

**FLUO** 

**UV Ink Densitometer**

**TRADEMARK  
COUNTERFEIT  
PROTECTION**

**Make Invisible Ink Quality **VISIBLE****

# **Quantified Control of Invisible Brand Protection**



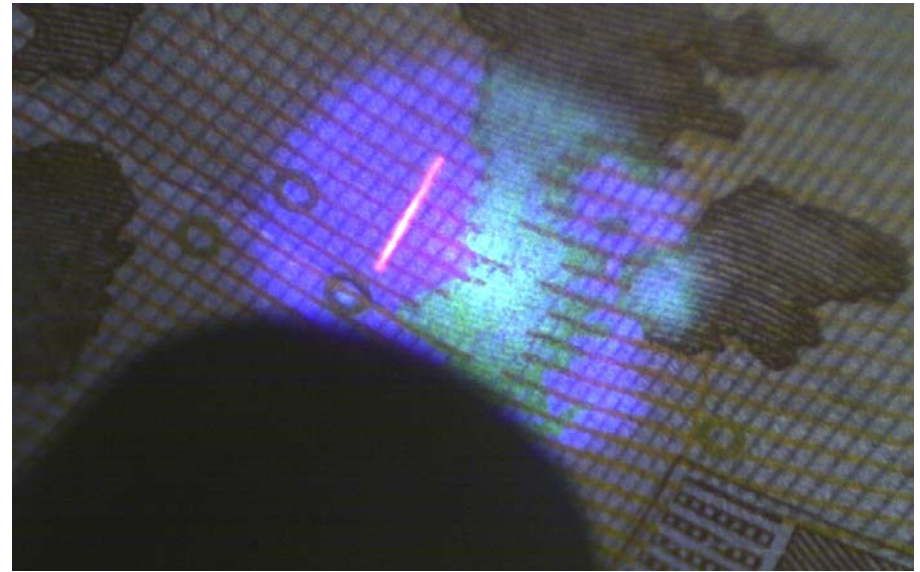
 **BETA INDUSTRIES**  
The Quality Control Company

# Trademark Protection is Image Protection

Packaging, packaging materials and other technologies can protect a product against criminal activities such as piracy, counterfeiting and black market diversion

- Serial numbers, QR Codes
- Digital Signatures
- Tapes and Labels
- Synthetic Paper
- Smartphone Apps
- Track & Trace
- Holographic Images
- RFID, Printed Memory
- Tracer Particles
- DNA Markers

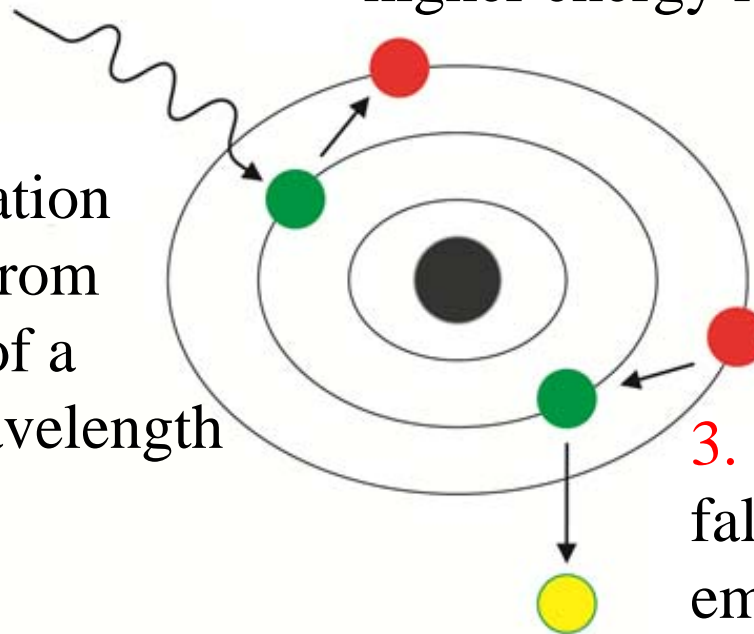
# Production Techniques in Current Use



Invisible Fluorescent Ink

# What is Fluorescence?

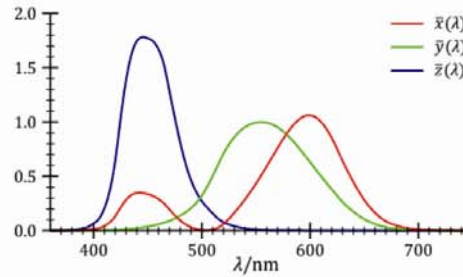
1. Excitation energy from photon of a short wavelength



2. Electron is raised to a higher energy level

3. Electron spontaneously falls to lower energy, emitting photons of longer wavelength

# What is Fluorescence

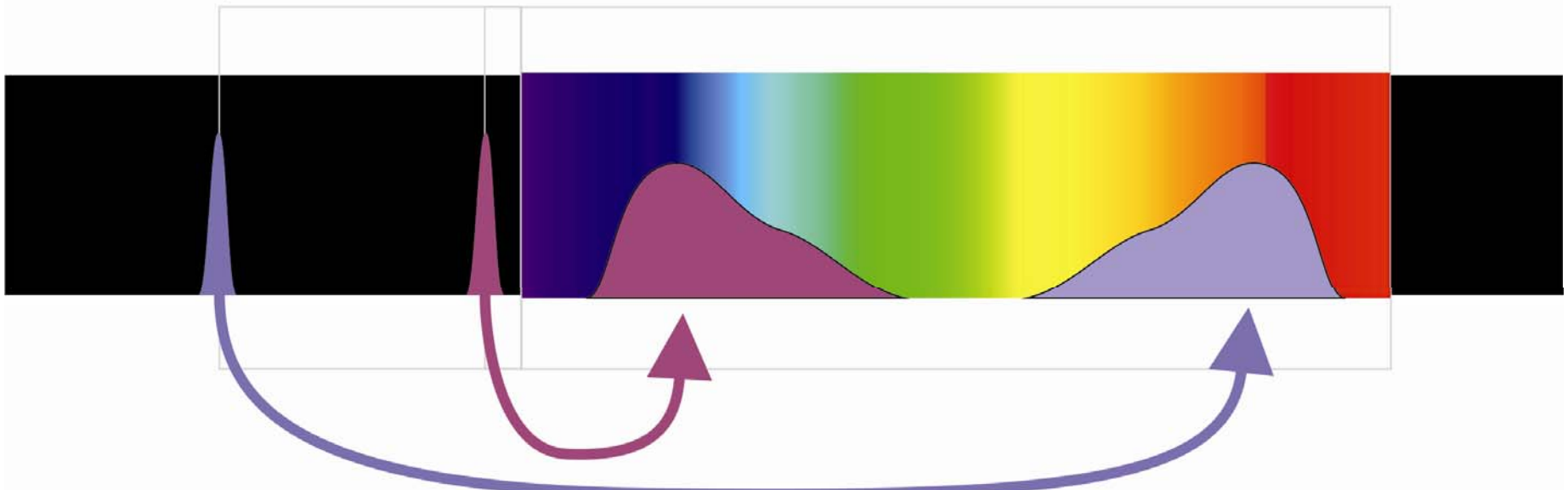
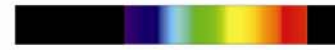


255 nm



365 nm  
380 nm

720 nm



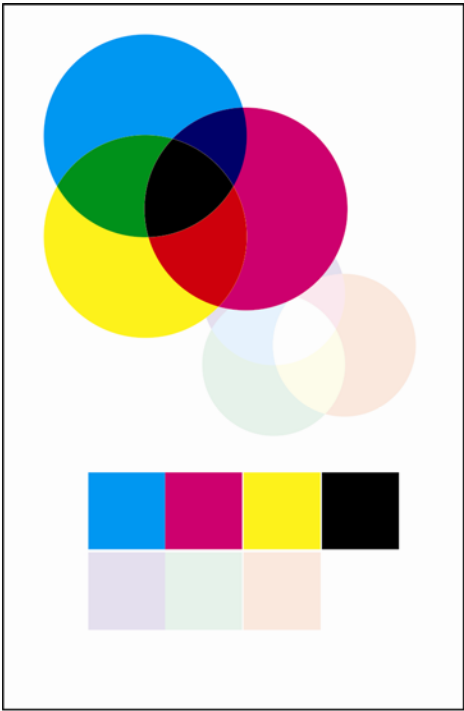
# The Printing Process Must be Controlled

## FLUO the Invisible Ink Densitometer

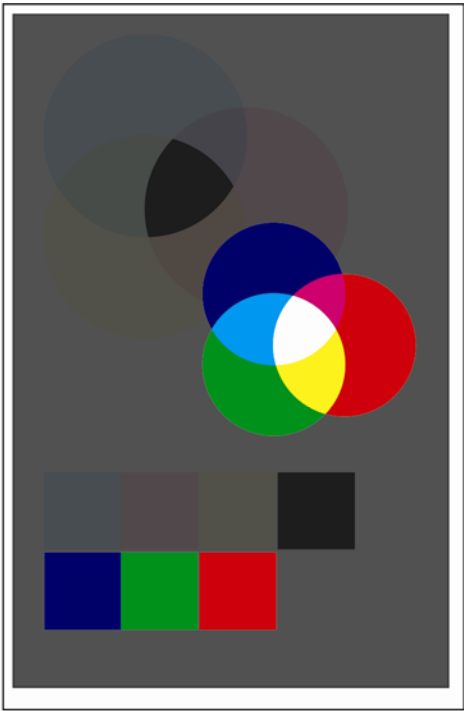


- Measure the total intensity of the emitted light over the visible range
- Measure the intensity within each individual (XYZ) color channel
- Measure tonal value
- Equipped with one or optionally two UV-emitting LEDs

# Incorporate Protection with Clever Designs

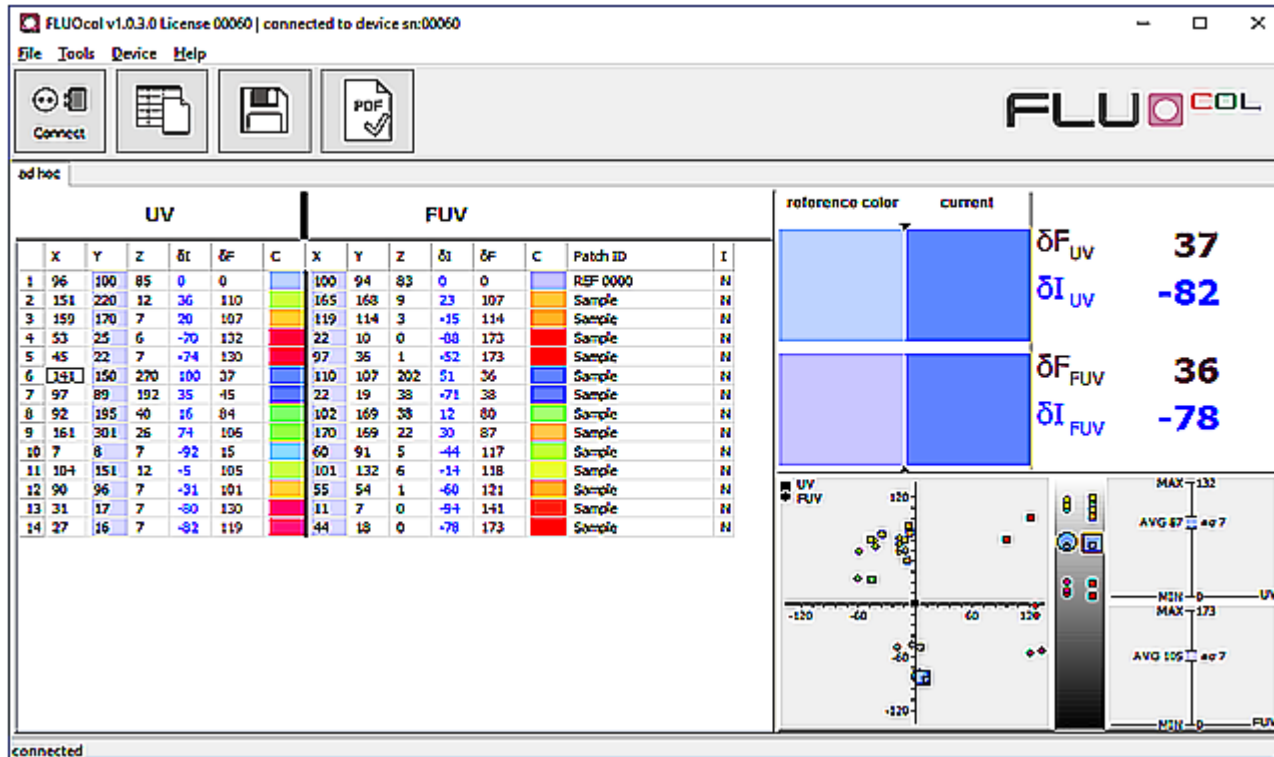


visible light



UV-LED

# FLUO Measurement Interpretation and Documentation with FLUOcol Software



Intensity FLUO (I) -> Delta I  
 Intensity FLUO (XYZ) -> RGB -> Lab -> Delta F



**The First Step to  
Printed Trademark Protection is  
Accurate and Reproducible Measurement  
of the Printed Control Target**





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