

# iarigai

FRIBOURG 2017

44<sup>th</sup> International Research Conference of **iarigai**  
Advances in Printing and Media Technology

*From printing to manufacturing*

Welcome!



*Theater "L'Équilibre", where the welcome reception will take place.*

**Conference program**

# Welcome!

Welcome to the major scientific and technical event of the print and media field, the 44<sup>th</sup> **iarigai** International Research Conference! Under the general topic of expanding “from printing to manufacturing”, the focus of the conference program will be on functional printing, media developments, and print science. As a participant, you will learn about new research findings and topical observations - information that will benefit both industry and the research community. You will also meet new and old colleagues and you will have the opportunity of networking with experts and industry representatives with different specializations. All this will contribute to the development of our field.

We proudly announce that the conference will take place in Fribourg, Switzerland this year, hosted by the iPrint Institute of the University of Applied Sciences of Western Switzerland. The **iarigai** Conference on “Advances in Printing and Media Technology” runs from 10<sup>th</sup> to 13<sup>th</sup> September. Some program sessions are specifically directed at industry participants, notably the special high-level keynote session and the panel discussion on Tuesday, 12<sup>th</sup> September, where distinguished industry leaders will discuss the future of print and media towards digital direct manufacturing or production.

We are convinced that the conference days in Fribourg will be instrumental in the international exchange of knowledge between researchers from various fields as well as between research and industry. Thus, we will all be working together for the further development of the print and media industries.

We look forward to meeting you in Fribourg!

With our best regards,



**Prof. Fritz Bircher,**  
Conference Chair

## Day 1

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Sunday, 10<sup>th</sup> September 2017

12:00-17:00 **Board meeting**

18:00 **Welcome reception at "L'Équilibre", Fribourg**  
Registration start (at the Équilibre)

## Day 2

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Monday, 11<sup>th</sup> September 2017

8:30-9:00 **Welcome and Coffee**  
Registration (at the NH Hotel)

09:00-10:30 **Opening session**

09:00-09:10 **Opening of the conference**

*Anne Blayo, President of iarigai*  
*Fritz Bircher, Conference director*

09:10-09:15 Fribourg University of Applied Sciences - Welcome addresses  
*Jean-Nicolas Aebischer, Director*

09:15-09:20 City of Fribourg - Welcome addresses  
*Thierry Steiert, Mayor*

09:20-09:40 Industrial printing - needs for education  
*Fritz Bircher, iPrint Institute Fribourg*

09:40-09:45 Introduction of new members

09:45-10:00 JPMTR - iarigai scientific publishing platform  
*Gorazd Golob, Editor-in-Chief*

10:00-10:30 **Invited opening presentation**

Digital Direct Manufacturing  
*Steve Knight, Digital Direct Technologies*

10:30-11:00 Coffee break

11:00-12:00 **Plenary session 1 - New dimensions of industrial printing**

Chair: *Fritz Bircher*

11:00-11:30 **Keynote 1**

Mouvent™ Cluster - The Base for a printed Printer  
*Piero Pieranzzotti, Mouvent*

11:30-12:00 **Keynote 2**

Progress on massive scaling of NanoDrip electrohydrodynamic printing  
*Patrick Galliker, Scrona*

12:00-13:30 Lunch

**13:30-14:45 Session 2 A – Inkjet printing**

Chair: Fons Put

- 13:30-13:55 A Model of Inkjet Printing on porous Substrates incorporating Droplet Impact  
*Li Yang, Jianghao Liu and Xianfu Wei*
- 13:55-14:20 Ink Jet Matching of Gravure Printed Wood Grain  
*Vinay Anil Turke, Paul Daniel Fleming, Veronika Husovska and Alexandra Pekarovicova*
- 14:20-14:45 Waveform Optimization for Piezo Drop on Demand Inkjet Print Heads by Meniscus Motion Analysis  
*Johannes Renner and Fritz Bircher*

**Session 2 B – Printing processes**

Chair: Cathy Ridgway

- Calculation of Mesh Depression due to Squeegee Forces during Screen-Printing Process  
*Gunter Huebner*
- On the Measurement of the Pick-up Volume of Anilox Rollers by Fluorescence  
*Felipe Fernandes, Fabio Campanelli and Edgar Dörsam*
- Accelerated Weathering Tests of Parking Vignettes  
*László Koltai, Csaba Horváth and Eszter Bartha*

14:45-15:15 Coffee break

**15:15-16:30 Session 3 A – Printed functionality 1**

Chair: Edgar Dörsam

- 15:15-15:40 Co-Developing Services utilizing Printed Functionality  
*Liisa Hakola, Kaisa Vehmas, Thea Sipiläinen-Malm, Reetta Grenman and Anu Seisto*
- 15:40-16:05 Influence of Drying Temperature on Morphology and Conductivity of Silver  
*Vincent Faure, Aurore Denneulin, Yahya Rharbi, Albert Magnin and Anne Blayo*
- 16:05-16:30 Inkjet-fabricated Coated Reaction Platform for Colorimetric Glucose Detection  
*Eveliina Jutila, Risto Koivunen, Roger Bollström and Patrick Gane*

**Session 3 B – Printing for packaging**

Chair: Patrick Gane

- Investigating Opportunities for 3D Digital Package Prototypes in the Proofing Workflow  
*Amanda Whyte, Natalia Lumby and Reem El Asaleh*
- Formulation of a Bio-based and Water-based Ink for Flexography  
*Fanny Bardot, Charles Bouchard, Olivier Tonnoir, Anne Blayo and Gérard Mortha*
- Smart Packages by Means of Intelligent Codes  
*Mustafa Bilgin and Johannes Backhaus*

**16:45-18:00 General assembly (appointed representatives only)****18:00-18:45 Board meeting (members only)**

## Day 3

**Tuesday, 12<sup>th</sup> September 2017****09:00-10:15 Plenary session 4 – Innovation in industrial printing**

Chair: Anne Blayo

- 09:00-09:20 Keynote 3**  
Collaborative Innovation in Digital Direct Manufacturing  
*Fritz Bircher, iPrint*
- 09:20-09:50 Keynote 4**  
New Printing Processes - Challenges for Paper Recycling  
*Axel Fischer, INGEDE*
- 09:50-10:15 Canadian Magazine Publishers – State of the ‘App’  
*Christopher Smyth and Carman Fan*

10:15-10:45 Coffee break

10:45-12:00

**Session 5 A – Printing inks**

Chair: Ian Baitz

10:45-11:10

Predictive Modelling of Demixing and Evaporation from a Roller Nip-distributed Water-in-Ink Thin Film Emulsion using Tack Measurement

*Patrick Gane, Carl-Mikael Tåg and Cathy Ridgway*

11:10-11:35

The Yin and Yang of Colors – how to calculate the exact complementary color to a specific chromatic Brand Color

*Michael Abildgaard Pedersen*

11:35-12:00

Microscale Halftone Analysis: measurement Framework and Convolution Strategy to differentiate Physical and Optical Dot Gain

*Louis Vallat-Evrard, Lionel Chagas, Raphaël Passas and Nadège Reverdy-Bruas*

**Session 5 B – Print quality**

Chair: Gunter Hübner

Special Examination for the Durability of Text Books

*Csaba Horváth*

Quality Testing of Samples from Multi-Layer-Printing Process using the Method of Visual Color Assessment

*Heike Gute, Edgar Dörsam and Hans Martin Sauer*

Quality Control in Job Printing: adaptable Camera Focus using Power Spectrum

*Julian Schäfer, Felipe Fernandes and Edgar Dörsam*

12:00-13:30

Lunch

13:30-14:45

**Session 6 A – Printing functionality 2**

Chair: Anu Seisto

13:30-13:55

Analyte Separation for Microfluidic Applications by Surface Charge Modified Functional Pigment Coatings

*Risto Koivunen, Eveliina Jutila, Roger Bollström and Patrick Gane*

13:55-14:20

A Method to Assess the Cross-Sectional Profile of Fused Deposition Modeling Lines

*Heng Li, Bruce Myers and Shu Chang*

14:20-14:45

Cheap Carbon Nanodots obtained from Waste and their Use as Luminescent Material for (Water-based) Ink-jet Inks

*Massimo Varisco, Denis Zufferey, Fritz Bircher and Olimpia Mamula Steiner*

**Session 6 B – Substrates for printing**

Chair: Gilbert Gugler

The Evaluation of Bio-Based Binders Influence on Offset Print Mottle using GLCM

*Igor Karlovits, Janja Juhant Grkman, David Ravnjak and Gregor Lavrič*

Using ISIT as a Probe to establish Critical Roughness – film thickness relationship

*Mika Anttila, Martti Toivakka and Patrick Gane*

The Wettability Effect of CMY Water-based Flexographic Printing Inks

*Zuzanna Żołek-Tryznowska, Joanna Izdebska-Podsiadły and Mariusz Tryznowski*

14:45-15:15

Coffee break

15:15-16:45

**Plenary session 7 - Introduction & panel discussion on digital direct manufacturing**

Chair: Fritz Bircher

15:15-15:45

Introduction of the participants:

- Steve Knight, Digital Direct Technologies
- Polytype SA, Jean-Marc Moriggia
- 3D iam AG, Reto von Arx
- Phytec, Sven Dengel

15:45-16:45

**Panel discussion**

Moderator: Fritz Bircher

- 16:45-17:00**      **Closing of the conference**
- 16:45-16:55      Wrap up  
*Fritz Bircher, Conference director and Anne Blayo, President of iarigai*
- 16:55-17:00      45<sup>th</sup> International Research Conference, Warszawa, September 2018  
*Presentation by the University of Warsaw (Zuzanna Żótek-Tryznowska)*
- 19:30**              **Conference dinner**

## Day 4

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Wednesday, 13<sup>th</sup> September 2017

**09:00**              **Meeting at NH Hotel**

Building of two groups

**Group 1**

Transfer by shuttle to the Marly Innovation Center (MIC)

**Group 2**

15' walk to the Museum

**09:15-10:15**      **Visit iPrint Institute**  
*The modern Way of Printing*

**Visit Gutenberg Museum**  
*The ancient Way of Printing*

**10:15-10:30**      Coffee break (at the MIC)  
Transfer by shuttle to the Museum

Transfer by shuttle to the MIC  
**10:30-10:45**      Coffee break (at the MIC)

**10:45-11:45**      **Visit Gutenberg Museum**  
*The ancient Way of Printing*

**Visit iPrint Institute**  
*The modern Way of Printing*

15' walk back to NH Hotel

Transfer by shuttle back to NH Hotel

**12h00**              **Back at the NH Hotel**

Trains leaving Fribourg:

- 12h26 in direction of Geneva (every 30 minutes)
- 12h34 in direction Bern/Zurich (every 30 minutes)