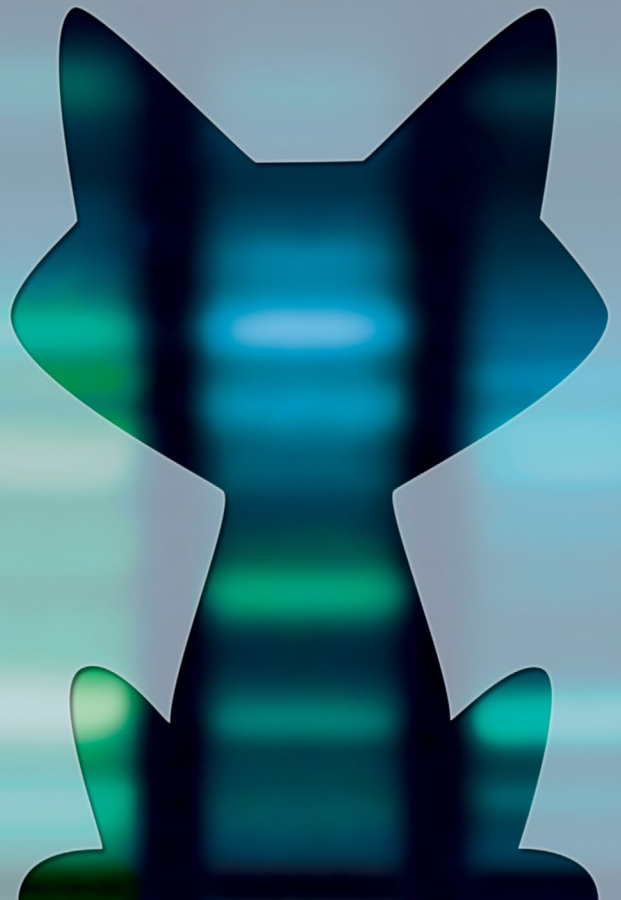


*vision***CATS**
CAMAG HPTLC SOFTWARE



HPTLC ANALYSIS – MADE EASY

CAMAG[®] WORLD LEADER IN PLANAR CHROMATOGRAPHY

		Horizontal Developing Chamber	Chromatogram Immersion Device
Stationary Phase	Nanomat	Developing Chamber	TLC/HPTLC Sprayer

▲ Manual Input

Definition	Sample Application	Chromatogram Development	Derivatization	Evaluation: Detection	Evaluation: Documentation	Report
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▼ Software-controlled

Samples	Automatic TLC Sampler ATS 4	Automatic Developing Chamber ADC 2		TLC Scanner	TLC Visualizer
Standards	Linomat 5				

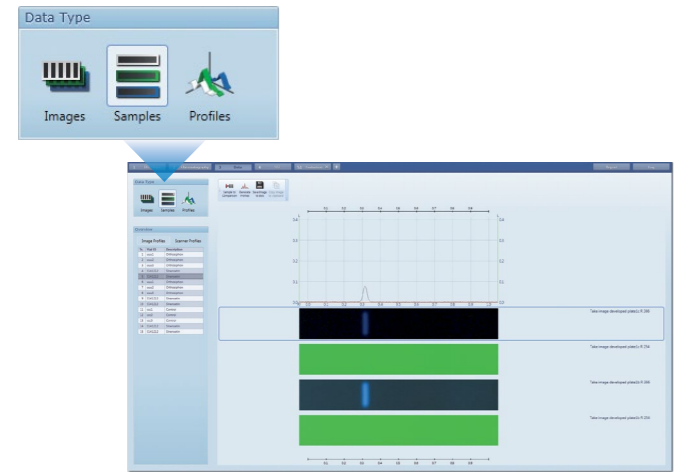
HPTLC ANALYSIS – MADE EASY

visionCATS stands for ease of use and intuitive simplicity. The software organizes the workflow of HPTLC, controls the involved CAMAG instruments, and manages data.

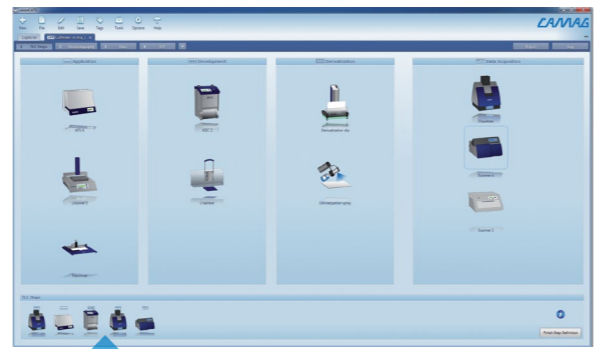
The easy to navigate user interface effectively guides the user through the chromatographic process – from definition of samples and substances to reporting of results. Simply select one of the default methods and start working: fill in the sequence table, select a mobile phase and the derivatization reagent.

If necessary modify detection parameters. Then visionCATS will guide you. Creating your own method is easy as well: just select the desired steps. The new sample-oriented approach allows for creating virtual plates from tracks originating from different plates, e.g. for batch-to-batch comparison or long-term stability testing.

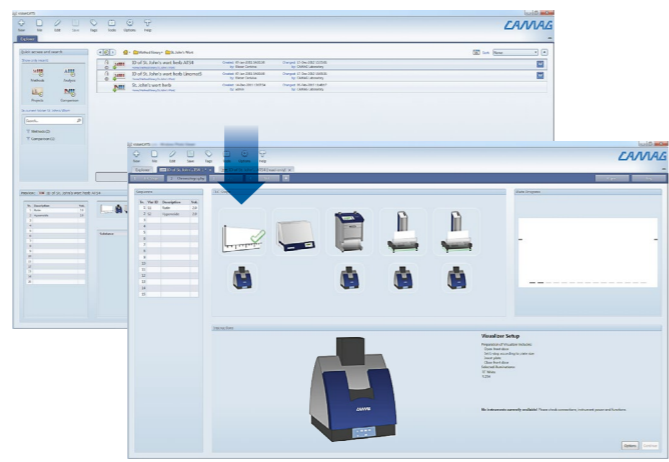
With visionCATS relevant samples can be located easier and faster than ever: a powerful search tool within the file explorer that includes extended preview functionalities enable the user to easily search for text and date, samples, methods, and analysis files.



SAMPLE VIEW: all available data related to the sample are displayed



HPTLC ANALYSIS – MADE EASY: create your own method with a few mouse clicks



GUIDED ANALYSIS: select a method and visionCATS will guide you

KEY FEATURES

Image Comparison Viewer

With the fully integrated Image Comparison Viewer tracks originating from the same or different plates and/or different detection modes can be compared on the same screen side-by-side.

Image Enhancement Tools

visionCATS supports low-noise, high-dynamic-range imaging (HDRI) and includes a comprehensive set of Image Enhancement Tools.

Scanning Densitometry and Spectral Evaluation

Following their chromatographic separations substances on the plate can be measured by Scanning Densitometry. Recording of UV/Vis spectra and their comparison with reference spectra allows identification.

Quantitative Analysis

To determine the substance concentration in a sample after densitometric or image analysis, five different quantification functions (e.g. linear and polynomial regression modes) are available. Several scanning steps and up to five different evaluations can be performed in one analysis file.

HPTLC Method Library

For seamless import of validated methods and images of standards and reference materials, visionCATS provides a free of charge HPTLC Method Library for licensed users.

Regulatory Compliance

visionCATS supports compliance with cGMP/cGLP and 21 CFR Part 11.

State-of-the-art Software Architecture

visionCATS is based on a client/server system, enabling scalability from a single workstation to a multi-user lab network.

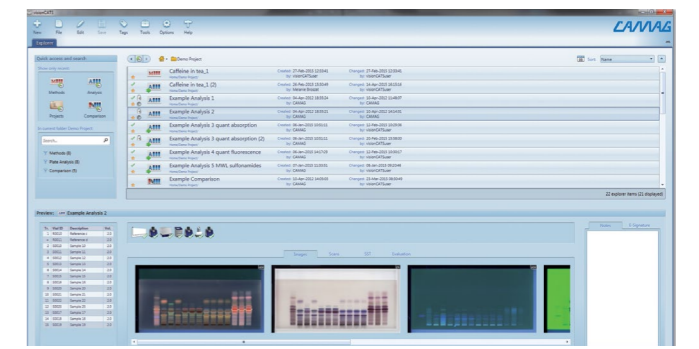
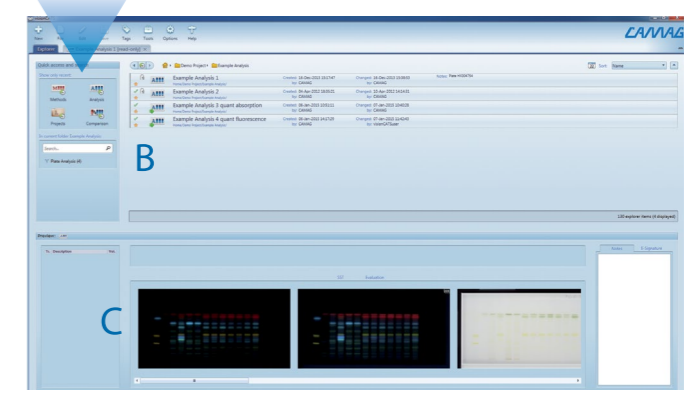
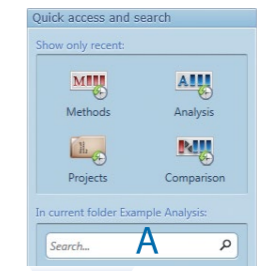


PLATE PREVIEW: provides an overview of steps and samples of an analysis or method incl. instrument parameters and thumbnails of the acquired image



FILE EXPLORER: search entry for name, ID or keyword A; file results B; preview of a selected analysis with the thumbnail of the captured images C

DOCUMENTATION WITH CAMAG TLC VISUALIZER

Controlled by *visionCATS*, the CAMAG TLC Visualizer can generate low-noise, high-dynamic-range images (HDRI). These images can be separated into tracks representing single samples. Any sample that has ever been analyzed can be directly compared with any other sample using the fully integrated Image Comparison Viewer. Samples can be rearranged and compared to reference substances or samples, independent of their plate origin. Also 3D profiles of images can be generated.

The comprehensive set of Image Enhancement Tools in the Data View exploits the TLC Visualizer's full potential. Images are automatically captured based on an optimized control of the illumination and parameters specified in the HPTLC method. Sophisticated algorithms guarantee the highest image quality for identification of even the weakest zones.

The Data View allows 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 and/or linear zoom function.

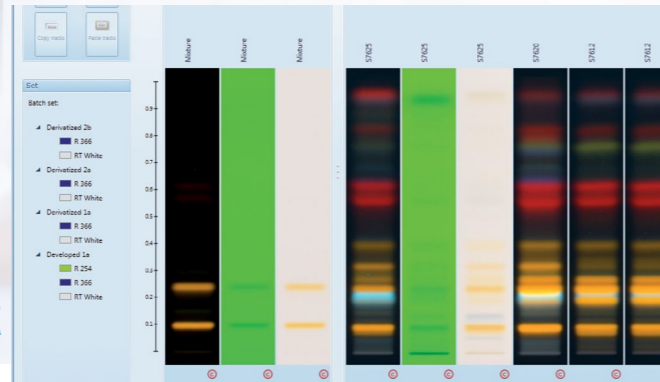


IMAGE COMPARISON: side-by-side view of tracks originating from the same or different plates and/or different detection modes

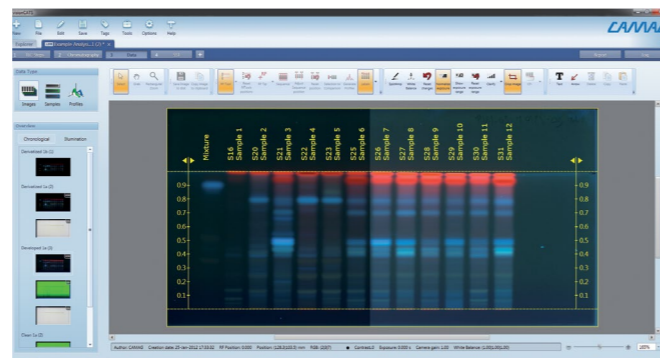
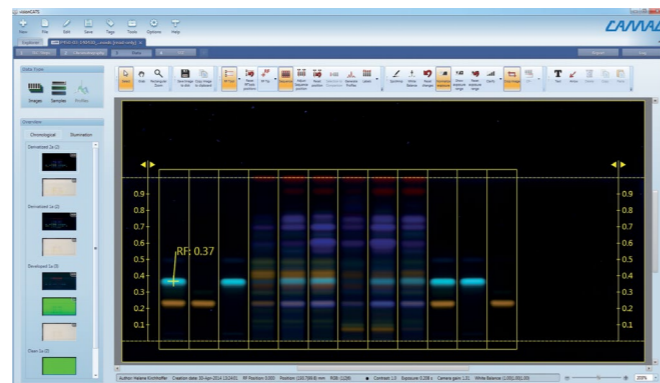
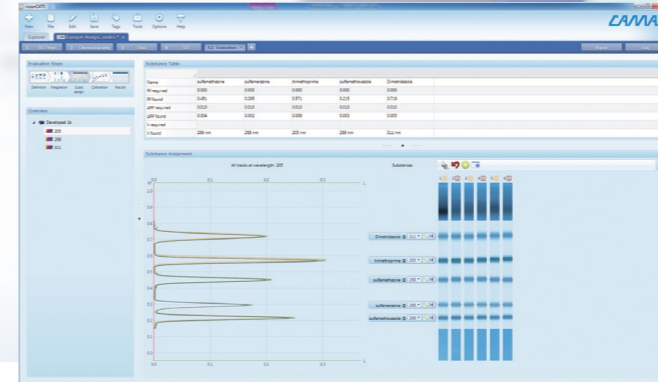


IMAGE ENHANCEMENT: exposure normalization for visualization of weak zones (right) and original image (left)

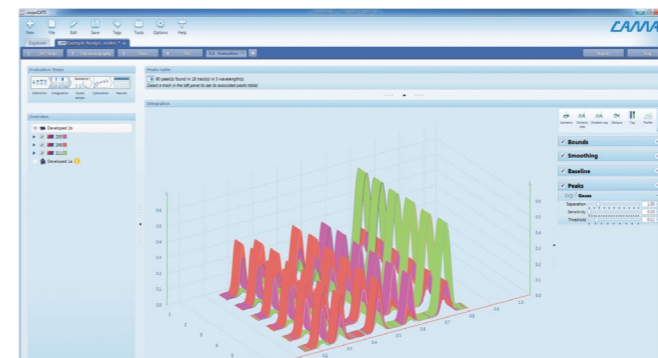


DATA VIEW: all data gathered through the chromatographic process can be reviewed and processed

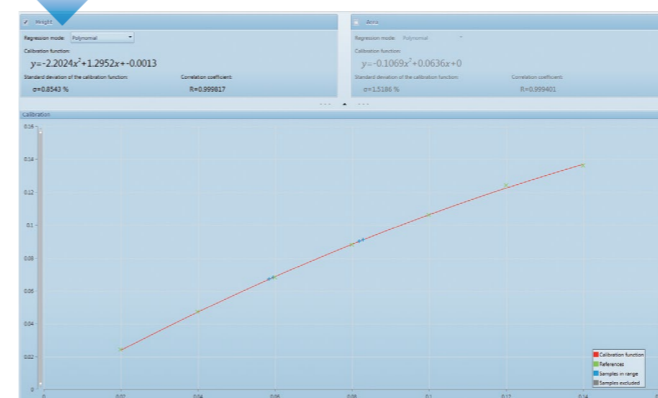
QUANTITATIVE EVALUATION WITH CAMAG TLC SCANNER



PEAK ASSIGNMENT: these separated compounds are assigned. For quantification, data from the multi-wavelength scan at the optimum wavelength for each compound is used.



3D VIEW AND PEAK INTEGRATION: densitograms are displayed in 3D, top or front view. Several peak integration and baseline correction settings can be selected.



CALIBRATION CURVE: for evaluation the best fitting calibration model is used. Quantitation can be done via peak height or area.

visionCATS controls the CAMAG TLC Scanner and enables quantitative evaluation of the generated densitometric data. The spectral range of light from 190 to 900 nm is available for selecting single wavelengths for Scanning Densitometry. Detection can thus be fine-tuned to match the spectral properties of the analyte to its optimized specificity and sensitivity of the detection. For almost unlimited flexibility, several scanning steps, e.g. before and after derivatization, can be selected. Each scanning step may also include up to 31 individual multi-wavelength scans using different light sources (deuterium lamp, mercury lamp, tungsten lamp). The detection modes *absorption* or *fluorescence* can be combined. The generated data can then be evaluated. Integration of peaks and assignment to separated substances is a matter of a few mouse clicks.

Quantification of substances can be performed via peak height or peak area. The best fitting calibration model with single-level calibration or multilevel calibration via linear, polynomial or Michaelis-Menten regression is selected. With *visionCATS* and the CAMAG TLC Scanner UV spectra can be measured as well. These selected peak positions, which are detected from a previous densitogram, are automatically scanned at the defined wavelengths. Spectra can be measured from 190 to 900 nm and displayed individually or overlaid in one diagram.

HPTLC METHOD LIBRARY

COMPLIANCE

For analysts using HPTLC for identification of herbal drugs or analysis of food samples, *visionCATS* offers breakthrough support with the HPTLC Method Library.

- A method documented in a form (e.g. docx) which may serve as an SOP and which can be easily incorporated into any quality management system. This file contains a description of the System Suitability Test (SST).
- An instrument method ready to use in *visionCATS*. A new analysis with all method relevant information (reference substances, plate layout, stationary and mobile phase, etc.) can then be processed. Only the Vial ID of the sample to be analyzed needs to be entered.
- An Image Comparison Viewer file with reference images against which each analyzed sample can be compared and evaluated, based on acceptance criteria specified in the method document. After comparing the data of the samples with the reference images individual reports can be generated by a mouse click.

The HPTLC Method Library contains methods included in the USP Dietary Supplement Compendium and those published by the International Association for the Advancement of HPTLC. Numerous methods of identification from the European Pharmacopoeia are added as well. Additional methods will be added continually.

Preview: **ID of Turmeric rhizome - DCCL - ATS4**

Tr.	Description	Vol.
1	USP Curcuminoids (1151866) (...)	2.0
2		
3		
4		
5		
6		
7		

Substance	Rf	Rf standard	Description
Curcumin	0.49	0.	
Desmethoxycurcumin	0.29	0.	

Instrument method

Image Comparison file

Image Comparison file

Method document

HPTLC Identification Methods
Turmeric rhizome (*Curcuma longa*)

Alternative:
2,6-Dichloroquinone-4-chloramide reagent
Preparation: Dissolve 6 mg of 2,6-Dichloroquinone-4-chloramide in 20 mL of 2-propanol
Use: Spray dry in a stream of cold air. Place the plate in a chamber saturated with 32% ammonia, making sure the layer does not contact the liquid. Remove when the zones turned blue.

Documentation:
1.) Clean plate, white RT
2.) UV 365 nm
3.) White RT
4.) Anisaldehyde reagent, UV 365 nm
5.) Anisaldehyde reagent, white RT
Alternative:
6.) 2,6-Dichloroquinone-4-chloramide, white RT

4. Results
Note: The images presented in this section are examples and are not intended to be used as basis for setting specifications for quality control purposes.

Fig. 1) UV 365 nm

Fig. 2) White RT

Fig. 3) Anisaldehyde

Created by: DMSB Apr 2013 | Released by: DATS Jan 2014 | Version: 2 | Page 2 of 5

Method document

21 CFR Part 11

The option 21 CFR Part 11 supports customers to work in a controlled environment and to establish regulatory-compliant processes. As a part of 21 CFR Part 11 compliance, electronic signature processes are available. A set of log files (System log; Method log; Analysis log; Backup log) are available to fully meet 21 CFR Part 11 requirements.

Qualification

For customers working in a cGMP/cGLP environment, CAMAG offers Installation Qualification (IQ) and Operation Qualification (OQ) services.

System Suitability Test (SST)

System Suitability Tests are used on each plate to check and ensure that the analysis was performed appropriately to produce results that are within the acceptance criteria established during method development. Only data from plates qualified by the respective SST can be directly compared. The SST is the primary tool for evaluation of data during a transfer validation. *visionCATS* provides several tools for setting up SST.

Data Security

Data Security is achieved through access control, which is provided by a flexible, secure, and customizable User Management System and basic system settings. Users are defined with rights that determine the level of access they have. The User Management System is compatible with Active Directory. With the powerful user management, it is possible to reflect the customers' individual safety regulations. Data are stored in a safe database to prevent accidental alteration/deletion.

Data Safety

The *visionCATS* Backup Assistant helps users to store their data into a backup file. Automatic backup tasks can be defined with the Schedule Assistant. With the Restore Assistant users can easily restore their data from the backup file.

Ordering Information

CAMAG® HPTLC Software *visionCATS*

- 028.0000 *visionCATS* Basic Version, including:
- Access and control of the following instruments:
 - Linomat 5, ATS 4, ADC 2, TLC Visualizer, TLC Scanner 3, TLC Scanner 4
 - 1 server, 1 client
 - Instrument Diagnostics (IQ/OQ/PQ)
 - Analytical reports
 - Access to HPTLC Method Library
- Needs to be purchased separately and is not included in any Ultimate Package
- 028.1000 *visionCATS* Ultimate combining all CAMAG Visualizer and CAMAG Scanner Packages, including:
- Visualizer High-Resolution Documentation Package (028.2100)
 - Visualizer Comparison Viewer Package (028.2200)
 - Visualizer Enhanced Evaluation Package (028.2300)
 - Scanner Multi-Wavelength Package (028.3100)
 - Spectrum Scanning Package (028.3200)
 - Scanner Quantification Package (028.3300)
- Basic Version (028.0000) needs to be purchased separately
- 028.2000 *visionCATS* Visualizer Ultimate Package combining all CAMAG Visualizer Packages, including:
- Visualizer High-Resolution Documentation Package (028.2100)
 - Visualizer Comparison Viewer Package (028.2200)
 - Visualizer Enhanced Evaluation Package (028.2300)
- Basic Version (028.0000) needs to be purchased separately
- 028.2100 *visionCATS* Visualizer High-Resolution Documentation Package
- 028.2200 *visionCATS* Visualizer Comparison Viewer Package
- 028.2300 *visionCATS* Visualizer Enhanced Evaluation Package
- 028.3000 *visionCATS* Scanner Ultimate Package combining all CAMAG TLC Scanner Packages, including:
- Scanner Multi Wavelength Package (028.3100)
 - Spectrum Scanning Package (028.3200)
 - Scanner Quantification Package (028.3300)
- Basic Version (028.0000) needs to be purchased separately
- 028.3100 *visionCATS* Scanner Multi Wavelength Package
- 028.3200 *visionCATS* Spectrum Scanning Package
- 028.3300 *visionCATS* Scanner Quantification Package
- 028.4000 *visionCATS* Option "21 CFR Part 11"
- 028.5000 *visionCATS* license for a second client
- 028.5100 *visionCATS* license for a third, fourth and fifth client, each
- 028.5200 *visionCATS* license for a sixth and all subsequent clients, each

For system requirements and to download a fully functional 60-day trial version of *visionCATS*, visit → www.camag.com/visionCATS.