials  
4 Keynotes  
10 hours of Presentations  
6 hours of Networking  
Only €595!

# Ink Jet 2011 Technology Showcase

## IJTS 2011 Preview Presentation

The conference where industry suppliers meet their customers  
- now in its 10th year!

adphos Digital Printing  
Agfa Integrated Ink Solutions  
Amica Systems  
Collins Ink  
Digital Direct Technologies  
D&K Engineering  
Dr. Hönle  
FUJIFILM Dimatix

FUJIFILM Imaging Colorants  
Global Inkjet Systems  
ImageXpert  
Industrial Inkjet  
Integration Technology  
Lumen Dynamics  
Netzsch  
Olivetti

Pivotal Resources  
Ricoh Printing Systems  
SepiaX Ink Technology  
Sun Innovations  
Sunjet  
TTP Meteor  
Xennia Technology

# Welcome to the IJTS2011 preview

- \* **Programme outline**
- \* **Sample slides from Tech Talks**
- \* **Keynote speakers**
- \* **Ink jet industry suppliers at IJTS2011**
- \* **Supporting programme**
  - \* Ink Jet Academy course
  - \* UV Ink Jet Printing course
- \* **Hotel details**
- \* **Summary**

# What is the Ink Jet Technology Showcase 2011?

- \* **COME FOR INSPIRATION - INDUSTRY OVERVIEWS**
  - \* Hear a range of keynote speakers inform and inspire you about new applications and markets that are offering exciting new opportunities for ink jet technology
- \* **HEAR KEY SUPPLIERS PRESENT NEW PRODUCTS**
  - \* Hear the leading suppliers of hardware, inks, curing systems, and other components and services to the ink jet industry present their company's products and services
  - \* Each supplier will give a 15 minute presentation on their company and products. Think how much you can learn without travelling the world to meet with them all!

**Ink Jet 2011**  
*Technology Showcase*

# What is the Ink Jet Technology Showcase 2011?

- \* **MEET THE SUPPLIERS AT THE DEVELOPERS FAIR**
  - \* Meet with the leading suppliers to the ink jet industry during the inclusive conference breaks, lunch and evening receptions
  - \* Make those important first contacts, catch up on the latest developments and products, or remake old contacts and discuss your latest application or seek advice
- \* **FREE TRAINING - INK JET TECH TALKS**
  - \* A series of optional tutorials at no extra cost. Listen to our experts discuss some of the latest scientific findings and techniques - information that you can use immediately

**Ink Jet Tech Talks**  
**Free training!**  
**Information you can use immediately!**

TechTalk 1

Wednesday 8 June, 2011

09:30

# Advances in understanding the printing performance of ink jet fluids

Dr. Graham Martin  
Inkjet Research Centre  
Cambridge University

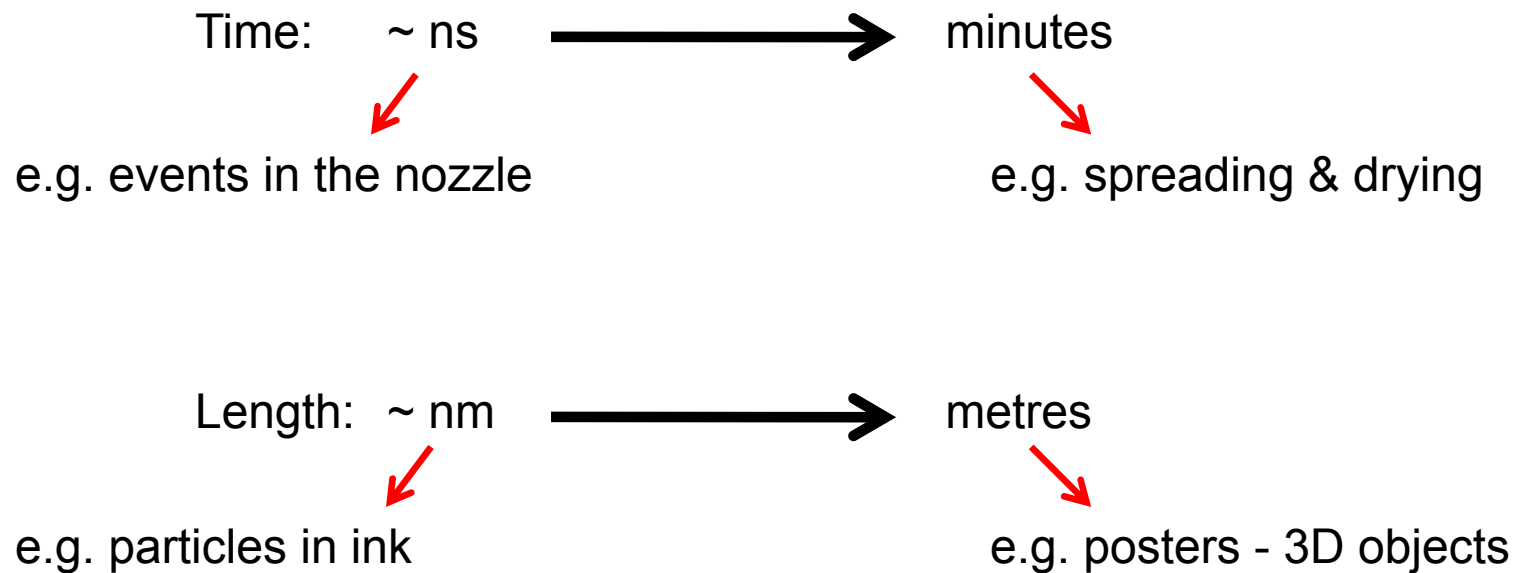
**Ink Jet 2011**  
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# Topics

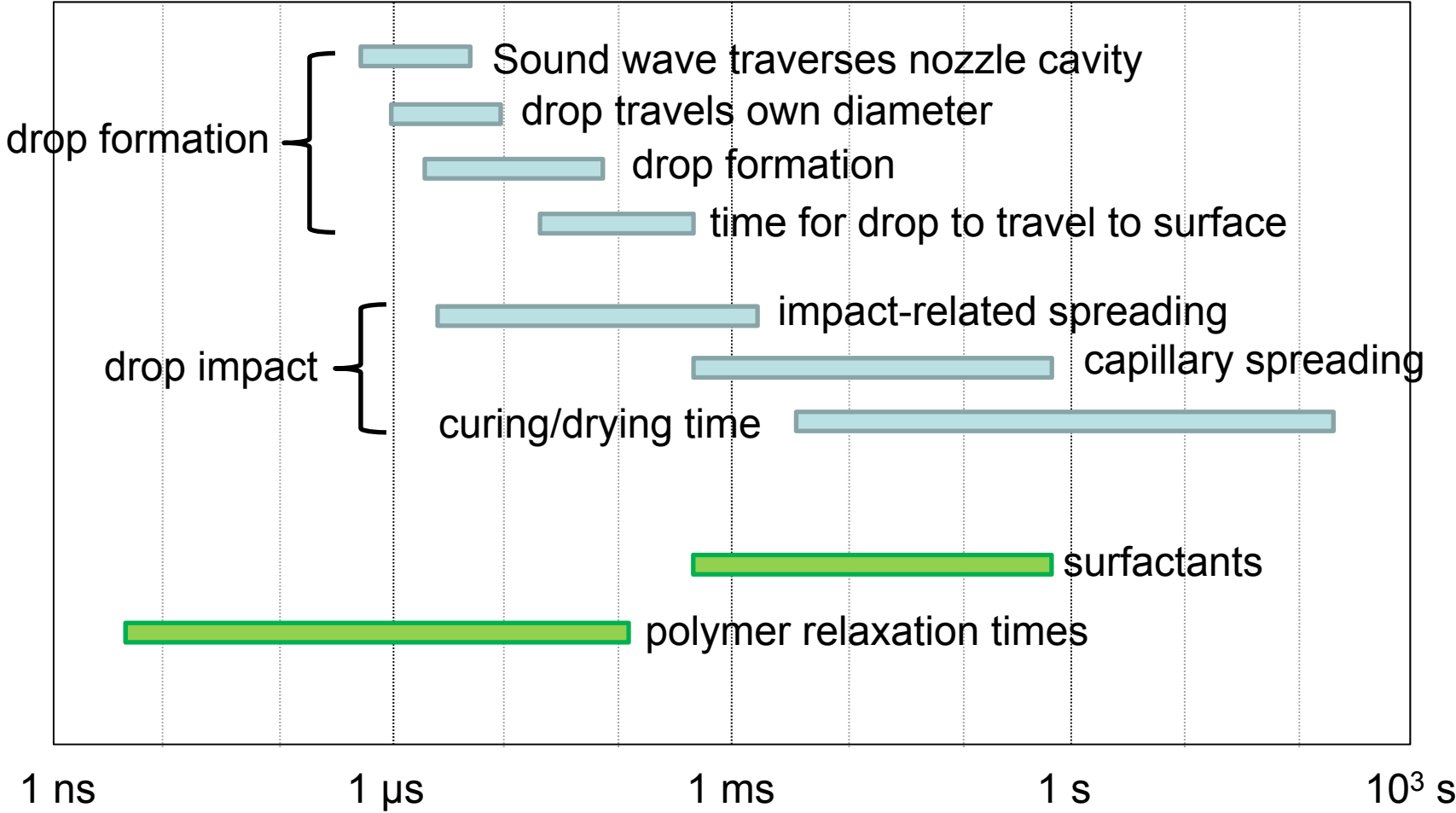
- The timescales of inkjet
- Ways of seeing
- Shear and stretch
- Jets to drops and satellites
- Polymers and particles
- The invisible fluid properties
- The impact of surface energy

# and length-scales The timescales<sup>v</sup> of inkjet

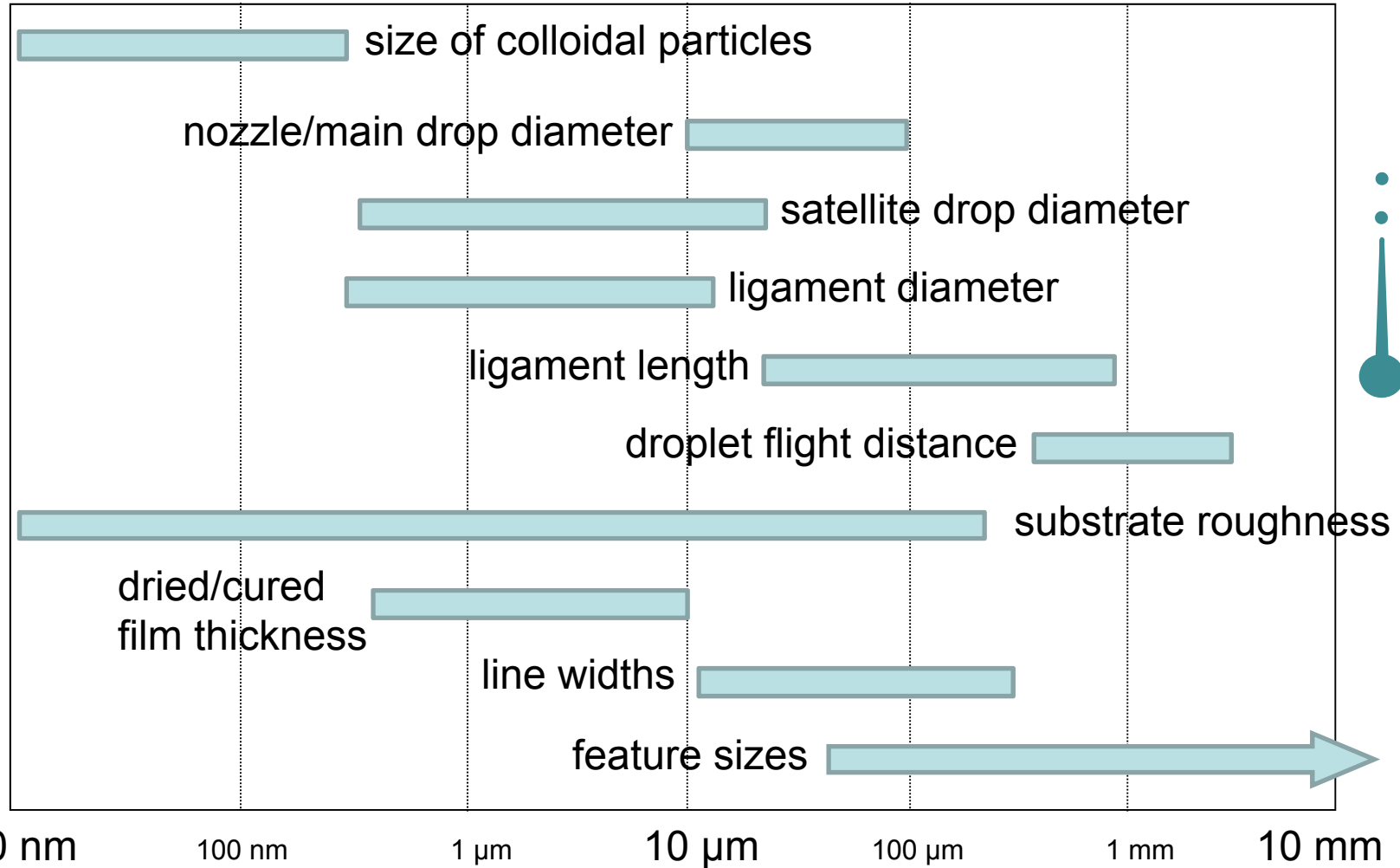
## Inkjet is multi-scale



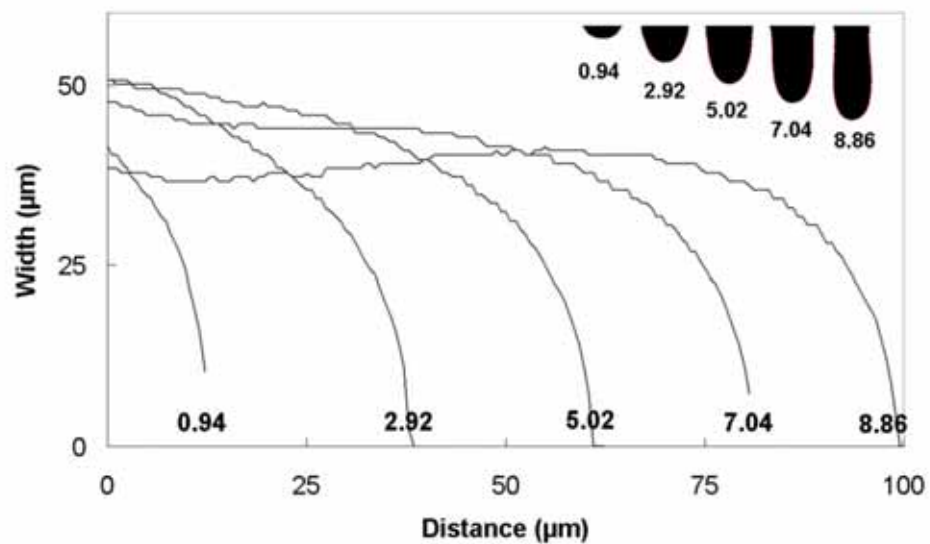
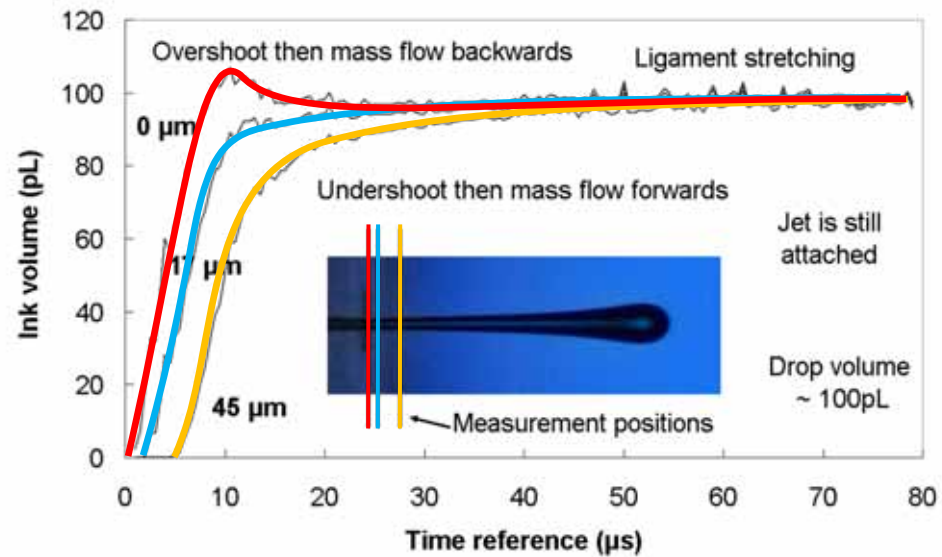
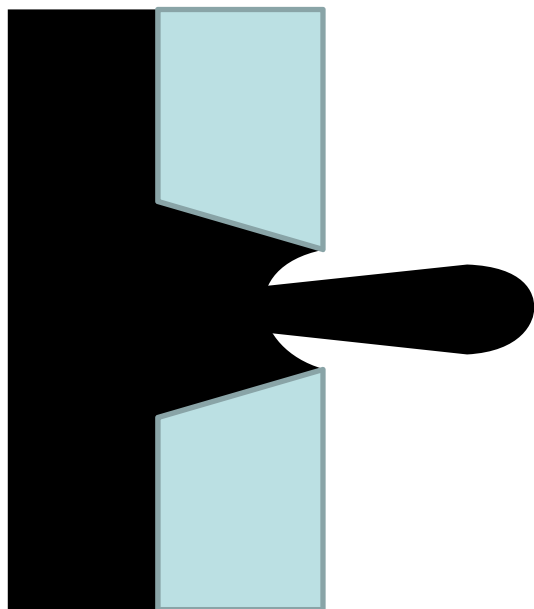
# timescales



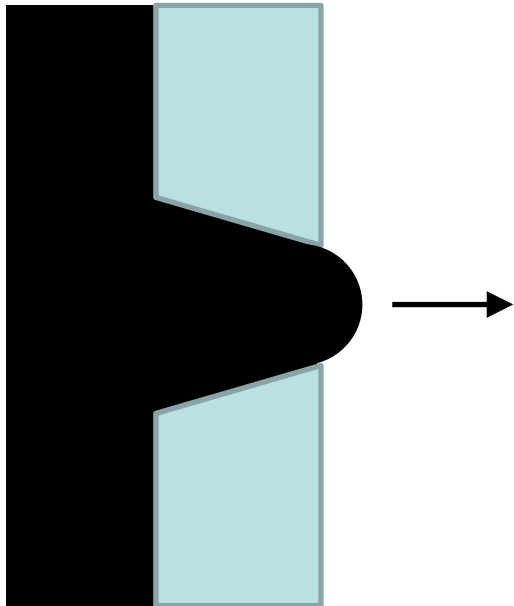
# length-scales



Formation of drop  
& ligament:  
Shear and stretch



# Shear



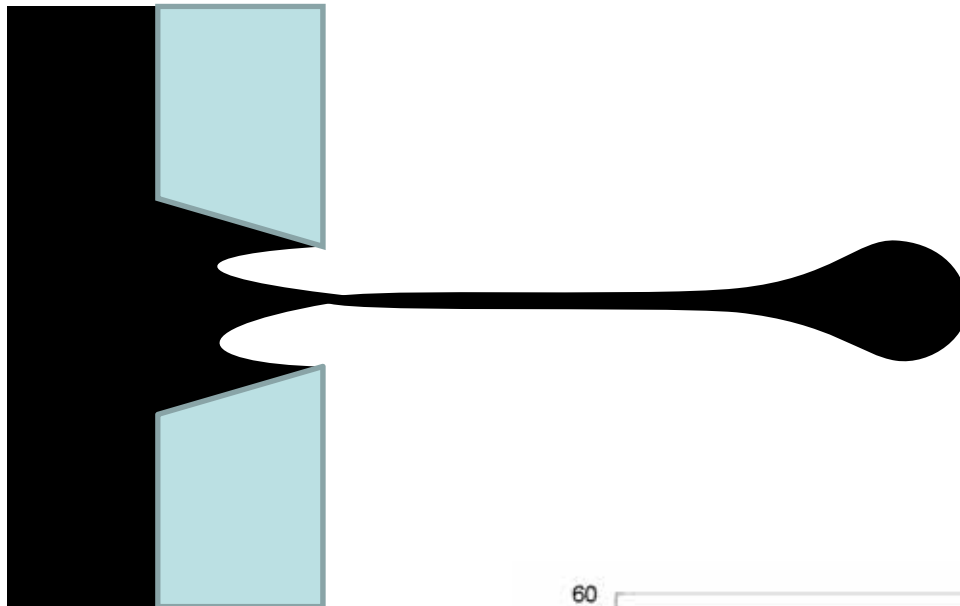
Shear rate estimate:  
Nozzle radius  $\sim 10 \mu\text{m}$   
Jet velocity  $\sim 10 \text{ ms}^{-1}$

Shear  $\sim v/r \sim 10^6 \text{ s}^{-1}$

Not a problem if the ink is truly  
Newtonian ie the viscosity is  
independent of the shear rate

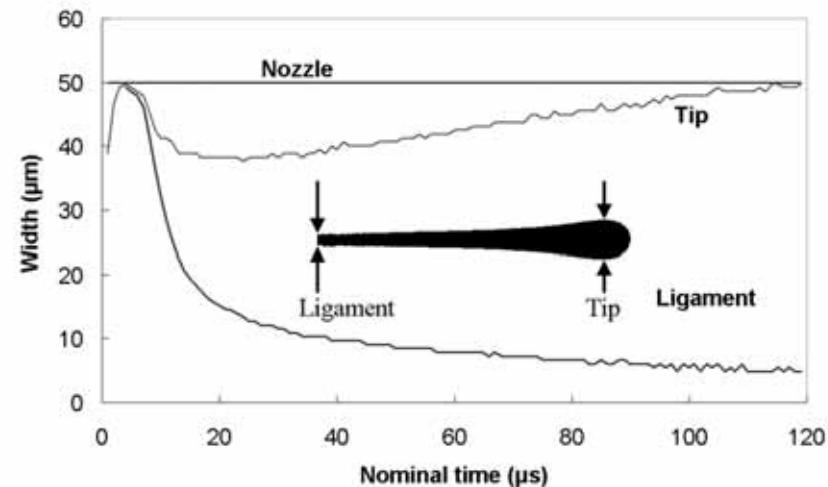
We have seen that some (perhaps many) inks, while showing Newtonian properties at normal values of shear and stretch (ie those measured by conventional rheological equipment), are not Newtonian under the conditions seen by forming jets and drops.

# Ligament extension – stretch



Polymers are particularly affected by shear and extension causing chains to stretch and align.

Relatively small amounts of long chain molecules will significantly affect the detail of the formation of drops and satellites.



Come along to the  
Ink Jet Technology Showcase 2011  
to learn the full story from  
Dr Graham Martin!

TechTalk 5

Thursday 9 June, 2011

09:00

# Mechatronic Aspects in Inkjet Development

Werner Van de Wynckel  
VdW-Consulting bvba,  
Wolvertem, Belgium

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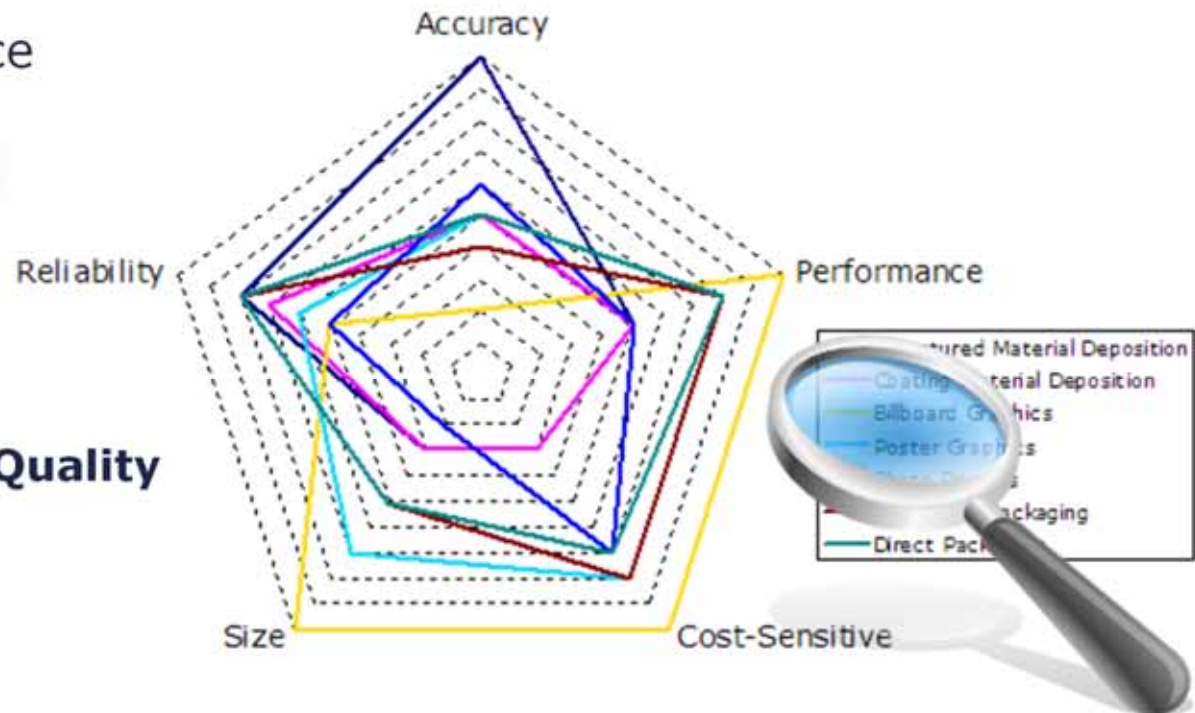
## Mechatronic Aspects in Inkjet Development

- **Scope of Presentation: Technology**
  - Inkjet Printing means : **Shoot flying dots onto a substrate**
    - as **accurate** as possible or needed
    - as **fast** as possible or needed
    - as **reliable** as possible or needed
    - as **economically** as possible or needed
  - Factors influencing these dots are;
    - Printing Process:
      - Head - Ink interaction
      - Ink- Substrate interaction
      - Pre & Post printing conditioning steps
    - System Accuracies
      - When to shoot
      - How the dots fly in 3 Dimensions
      - How the target moves in 3 Dimensions



## Mechatronic Aspects in Inkjet Development

- **Scope of Presentation: Application**
  - There are no generic design concepts that fulfill all requirements
  - Always a balance between:
    - Accuracy
    - Performance
    - Cost
    - Size
    - Reliability
  - Focus on: **Medium/High Quality Graphic Arts**



## Mechatronic Aspects in Inkjet Development

- **Outline**
  - Inkjet is non impact printing
  - Motion Related Image Quality Effects
  - Type of motion systems
  - Position Feedback Related Image Quality Effects
  - Type of Position Feedback systems
  - Real Time and Image Corrections

## Mechatronic Aspects in Inkjet Development

### Motion Related Image Quality Effects



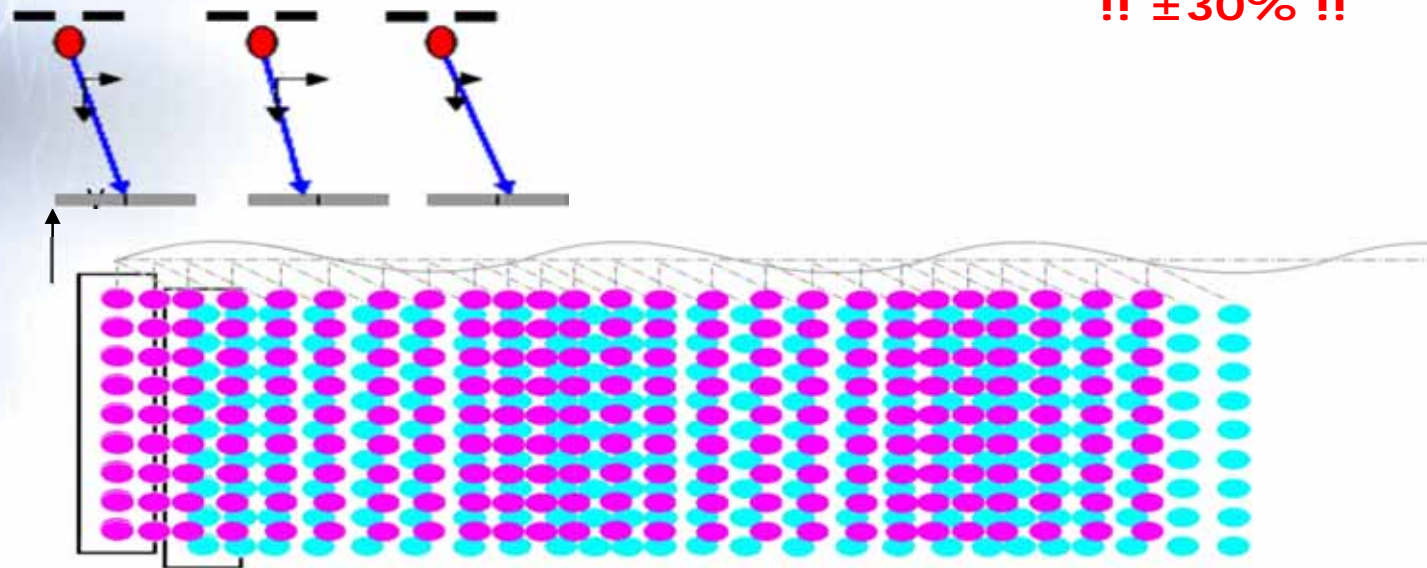
## Motion Related Image Quality Effects

- **What are typical Motion Errors**
  - Motion Errors are usually **systematic errors**
    - Human Eye will notice these errors very quickly
    - Very Critical
  - Main Categories:
    - Speed Control effects
    - Stiffness and Elasticity effects
    - Track straightness effects
    - 3-Dimensional nonparallel effects
  - Engineering efforts to find the best compromise for the application
    - System Accuracy
    - System Size and Weight
    - System Cost

## Motion Related Image Quality Effects

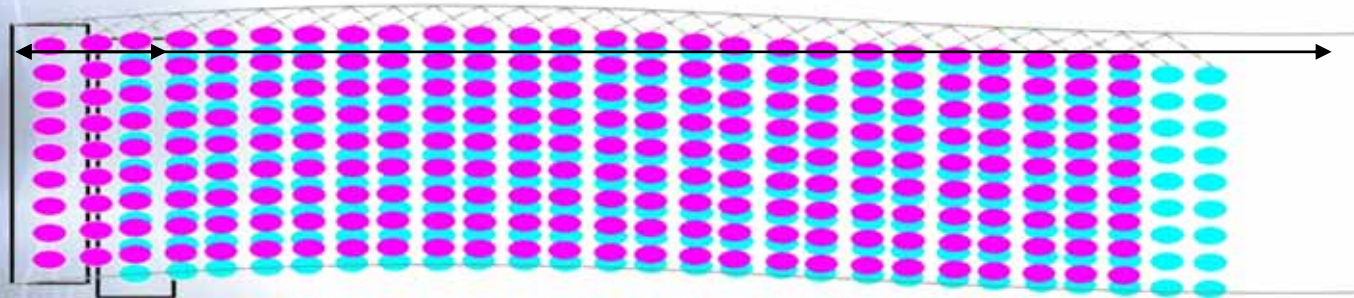
- **Non-Homogenous Printing Speed**
  - Droplets have substantial flight-time ( $\pm 200\mu\text{sec}$ )
    - When traveling at 1m/sec the landing is approx. 200um after fire
    - Printing speed  $\pm 5\%$  will land the drop 200um  $\pm 10\mu\text{m}$
    - When printing at 720dpi a line is printed every 35um  $\pm 10\mu\text{m}$

**!!  $\pm 30\%$  !!**

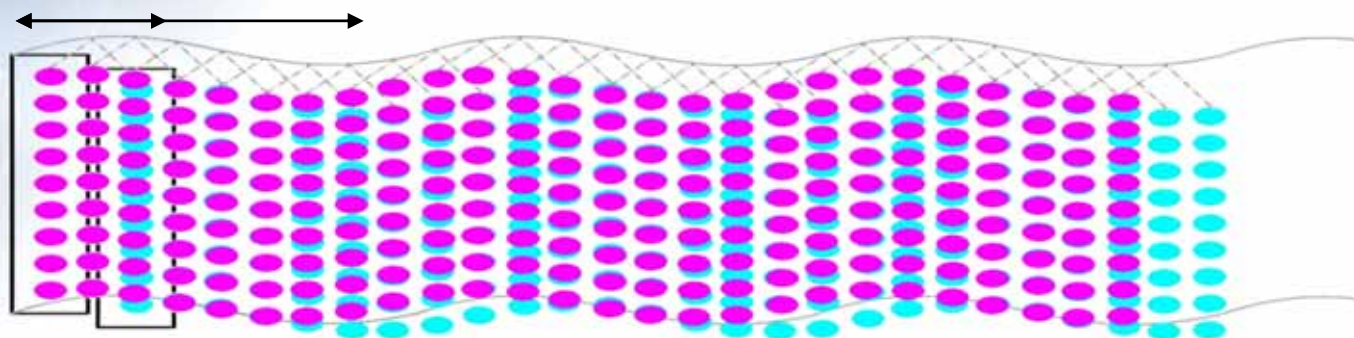


## Motion Related Image Quality Effects

- **Track Wobble**
  - Fast-scan motion not in straight line



- Important when **wobble period / Print-Head-Length** ratio  $< 10$



+ Angular effects

**!! Keep Print-Head-Length as short as possible**

Come along to the  
Ink Jet Technology Showcase 2011  
to learn the full story from  
Werner Van de Wynckel!

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# Ink Jet Tech Talks

Those were samples from just 2 of the 6 tutorials

- \* **ADVANCES IN UNDERSTANDING THE PRINTING PERFORMANCE OF INK JET FLUIDS**  
**Dr Graham Martin, Cambridge University**
- \* **INK TESTING FOR INDUSTRIAL INK JET PRINTHEADS**  
**Dr Kay Yeong, Xennia Technology**
- \* **KEEPING IT WORKING – NOZZLE MAINTENANCE**  
**Mike Willis, Pivotal Resources**
- \* **KEEPING IT FLOWING**  
**Rob Harvey, AtomJet**
- \* **MECHATRONIC SYSTEM ISSUES IN INK JET DEVELOPMENTS**  
**Werner Van de Wynckel, VdW-Consulting**
- \* **DPI & RESOLUTION - MORE THAN JUST NUMBERS**  
**Julian Bane, Ink Jet Consultant**

And there's much more...

**Keynote presentations  
to inspire you**

**Ink Jet 2011**  
*Technology Showcase*

# INKJET'S PLAY FOR LEADERSHIP

**Mark Hanley, President, IT Strategies**



- \* Which markets and which technologies qualify?
- \* Hi-volume inkjet's unresolved issues
- \* Inkjet's challenge to electrophotography may be premature?
- \* Market projections by sector
- \* Vendor review

# APPLICATIONS FOR INKJET PRINTING IN BIOTECHNOLOGY

**Prof. Brian Derby, School of Materials,  
University of Manchester**



- \* Inkjet printing - a powerful tool for precision patterning and manufacture
- \* Recent significant developments of inkjet for biology, biomaterials, gene/protein chips and sensor structures
- \* Directly printing enzymes, proteins, antibodies & living cells
- \* Despite impressive progress, approach to date has been empirical
- \* Key advances in recent years and current technological obstacles
- \* Future applications and technical and commercial opportunities

# PRINTING AS A DIGITAL FABRICATION TECHNOLOGY

\* **Marcel Slot, Director Technology Planning & Partnerships, Research & Development, Océ-Technologies**



- \* How digital printing technology has changed the printing industry
- \* Printing of text and graphics evolving into 'printing of things'
- \* Digital fabrication as enabler for a paradigm shift in manufacturing
- \* New manufacturing technologies will change the world

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# HOW TO SUCCEED

- \* **Paul Morgavi, President & C.E.O, IMPIKA**



- \* Once upon a time IMPIKA ...
  - \* But why?
- \* From the garage to the lab and to an industrial company
  - \* a “long and winding road”
- \* The day when the sun shines differently
  - \* Market and technology opportunities
- \* What’s next? - Today and tomorrow

And there's even more...

## Supplier presentations – learn the state of the art

Each of the suppliers will give a 15  
minute presentation describing  
their products and services

Visit our web site for descriptions of our suppliers products and services, and full contact details

**adphoS**

**AGFA** 

**Collins Ink Corporation**

 **Digital Direct**  
TECHNOLOGIES



**Amica Systems**

 **engineering**

**hönle**  
uv technology

**Dimatix**  
FUJIFILM 

**FUJIFILM**  
FUJIFILM Imaging Colorants



**GLOBAL INKJET SYSTEMS**  
dynamic solutions for industrial inkjet

**imageXpert**



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**Sun Innovations**

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DIC Inkjet Solutions



**METEOR**

**XENNiA**

New to ink jet?  
Attend one of two great  
introductory courses

**Full course details are on our web site!**

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# INK JET ACADEMY: Theory of Ink Jet Technology course

**Monday-Tuesday 6-7 June, 2011**

- \* A 1 1/2 day comprehensive course describing the basics of ink jet and ink technologies through to the latest advances, led by Mike Willis of Pivotal Resources and Dr Alan Hudd and Dr Tim Phillips of Xennia Technology.
- \* In 11 years over 2,000 have attended this broad and continuously updated introduction to this fast growing technology

# UV INK JET PRINTING COURSE

**Monday-Tuesday 6-7 June, 2011**

- \* **UV Curing Chemistry**

- \* Ian Hutchinson, Market Development Manager,  
Sartomer Europe, Paris, France

- \* **UV Curing**

- \* Dr. Nick Campbell, Project Manager,  
Inca Digital Printers, Cambridge, UK

- \* **Product Implementation & Applications**

- \* Dr. Simon Daplyn, Product Specialist,  
Xennia Technology Limited, Letchworth, UK

# Location

- \* **The Ink Jet Technology Showcase** is being held at the **Hesperia Tower Hotel, Barcelona, Spain**
- \* Luxury hotel, yet only €140 per night bed, breakfast and WiFi!
- \* Half way between BCN airport and downtown
- \* Full details on our web site



# Week at a glance

	9 am	10 am	11 am	12 noon	1 pm	2 pm	3 pm	4 pm	5 pm	6 pm	7 pm	8 pm
<b>Monday June 6</b>					Registration	Ink Jet Academy Course UV Ink Jet Printing Course				Reception		
<b>Tuesday June 7</b>	Ink Jet Academy Course UV Ink Jet Printing Course				Lunch	Ink Jet Academy Course UV Ink Jet Printing Course						
<b>Wednesday June 8</b>	<b>Ink Jet Technology Suppliers Showcase 2011</b>											
	Registration				Registration		Intro Keynote Mark Hanley	Supplier Presentations			Keynote Brian Derby	Reception
	Ink Jet Tech Talks Free training for Showcase registrants				Technology Supplier Exhibits							
<b>Thursday June 9</b>	<b>Ink Jet Technology Suppliers Showcase 2011</b>											
	Ink Jet Tech Talks		Supplier Presentations		Lunch	Keynote Marcel Slot	Supplier Presentations			Keynote Paul Morgavi	Reception	
	Technology Supplier Exhibits											

# Ink Jet 2011 *Technology Showcase*

See you at the Ink Jet  
Technology Showcase 2011!

[www.imieurope.com/IJTS11](http://www.imieurope.com/IJTS11)

Registration fee for  
**Ink Jet Technology Showcase 2011**  
€595, or €295 for students and academics