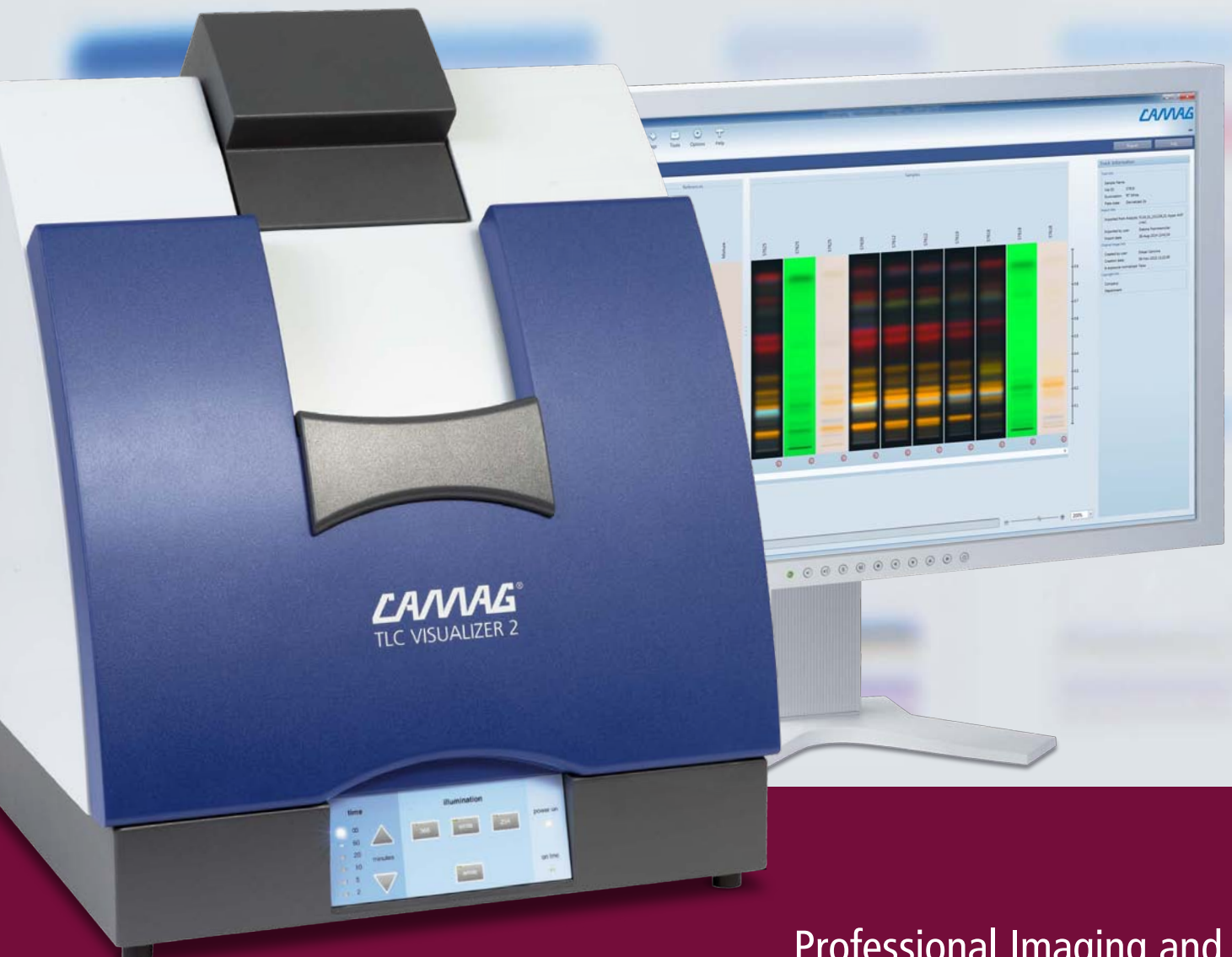


CAMAG TLC VISUALIZER 2



Professional Imaging and Documentation System for TLC/HPTLC Chromatograms with a new Digital CCD Camera, connected by USB 3.0

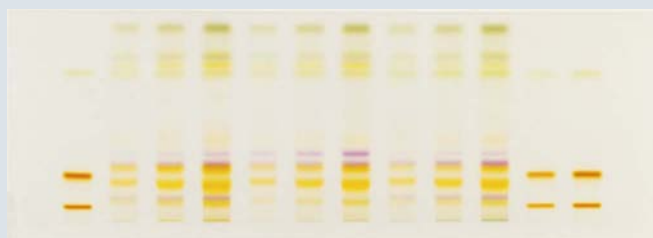
CAMAG[®] WORLD LEADER IN PLANAR CHROMATOGRAPHY

Visualization, Evaluation, and Archiving

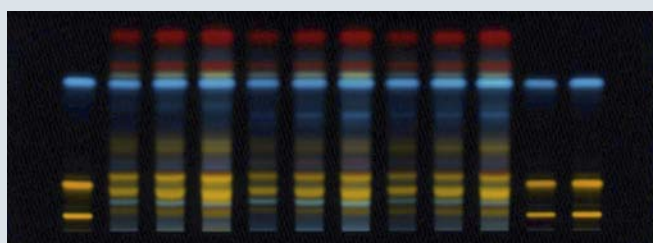
The visual presentation of the complete chromatogram showing all samples and standards side by side is one of the most convincing arguments for Thin-Layer Chromatography. No other chromatographic technique can directly express the result as a color image and make it available for visual evaluation.

To reproducibly acquire and preserve best quality images of TLC/HPTLC chromatograms under different illumination modes this high-end imaging and documentation system is now available. With its new digital CCD camera a maximum resolution of 82 μm on the plate is obtained.

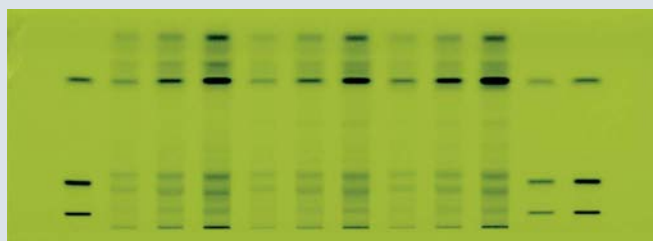
For electronic image acquisition the camera – like the human eye – captures polychromatic visible light. Under white light illumination it is the light reflected from the layer background. Under long-wavelength UV light (366 nm) it is the light emitted by fluorescent substances. When short-wavelength UV light (254 nm) is used, substances absorbing UV 254 nm appear as dark zones, provided the layer contains a fluorescence indicator (fluorescence quenching).



Chromatogram under white light



Chromatogram under UV 366 nm



Chromatogram under UV 254 nm

Key Features

- Reproducible high-quality images acquired under homogenous illumination with the selected light
- Easy and intuitive operation with *visionCATS*
- High-dynamic-range imaging (HDRI)
- Side by side comparison of tracks originating from the same or different plates and/or different illumination modes
- Various image enhancement tools, e.g. "Spot Amplification", "Clean Plate Correction" and "Exposure Normalization"
- Image-based profile generation from reference and sample tracks, and subsequent peak integration and calibration
- New digital CCD camera with a maximum resolution of 82 μm on the plate
- USB 3.0 for easy PC connection
- Meets all requirements to be used in a cGMP/cGLP environment
- IQ/OQ qualification and 21 CFR Part 11 ready



CAMAG TLC Visualizer 2 operated under *visionCATS*

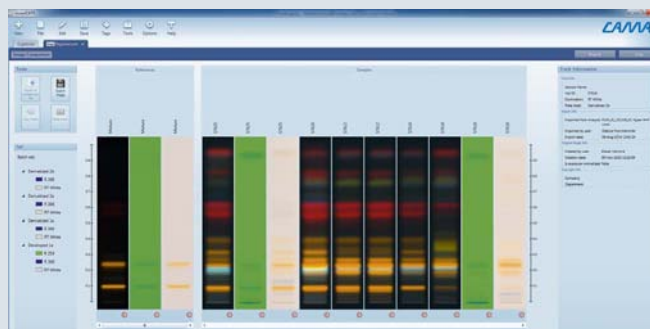
visionCATS organizes the workflow of TLC/HPTLC, controls the involved CAMAG instruments, and manages data. Professional image acquisition and documentation of TLC/HPTLC chromatograms ensuring highest reproducibility is the major purpose of the TLC Visualizer 2.

For the evaluation of acquired images sophisticated enhancement tools and functions for annotation and determination of position (R_f) are required.

This is where *visionCATS* comes into play and virtually unleashes the power of TLC/HPTLC. *visionCATS* features a powerful database at its heart, enabling an all new sample-based approach. The state-of-the-art software supports low-noise, high-dynamic-range imaging (HDRI) and includes a comprehensive set of image enhancement tools. With the "Comparison Viewer", tracks originating from the same or different plates and/or different illumination modes can be compared on the same screen side by side which allows the creation of "virtual plates". Detailed on-screen instructions effectively guide the user through the image acquisition process.



"Data View" allows for visual evaluation of a plate in different illumination modes and offers a broad range of helpful tools, e.g. the R_f tool displays the R_f value of zones on the digital image or a rectangular zoom function.



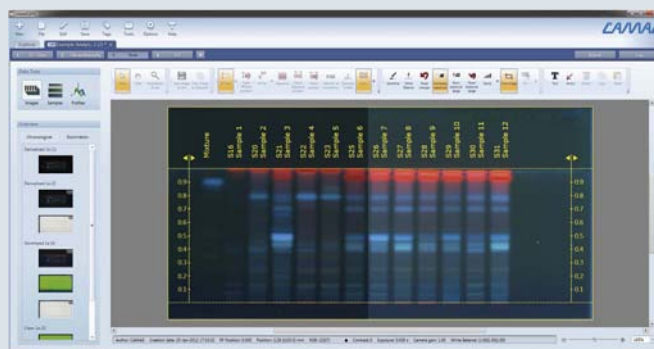
"Comparison Viewer": selected tracks of images taken from different plates under UV 366 nm, UV 254 nm, and white light can be displayed side by side.

Image Enhancement

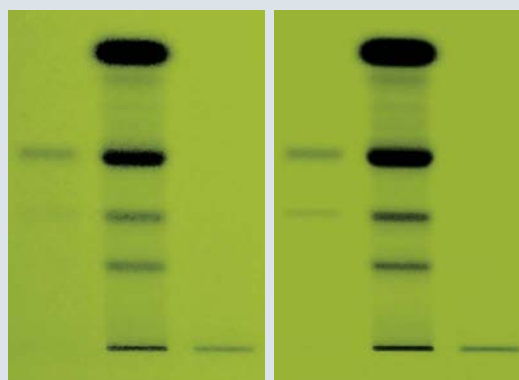
The image enhancement tools featured in *visionCATS* exploit the full potential of the TLC Visualizer 2. Images are automatically captured based on an optimized control of the illumination and parameters specified in the TLC/HPTLC method. Sophisticated algorithms guarantee the highest image quality for identification of even the weakest zones.

HDR is a technique used to reproduce a greater dynamic range of luminance levels. Multiple standard-dynamic range images are taken at different exposures and merged into a single HDR image. For HDR images under UV 366 nm a set of dedicated enhancement tools is available. "Exposure Normalization" allows the retreatment of the image by normalizing the exposure: the gain is adjusted to an equivalent of 85% detector response based on a selected area (reference track by default). The tool is used to allow visual comparison of images from different plates with virtually the same exposure settings. The "Clarify" tool virtually changes the illumination setting after capturing and makes very faint zones visible on an unchanged background.

Localization of even the smallest fractions on the plate can be achieved with the "Spot Amp" tool which allows increasing or decreasing the contrast of the image. With "Clean Plate Correction" an image taken of a neat plate prior to sample application can be subtracted from the image of the developed plate. Thus irregularities of the TLC/HPTLC plate, particularly the structure of the fluorescence indicator, or small variations in layer thickness seen in transmission mode, are efficiently eliminated. The "Clean Plate Correction" is significantly improved due to the increased resolution of the new CCD camera in the TLC Visualizer 2.



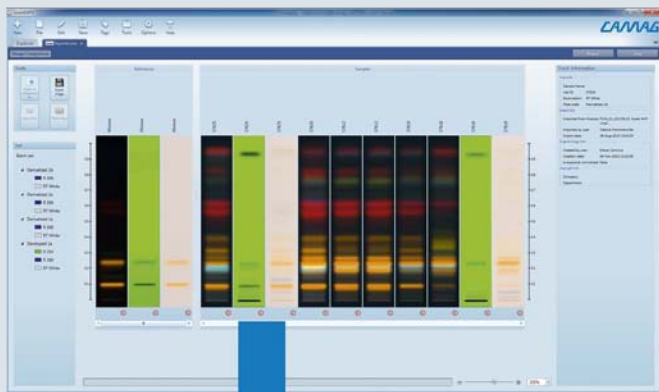
"Exposure Normalization" for visualization of weak zones (right) and original image (left)



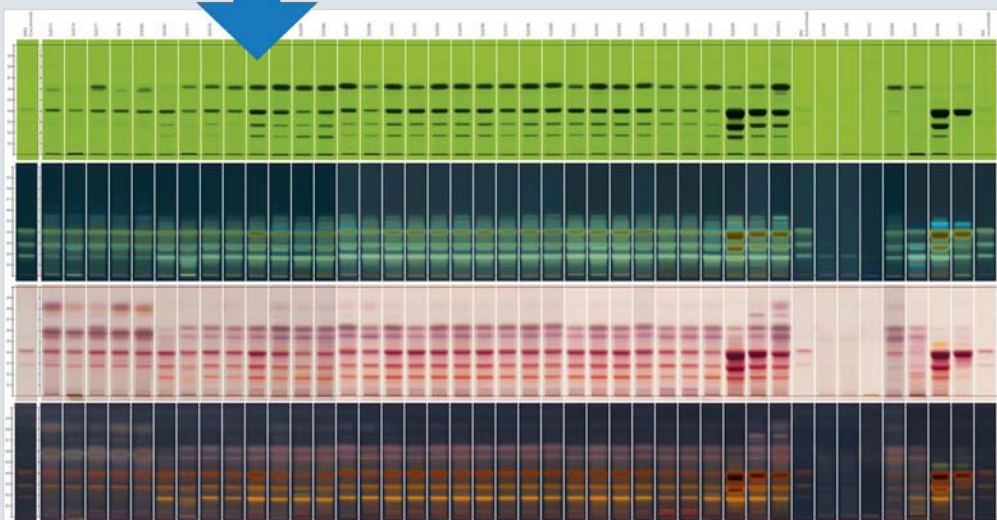
"Clean Plate Correction": the corrected image (right) is of superb quality. Due to reduced noise, weaker zones become detectable.

Comparison Viewer

The "Comparison Viewer" allows easy side by side comparison of tracks from different TLC/HPTLC plates and different detection modes on the same screen:



- Simultaneous display of reference and sample tracks from different plates
- Creation of virtual plates from tracks originating from the same and/or different plates and/or detection modes
- Automatic transfer of all track information from an analysis to the "Comparison Viewer", e.g. plate state (clean, developed, derivatized), wavelengths, R_f value, and display settings
- "Comparison Viewer" report including sample details, track information and reference details
- "Comparison Viewer" files can be exported and transferred to a different *visionCATS* installation
- Traceability of all generated data to the original analysis



"Comparison Viewer": creation of virtual plates from tracks originating from different plates and detection modes

Image-based evaluation

visionCATS software enables an image-based evaluation of chromatograms obtained with the CAMAG TLC Visualizer 2.

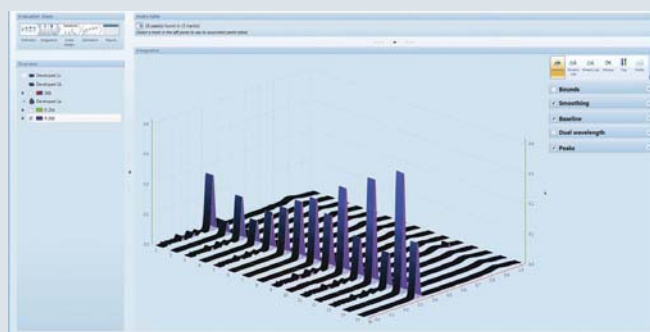
- Conversion of images of TLC/HPTLC chromatograms into analogue curves based on absorption or fluorescence of separated zones
- Integration of chromatograms resulting in semi-quantitative peak data (area and/or height)
- Semi-quantitative evaluation of samples in comparison to calibration standards on the same plate

Profile Comparison

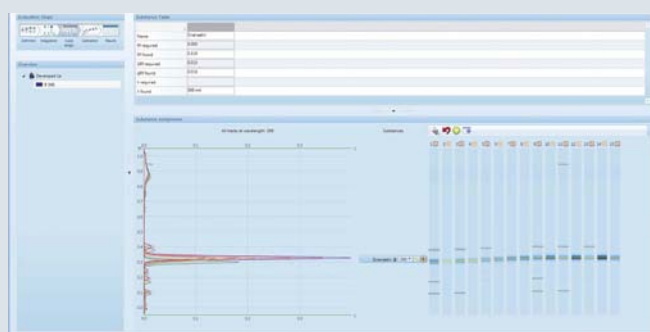
- Display of individual chromatograms
- Position of peaks (R_f value/migration distance) can be determined
- Comparison of chromatograms from the same or different plate/image

Evaluation

- Intuitive data management
- Several calibration modes (e.g. single level, multi-level, related substances)
- Re-evaluation of data at any time



3D-image profile



Substance assignment

Technical specifications

Dimensions and weight

Width: 480 mm, depth: 537 mm, height: 596 mm
Net weight: 17.0 kg

Object size supported

With 12 mm lens: up to 20 x 20 cm
With 16 mm lens: up to 20 x 10 cm

Light sources

2 x UV tube short wavelength (254 nm) – direct light
2 x UV tube long wavelength (366 nm) – direct light
2 x white light tube – direct light
2 x white light tube – transmitted light

Camera type

Digital CCD camera, sensor "SONY Super HAD CCD", HDR

Camera exposure time

2.3 ms to 10 s, up to 60 s for HDRI, min. step size 1 μ s

Connection

USB 3.0 and RS232

Mains voltage

100–240 V, 50/60 Hz, 50 W

Software for instrument control

visionCATS (2.3 or higher) on MS Windows 7 and Windows 10



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