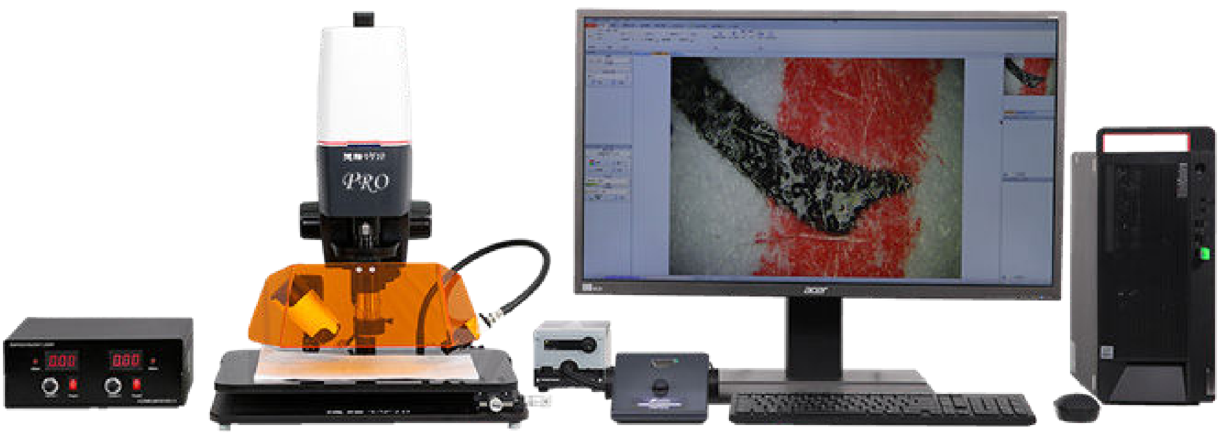
DeltaPix

VF10

Digital 3D Microscope



- -High Quality Forensic microscope
- -2D and 3D display and measurements
- -Volume/Height/Depth/Roughness measurements
- -Fast EDF and HDR
- -Large XY stage with high precision
- -Suited for questioned document examination
- -Laser light and filters for fluorescence
- -Affordable

VF10

VF-10 integrates fluorescence observation/chromatography observation/ ultra-high magnification coaxial observation/3D stereoscopic observation and 3D imaging reconstruction techniques, significantly improve the accuracy of identifying the sequence of stamp and strokes. This is applicable to stamp and strokes sequence analysis, printed document examination, paper material inspection, stamp examination, and trace evidence analysis.

The upgraded laser light source, compared to ordinary light sources, features high energy and strong specificity. It enables long lifespan, high efficiency, high brightness, and speckle-free operation, producing superior fluorescence effects that facilitate better observation and judgment. The excitation and emission spectra of laser fluorescence can be tuned to meet different application requirements.

FEATURE HIGHLIGHTED

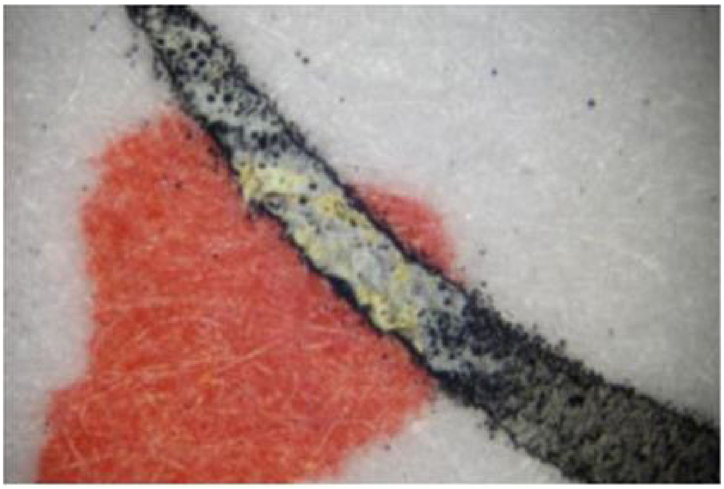
- 100x-3200x Ultra-high magnification microscope reveals the detailed features of the examined materials from macro to micro perspectives.
- Extended depth-of-field tomography observes and interprets the sequence of stamp and strokes/stock order.
- Coaxial light illumination provides the optimal observation method for documents.
- 12M pixels High-definition, wide dynamic range cameras ensure the best image quality.
- High-power, high-purity dual-band LED excitation light source offers optimal fluorescence observation, with adjustable illumination angle and distance.
- Tomographic microscopic 3D imaging technology presents the three-dimensional reconstruction of the examined materials in true original color.
- High-precision optical system Z-axis movement control, with micron-level stepping accuracy and auto focus adjustment, ensures high-resolution 3D images.
- Various image processing, comparison and measurement functions.

APPLICATION:

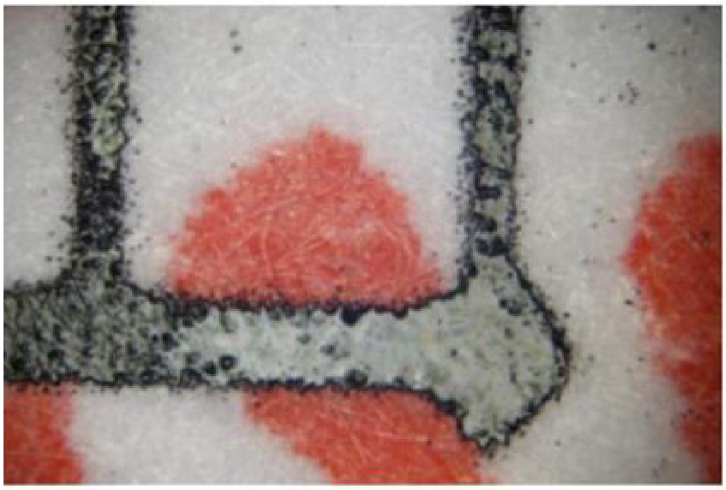
- Stamp and stroke sequence
- Order of strokes
- Paper fiber inspection
- Photocopied document inspection
- Printed document inspection
- Other user-extended applications

CASE STUDY

1. stamp and strokes sequence analysis
Co-axial high magnification observation under white light



Laser printing first, then stamping.
The pits are filled with ink, and the upper surface of the toner appear gold color.

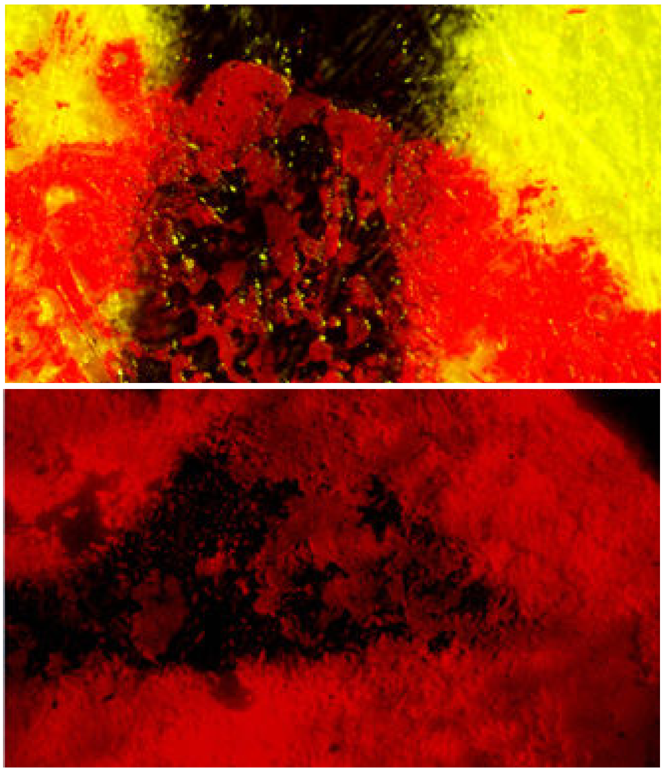


Stamp first, laser printing later.
Intersection is particulary smooth with regular color.

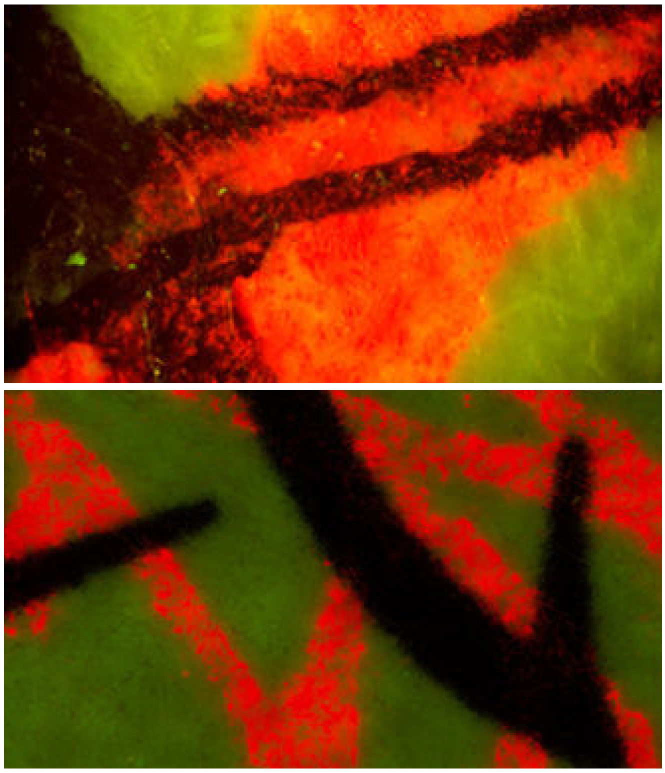
Stamping before handwriting.
The adhesion of the ink of the signature pen at the intersection decreases, the transfer effect to the paper becomes poor, shrinkage and interruption occur, and red background is visible in areas of the handwriting.

Stamping after handwritting.
The strokes of handwriting are continuous, complere and consistent in width

Fluorescence observation with 440-460nm blue excitation light



Laser printing first, then stamping.
There are obvious differences in the color of the printing and strokes.



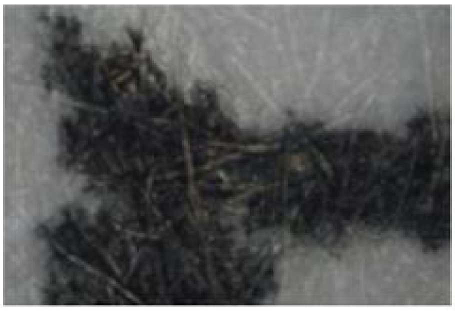
Stamping first, laser printing later.
There is no obvious difference in the color of the printing and strokes.

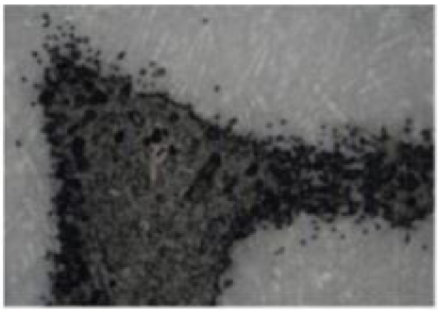
2.Optical Tomography Stereo observation of overlapping parts of the handwriting
Ultra-short depth of field caused by the high-magnification lens can effectively distinguish the upper and lower order of strokes.

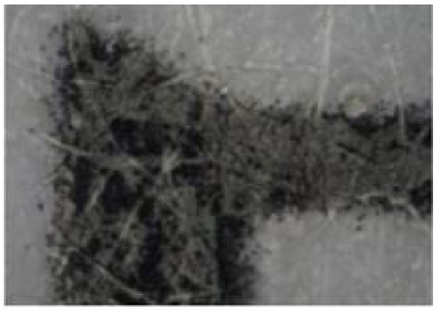
Lens moves from the top to down.
Upper stroke will be clear first

Lens move fra the top to down.
Lower stroke will be clear later

3. Observation on the accumulation morphology and distribution characteristics of toner particles in laser printing/copying documents.

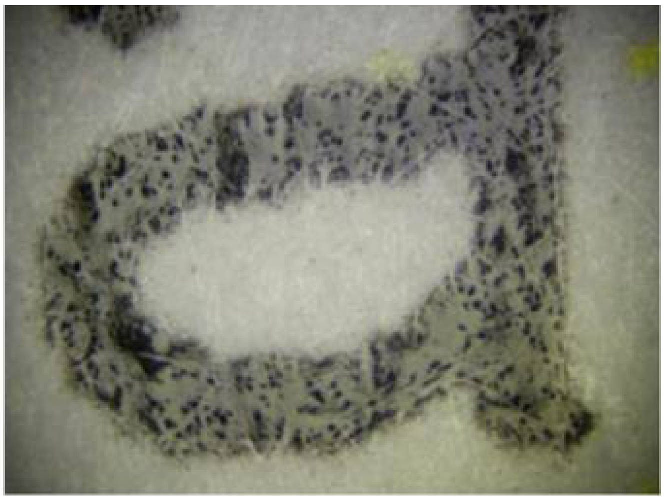

EPSON R330 Inkjet Printer


HP M225 Laer Printer

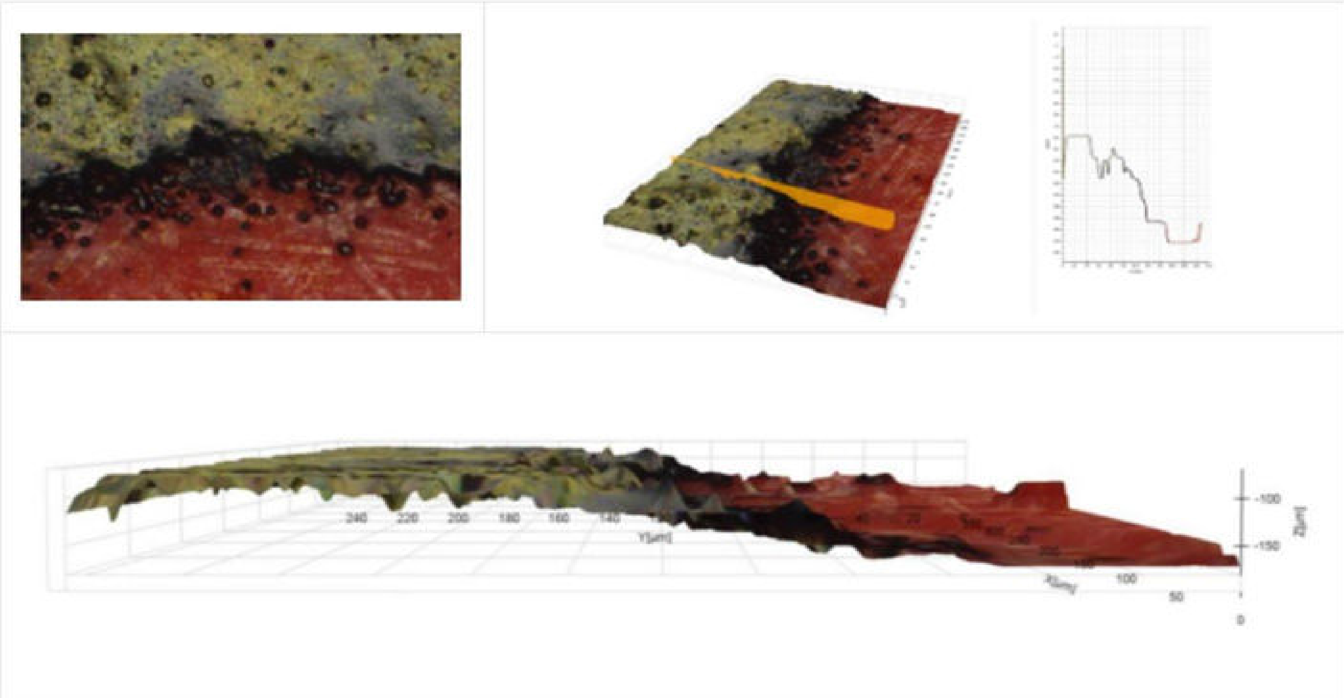

CANON 8200 Laser Printer

4. Secondary printing analysis and identification
Laser printing document formation method for the toner adsorption to the paper through the fixing method of the toner melting pressure after the formation of the image, the second printing part of the coaxial light reflection light is more obvious than the first printing. Identify traces of forgery in documents through the identification of the second print.


First printing


Second time printing

5. Microscopic three-dimensional imaging inspection



Specification:

- Microscope body: 6× Zoom microscope, optical zoom range 0.75-4.5×
- Camera: 12 M pixel USB3.0 digital camera, up to 20 FPS in full resolution,
- Micron focusing controller:
  Diisplay for Z-position read out and control optical focusing
- XY-stage:
  Manual adjustment A3 size
  I Coaxial light source
  I Gooseneck White Light Source 6400K
- Light source:
  I Blue & Green (450nm & 520nm), Laser light source, Illumination angle, and distance adjustable
  I Transmission light source
- Camera Long Filter: 490nm and 550nm
- Objective Lens: ×2, ×10,
- Magnification Range: 100×-3200×
- MAX FOV: 11mm×8mm

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