



Recent Developments at CAMAG

Rolf Rolli, CEO

CAMAG's values

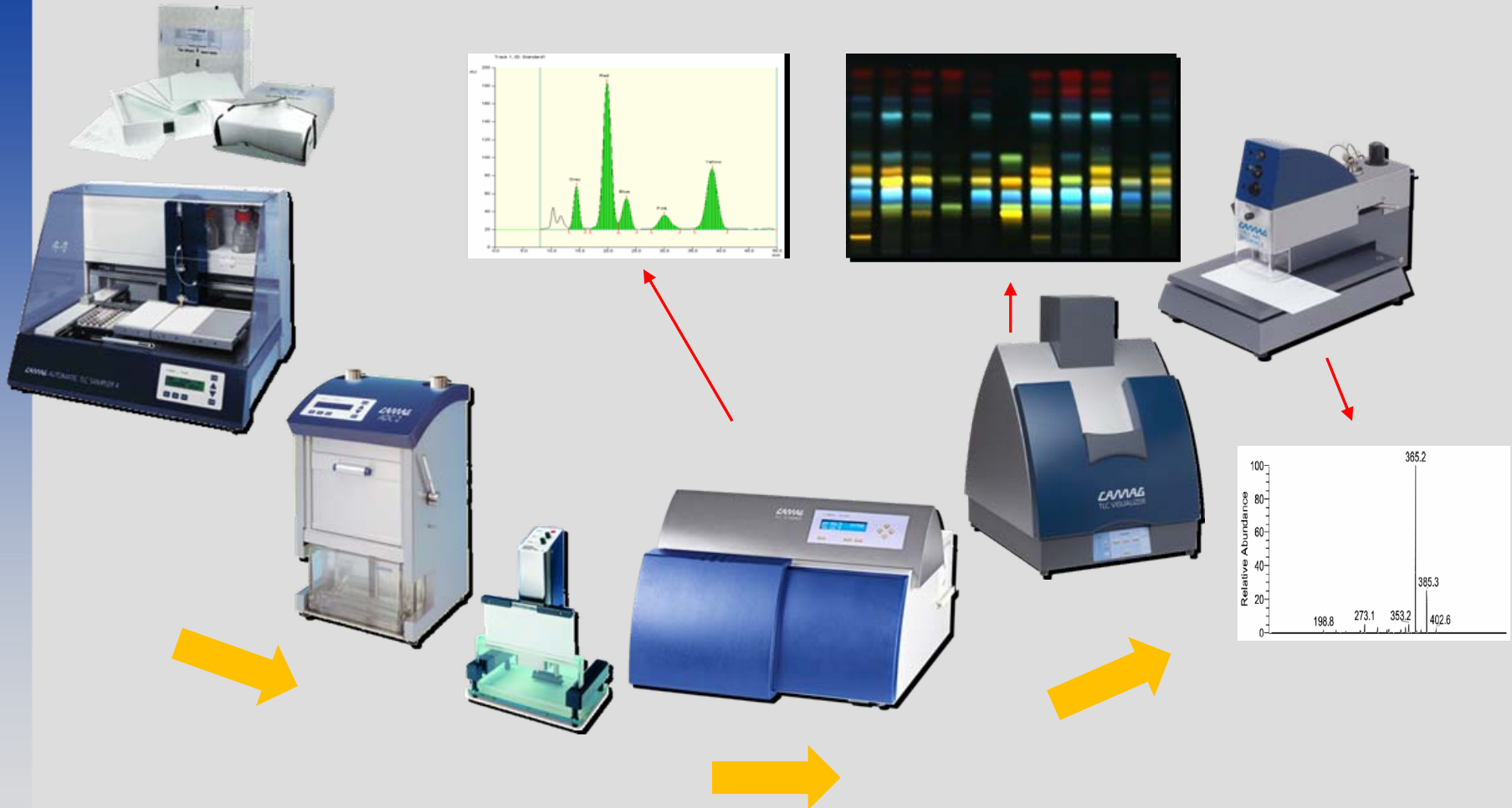
- We focus on High Performance Thin-Layer Chromatography and related technologies
- We create values for our customers by
 - developing & manufacturing sophisticated instruments and associated software
 - offering application services and training
 - providing a worldwide support & service network
- We foster the acceptance of High Performance Thin-Layer Chromatography by collaborating with many Universities around the globe
- We develop standardized methods for Pharmacopeias and collaborating with Swiss medic, USP, EP, ChP and other regulatory bodies

CAMAG investment in R&D

- Each year CAMAG spends more than 10% of sales in Research & Development
- Focus of R&D is in development of HPTLC instruments and software as well as adjacent fields
- Our goal is to develop and manufacture high quality instrumentation for longstanding customer satisfaction

SWISS 
QUALITY

Complete Instrumentation for HPTLC



Recent and coming new products

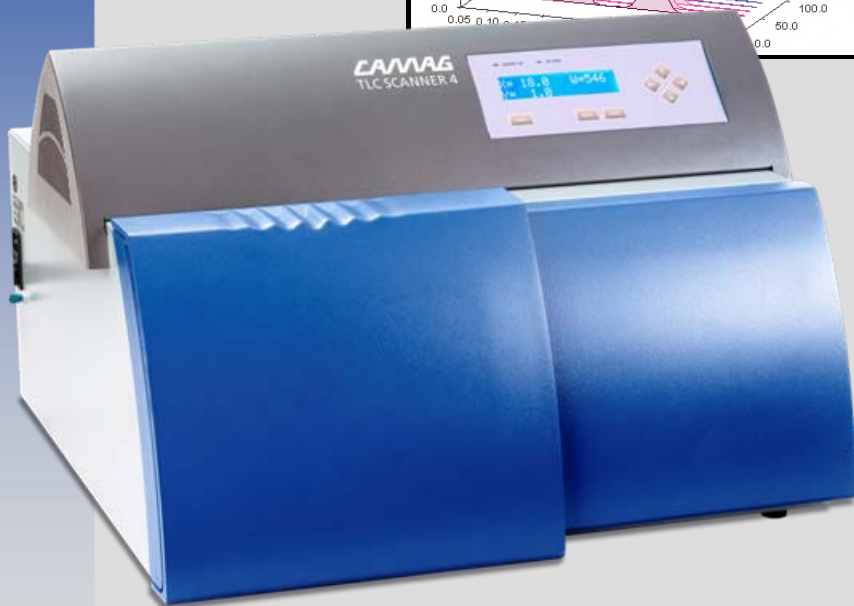
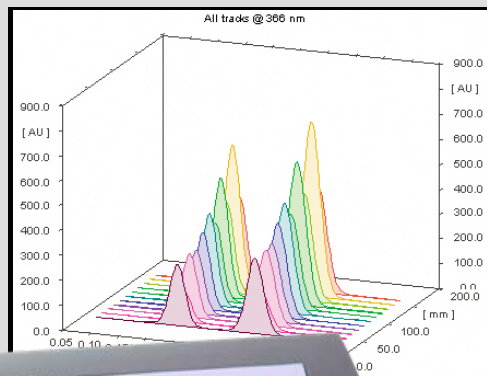
- 2010 replacement of Scanner 3 by Scanner 4
- 2009 Introduction of TLC-MS
- 2011 Introduction of DBS-MS
- 2011 Introduction of CATS CAMAG TLC Software

CAMAG TLC Scanner 4



The TLC Scanner 4 is the most advanced workstation for densitometric evaluation of HPTLC/TLC chromatograms

CAMAG TLC Scanner 4



- Measurement of reflection, either in absorbance or fluorescence mode
- Object formats up to 200 x 200 mm
- Spectral range 190 – 900 nm
- Automatic start of all lamps
- Data step resolution 25 – 200 μm
- Scanning speed 1 – 100 mm/s
- Spectra recording speed up to 100 nm/s
- Automatic selection of electronic amplification
- Rapid data transfer
- Operated with CAMAG software

TLC-MS - Alternative to LC-MS

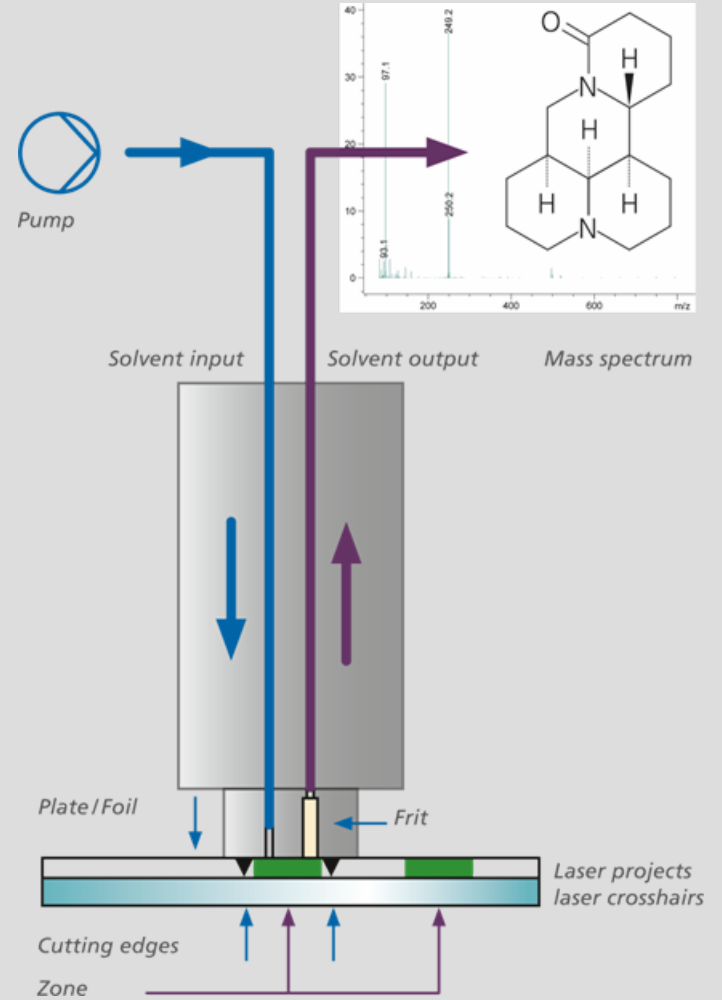
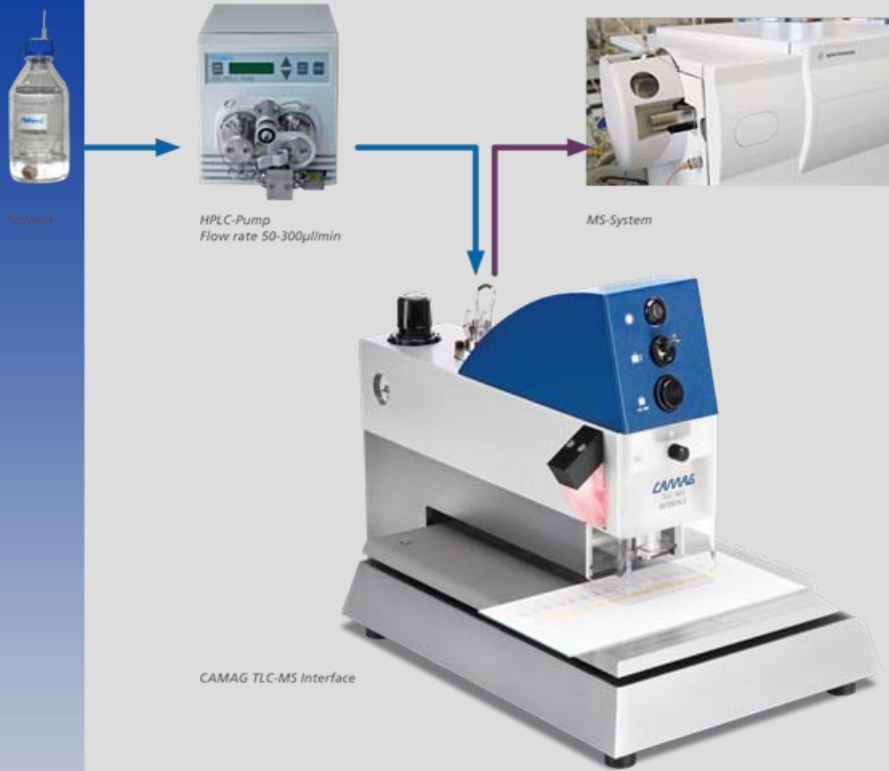
- Separation of sample on TLC is simple and very fast
- Components can be made visible and also non UV active compounds can be analyzed
- Extraction of a desired compound from a plate into MS is easily possible
- On-line and off-line procedures possible

TLC-MS coupling



- TLC-MS Interface introduced 2009
- Since then used in many labs for various applications around the globe

Principle of TLC-MS hyphenation



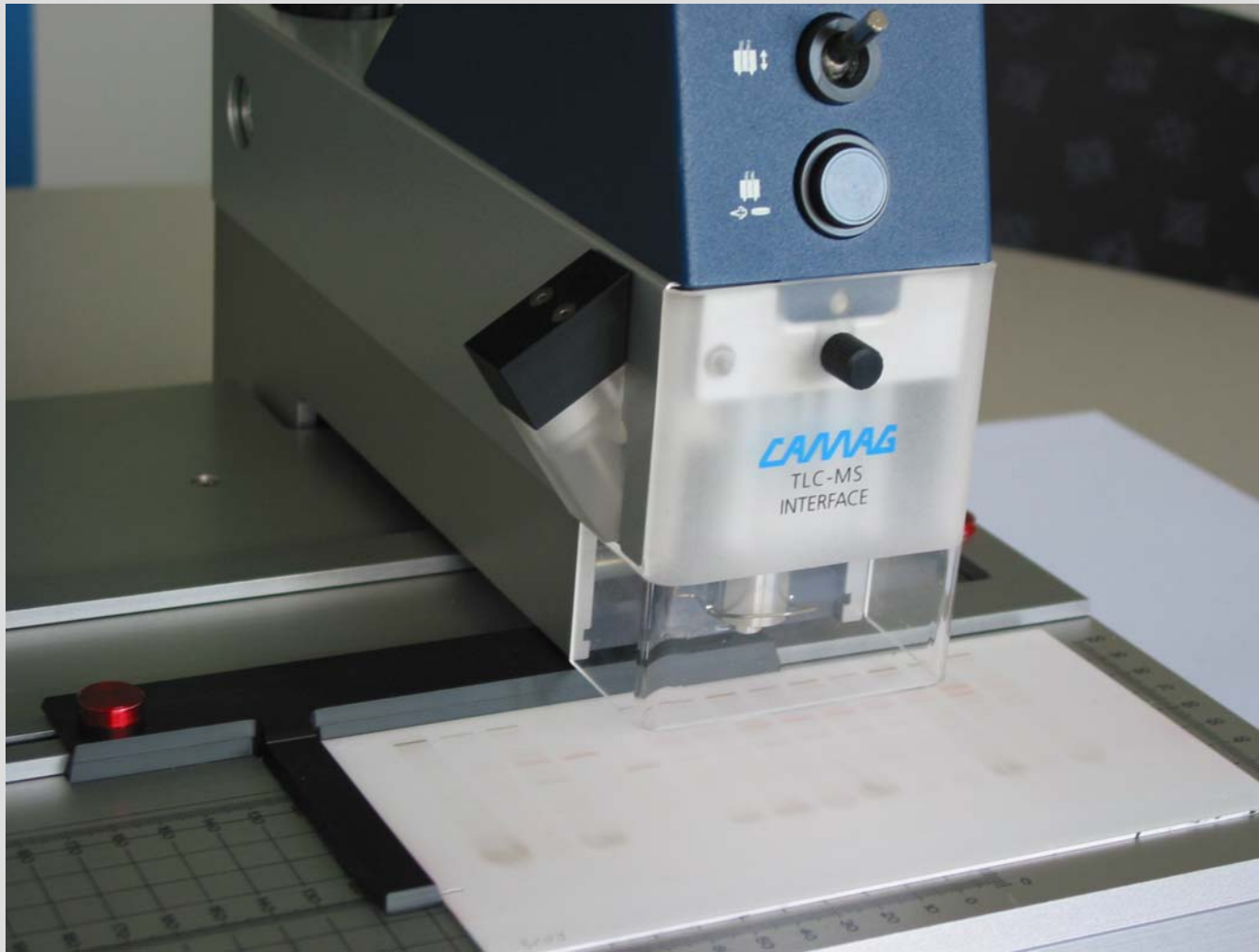
TLC-MS Applications

Elucidation/confirmation of compound and mass in various application fields:

- General research/chemical synthesis/impurities
- Pharmaceuticals
- Cosmetics/Herbals
- Food
- Forensic
- Environmental

New Development

- Table with plate positioning system available soon



Extensions of the TLC-MS Concept

- Extensions of the TLC-MS Concept into Bioanalysis
- DBS-MS for Direct analysis of Dried Blood Spot Cards

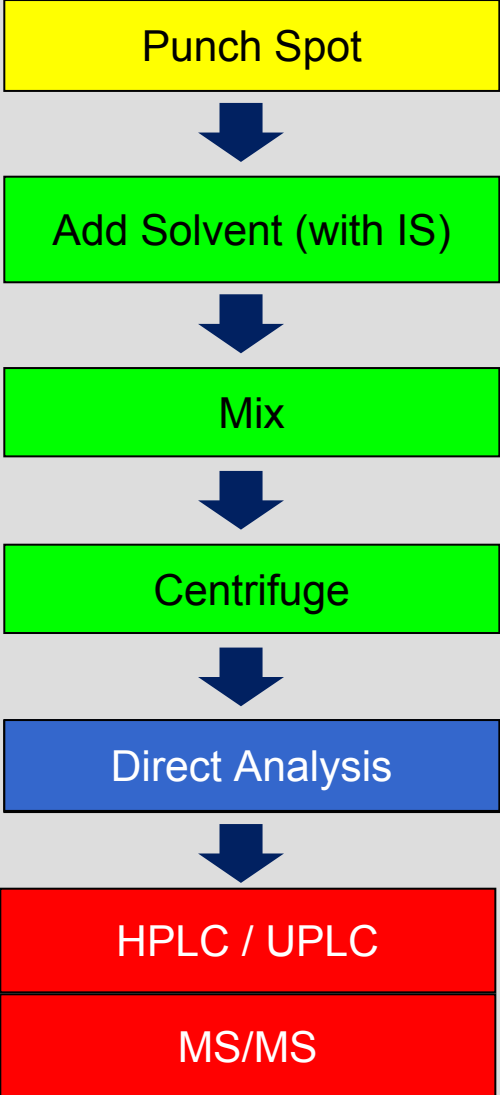


What are **D**ried **B**lood **S**pots? (DBS)

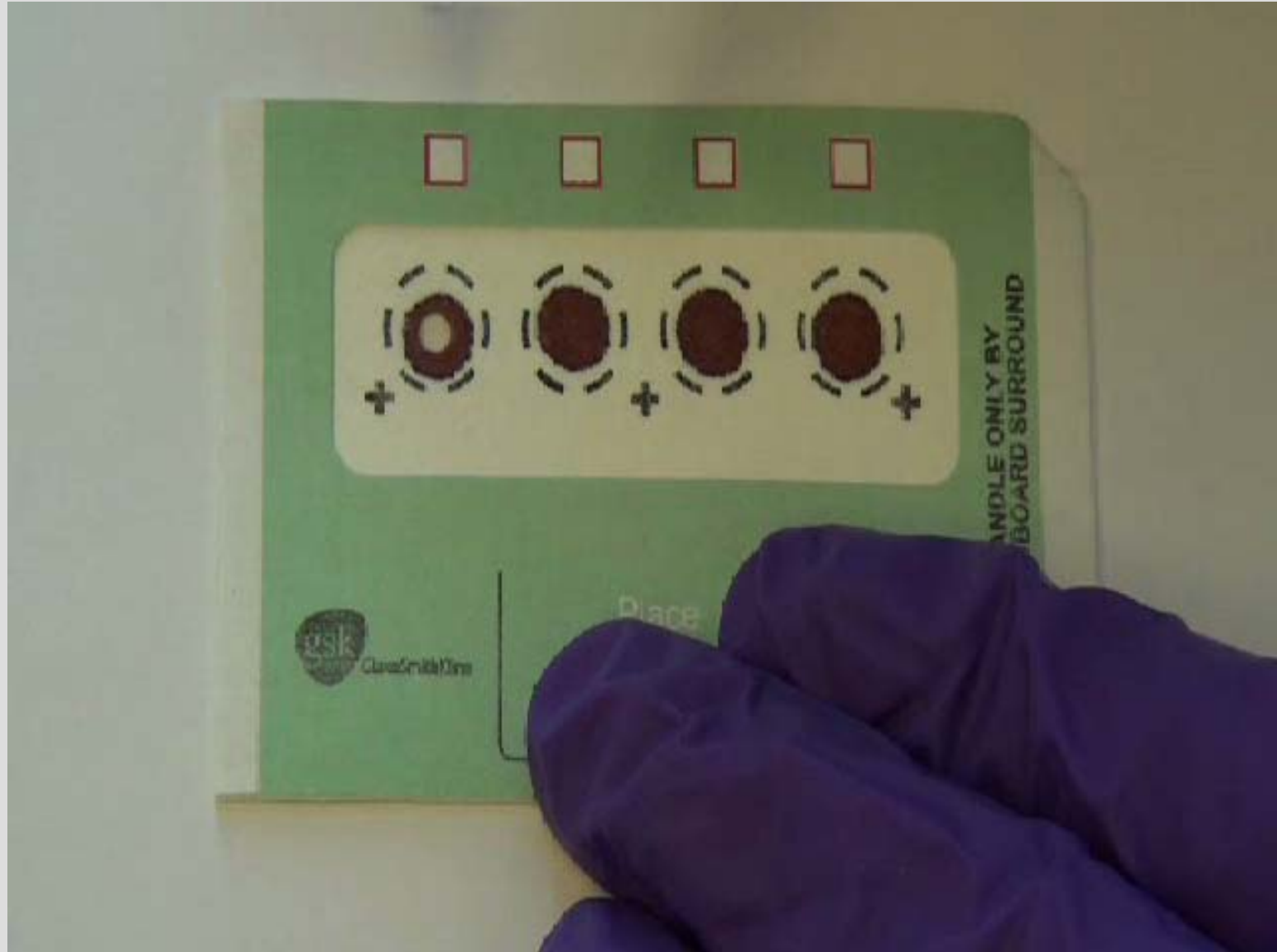
- Technique has been around for >40 years
- Easy way of collecting, shipping & storing blood samples
- Widely used in new born screening, therapeutic drug monitoring
- Blood from animal/human spotted onto collection card
- Cards air dried & stored/shipped desiccated at room temperature
- Discs punched out of the DBS for quantitative analysis (punch & elute)
- **New concept for Direct Analysis with CAMAG DBS-MS 500**

DBS Bioanalytical Workflow

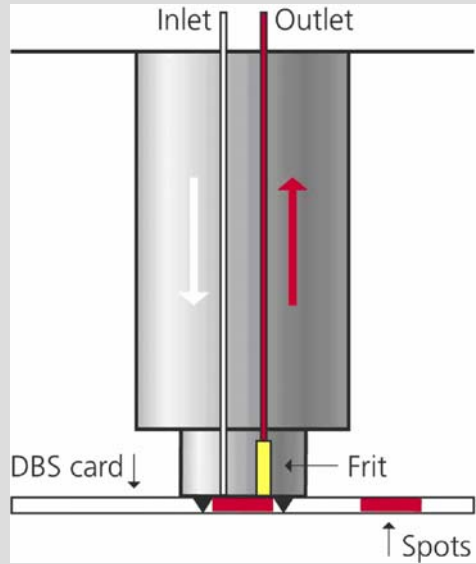
Punch & Elute vs Direct Analysis



Punch and extract (current method)



Direct Elution



Similar principle as
TLC-MS



Fully Automated CAMAG DBS-MS 500

Direct Elution – Automated Workflow with CAMAG DBS-MS 500



CATS CAMAG TLC Software



- Software for Qualitative Analysis
- Database-based Software
- Client /Server Architecture:
 - Configuration Single Workstation
 - Configuration Multiple Workstations
- Sample oriented Concept
 - Database allows to easily search for individual samples
 - Possibilities to display plate oriented (all tracks at one illumination / wavelength) and sample oriented (just one track but all illuminations / wavelengths)

CATS CAMAG TLC Software

- Image Comparison Viewer
- HDRI (High Dynamic Range Images)
- Three level user interface:
 - Level 1: Execute analysis (Routine)
 - Level 2: Experienced User/Method Development
 - Level 3: Expert Level, access to all parameters
- Professional Image Enhancement
 - Optimized colors always included

Execute Method

CATS CAMMAG TLC Software

File Chromatography View Admin ?

Explorer P340_110419_01 * x test4 * x test * x template ATS4 x

1 TLC-Steps 2 Chromatography 3 Data 4 Report

Tr.	Vial ID	Description	Vol.
1	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
2	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
3	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
4	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
5	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
6	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
7	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
8	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
9	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
10	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
11	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0
12	R6424	Rosmarinic acid	2.0
	+ R7638	Rutin	2.0
	+ R7637	Hyperosid	2.0


TLC Steps

Plate Progress

Instructions

10ml Ethyl acetate, dichloromethane, formic acid, acetic acid, water (100:25:10:10:11)

25ml Ethyl acetate, dichloromethane, formic acid, acetic acid, water (100:25:10:10:11)



ADC2 Setup
preparation of ADC2 development instrument includes:

Glasstank
Bring handle on the right to upright position
Insert clean glasstank 20x10 (with saturation pad in the rear chamber)
Lower handle on the right

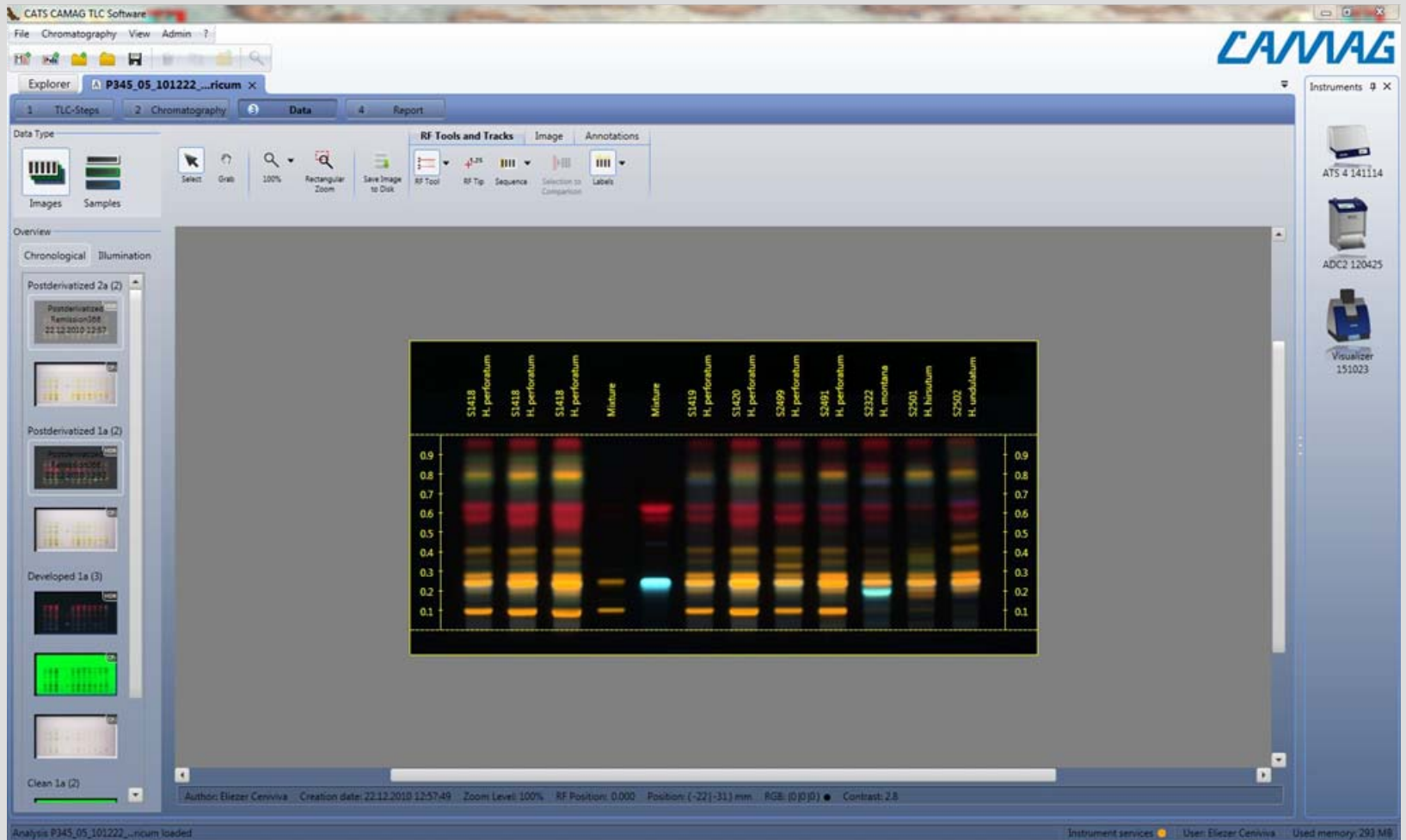
Plate
Open front door and remove plate clip
Insert plate into plate clip (coated side where indicated on clip)
Reposition clip into ADC2
Close front door

Liquids
Attach an activation bottle with NaCl (75%) (800ml) onto the back of the ADC 2
Fill Ethyl acetate, dichloromethane, formic acid, acetic acid, water (100:25:10:10:11) (10ml) into left funnel
Fill Ethyl acetate, dichloromethane, formic acid, acetic acid, water (100:25:10:10:11) (25ml) into right funnel.

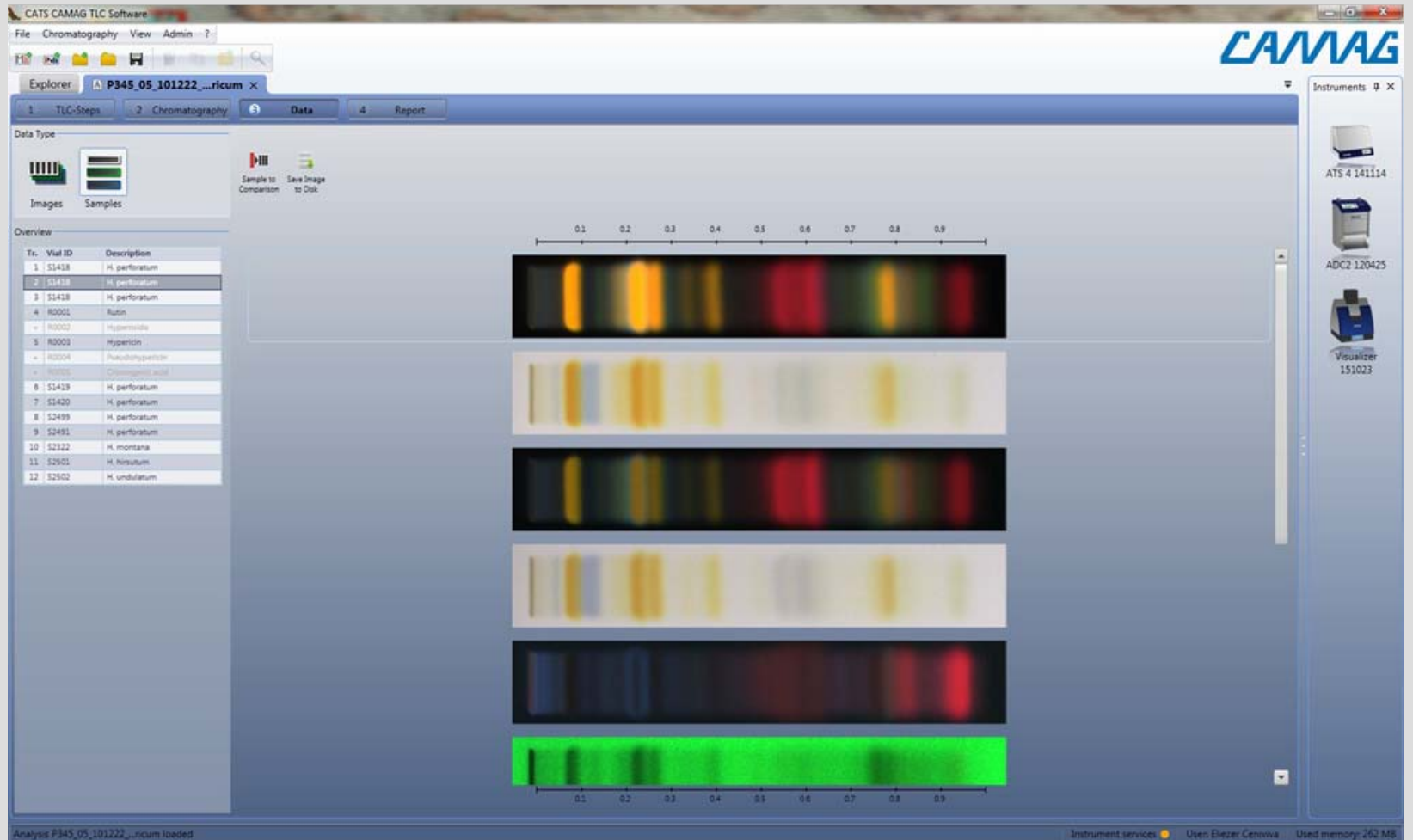
Options Continue

Analysis test4 saved Instrument services User: Eliezer Cenivva Used memory: 333 MB

Images of Plates



Compare samples



Thank you for your attention
and visit us at the booth.