



# FLAAR Lecture Abstracts

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Nicholas Hellmuth

## Digital Photography: How to improve input for Digital Printing



### Lecture Abstract

A recent visit to the Xerox demo center in Rochester by five of us from FLAAR+BGSU revealed how important it was to have outstanding images to input into the iGen3 variable data short run digital press. We learned the same when Xeikon used their model 5000 printer to test print our FLAAR photos. For both printer technologies, if your original image was color balanced and had appropriate exposure, the results were spectacular. The same would be true on other digital short run presses.

With wide format inkjet printers the input is all the more crucial because of the larger sizes of output. At trade shows around the world it is sad to see million-dollar printer manufacturers, media and RIP companies, showcasing their nice products but with dust spots and hair scattered all over the image; purple skies (a clear indication the image was scanned); and all too often pixellation. An all too common additional visible blemish is digital imaging over-saturation, especially in reds. You also frequently see unfortunate attempts to enlarge 35mm digital images to poster size.

In other words, the best short run digital presses, and the best inkjet printers, do a beautiful job of reproducing all the worst features of a bad original. The better the printer, the better it shows the inadequacies of your original photo or scan.

Based on many years of experience in testing large format digital camera backs, medium format digital camera systems, 35mm digital SLRs and even the entire range of zoom-lens cameras of 5 through 8 megapixels, we explain the blunt facts of how best to select a digital camera system to create impressive input for wide format printers (and variable data short run digital press) output. Frankly you need medium format or large format direct digital images: scans of 35mm film are what cause the most pathetic wide format prints.

This presentation is for print shop owners, printer operators, as well as for photographers (pros and aficionados). Dr Hellmuth has decades of experience using film with Nikon, Leica, Hasselblad, and Linhof cameras, so you don't have to be digital to enjoy this lecture. Nicholas is not a digital fanatic that thinks traditional negatives are useless. But since almost everything that is printed nowadays ends up digital at some point of the workflow, you might as well learn the reality now.

## How to determine the right UV-Flatbed Printer for your needs



### Lecture Abstract

A first step is to recognize the differences between:

- UV-cured ink flatbeds,
- Solvent ink flatbeds,
- Eco-solvent ink flatbed printers.
- New lactate-based Bio-solvent ink flatbeds
- Very special print-on-anything water-based ink such as Lumocolor

Second step is to understand the different classes of UV-cured ink printers:

- Skimpy entry-level printers,
- Capable entry-level printers,
- Full-featured mid-range UV flatbed printers,
- Super-charged industrial strength fast production printers.

It helps to understand the differences between:

- Dedicated flatbed printers
- Dedicated roll-to-roll UV printers
- Combo UV-curable inkjet printers (both rigid and also roll-fed materials)
- Hybrid UV-printers (sort of retrofitted, often a polite way to say jerry-rigged)

FLAAR can take advantage of being an independent and outspoken university institute to cut through advertising claims and reveal what you need to know BEFORE you decide which UV flatbed printer to select.

FLAAR has prepared a standardized evaluation format so that you, on your own, can evaluate each individual UV-cured flatbed and roll-to-roll printer, for all applications (more than just printing interior decoration). The crucial aspect is to realize that asking the right question (before you buy) may save you headaches later on. Learn how to go beyond the spec sheet. Every brand and model of printer is very good at something, but not so appropriate for other tasks. Indeed this is why the really large and successful print shops have several different printers. But which printer for which material and for which application?

Several million people have read the FLAAR websites since Print '01, so during this lecture is a chance to get information first hand, personally from Nicholas Hellmuth, author of over 53 FLAAR Reports on UV-cured inkjet flatbed printers as well as author of countless other reports on all aspects of wide format inkjet printers, RIPs, color management, inkjet media, printheads, and workflow.

## How to determine the right UV-Flatbed Printer for your needs Cont.



Of the thousands of e-mails that pour into FLAAR almost every one has the word “help” somewhere. Print shop owners and printer operators seek assistance to sorting through the plethora of choices. There are more different brands of UV-flatbed printers than all brands of solvent, eco-solvent, and water-based printers put together. To make decisions all the more daunting, UV inkjet technology is still brand new. Ink recipes are changing every 8 months. Because our institute is wholeheartedly dedicated to research, a university professor is a useful fountain of information for learning the pros and cons of each aspect of wide format printing produced with UV-cured technology, whether for signage, giclee, or architectural decoration.

What would happen to your sign shop business if there was an ink that printed on everything...



## Lecture Abstract

What if this ink was made from corn, or with water, and therefore was not hazardous, carcinogenic, and did not require UV lamps?

After attending digital imaging printing trade shows and seminars across the USA and Europe in 2005 I have seen the breakthroughs for last year leading to the challenges for 2006 onward. I would like to review 2005 and preview 2006.

Naturally, a media manufacturer will prefer inks that require specialty media. But the consumer may boycott media that is too expensive. A real-world example will be presented. At the far other end is the absolute cheapest material, ordinary brown Kraft paper (cheap wrapping paper), aluminum foil from a grocery store or Wal-Mart, uncoated wallpaper, etc.

What would happen to the world of inkjet, as we now know it, if an ink could print equally well on every substance you could feed through the printer? Both the printers and the inks exist, we have seen them; they are in experimental testing stage.

If you expect these inks are UV-cured, yes and no. Yes there are UV inks that can print on glass, ceramic tiles, concrete and brick (we cover those in another popular lecture from the FLAAR digital imaging learning center). But the PowerPoint presentation we abstract here is dedicated to special inks that do not require UV lamps. This means no heat to roast thin papers and warp delicate materials. No ozone either, and no quarter-million-dollar printer is required.

Although the discussion will be on inkjet inks, inkjet media and substrates, my reference point will be photographic quality, so near-continuous tone when possible. Indeed at DRUPA 2004 I saw giclee-quality art being produced with a Toshiba copier. Variable data short run digital presses such as Xeikon are producing fine art quality photographic prints already. We mention these, but will focus primarily on liquid inks that jet through conventional piezo printheads (so far none of these unusual inks can work in a thermal/bubble-jet head).

Because this lecture includes printing on signage materials as well as on art (giclee) papers, I will focus on what exotic ink chemistries can be jetted through printheads, what printers can utilize these remarkable inks, and which materials can receive this kind of ink.

I will review the recent year and preview what we can look forward to in our future of specialty inks for inkjet printers

## Printing on Wood, Stone, Metal & Tiles: Opportunities & Options



### Lecture Abstract

Direct printing on wood, stone, metal and tiles offers opportunities for handsome work by interior decorators, architects, as well as artists. The more these occupations learn about the technology that will enable them to print on hard rigid materials, the sooner (and more often), graphic designers, architects and artists will specify printed wood and stone in their projects. Since FLAAR is an academic institute at a large state university, part of our mandate is to do research and publish our results specifically for this type of audience.

This lecture will review the range of technology available for printing on building materials both for the upscale home as well as for office and corporate spaces. We will also include printing on plastic floor tiles, common ceiling panels (acoustical ceiling tiles) and office cubicle wall units (both metal and fabric-covered). Comments will discuss the pros and cons of each of these printing or decoration processes. The coverage will mention the entire workflow, from image capture through digital imaging through RIP software into the printer and finishing (cutting, trimming, top-coating if necessary).

By "tiles" we will include ceramic floor tiles as well as tiles for wall murals. By doors we include both real wood (chip-board, plywood, or hardwood) as well as steel doors when building codes don't allow wooden doors (such as fire escapes). Many hotels, casinos, ships, and office buildings want all their doors to look like expensive hardwood doors, Now even particle-board doors can look like Honduras mahogany.

The focus will be on large format flatbed inkjet printers, since this is the size, shape, and technology that can handle doors, window shutters, table-tops, and other wood, stone, plaster or concrete surfaces of interest to architects and interior decorators.

If the wall is already in place, you can roll a portable air-brush printer in front of the wall and print directly on it. However most of this lecture will discuss the potential of UV-curable inkjet printers. Faux-marble surfaces painted onto cheaper walls have been used since Baroque times, so printing a marble pattern onto architectural surfaces is a logical digital version of this time-honored practice.

Because this lecture is specifically on materials for inkjet printing, I will focus on what can be jetted through print-heads and what substrates can receive this kind of ink. But HP and Ricoh printheads can also create 3-dimensional objects. And other digitally controlled devices, albeit not inkjet, can also "print" on metal, plastics, and wood: namely laser engravers.

## Dr. Nicholas Hellmuth Biography



Dr Nicholas Hellmuth  
FLAAR

Dr Nicholas Hellmuth is dedicated to helping people learn about UV-cured ink flatbed printer technology. What caught his attention is that UV-cured ink flatbeds can print on architectural material in addition to signage substrates. Nicholas studied architecture at Harvard and then went into photography, scanning and digital printing technologies. As a consultant to screenprinting and sign shops that seek help in “Which UV-flatbed printer should I purchase?” he has learned what clients seek. Today Nicholas is concurrently at a large state university where he interacts with their architecture department in addition to directing a digital photography, scanning, and wide format printing imaging programs.

Director, Large Format Digital Imaging Division  
Center for Applied Technology  
Bowling Green State University  
111 Saddlemire  
Bowling Green OH 43403-0156

Fax: 419-372-8283

