New Horizons in Instrumental TLC

Rolf Rolli
CEO CAMAG

Agenda
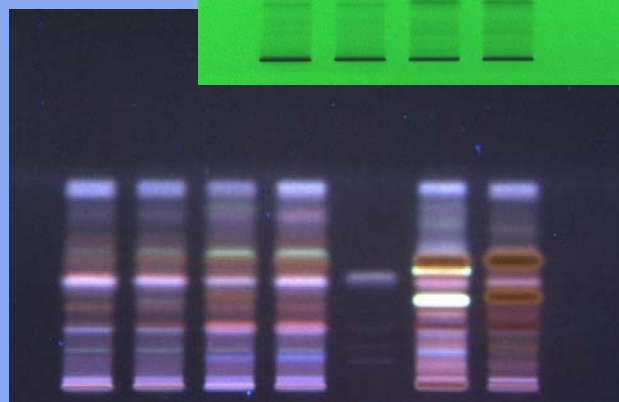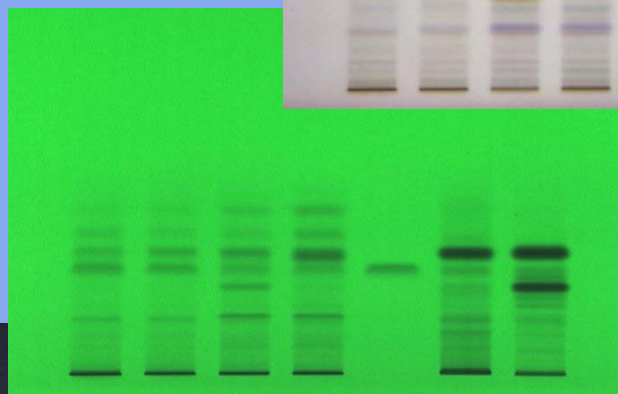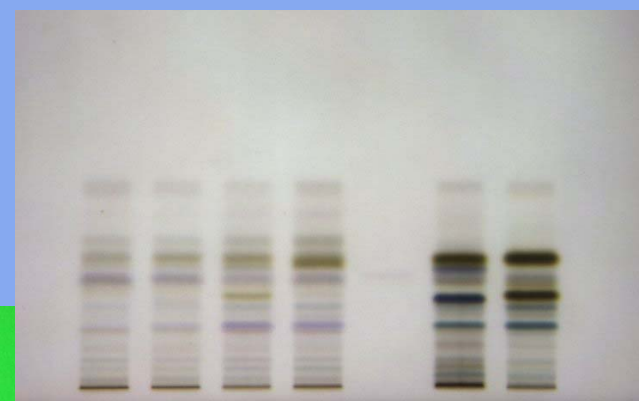
- TLC VISUALIZER – a new powerful evaluation, visualization and archiving system for TLC plates

- TLC-MS Interface

- New applications fields for Instrumental TLC/HPTLC

TLC Visualizer

CAMAG

A new powerful evaluation,
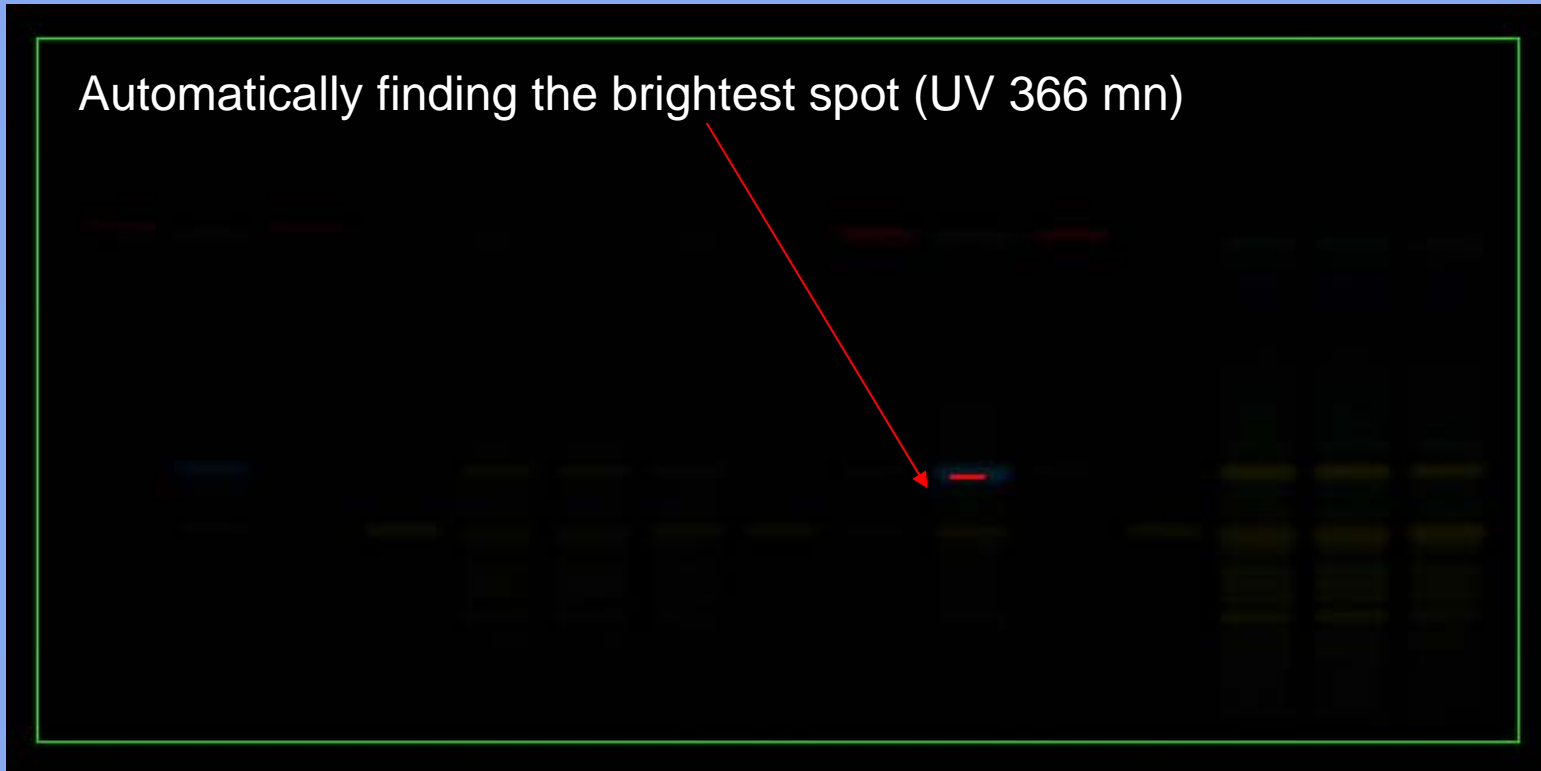visualization and archiving system
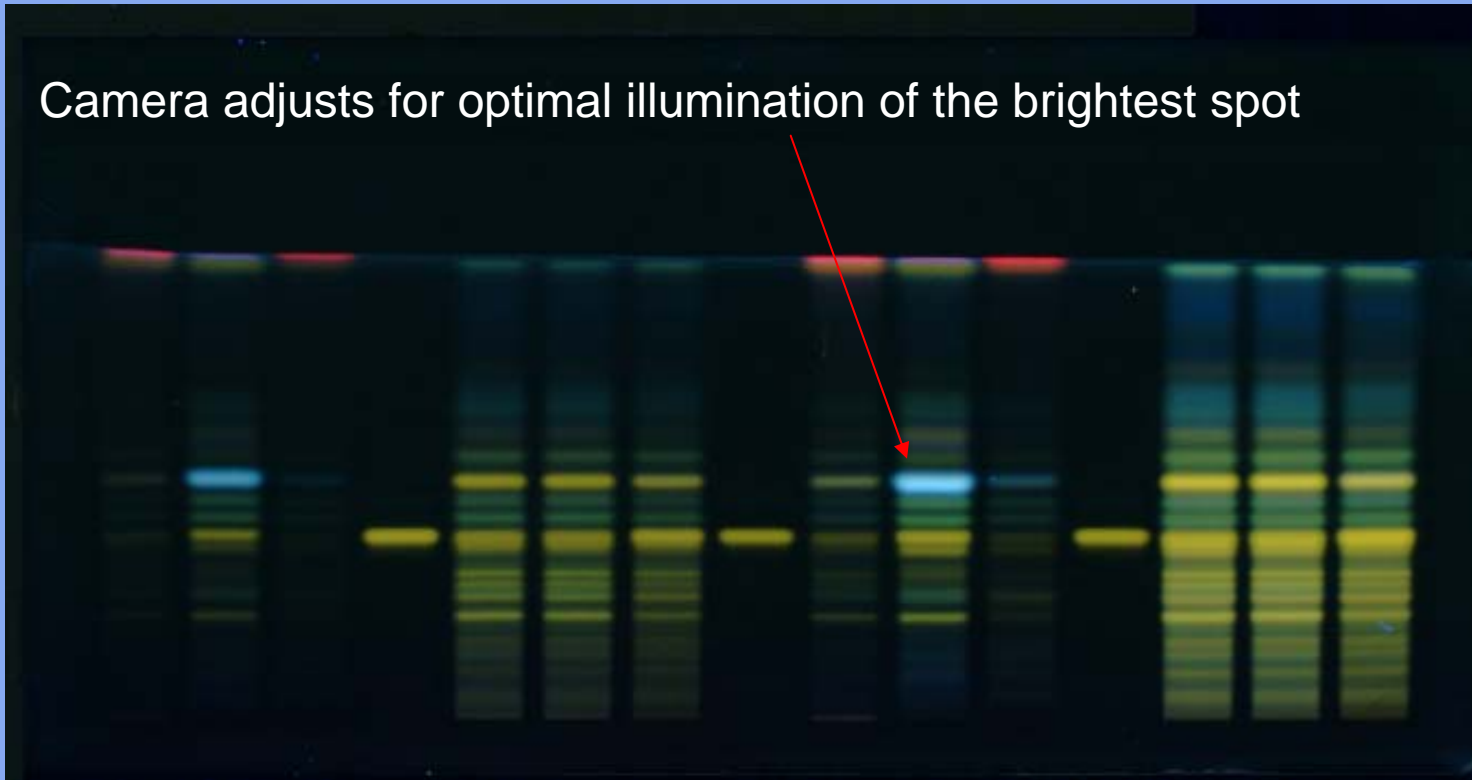for TLC plates

Automatic Optimization

CAMAG

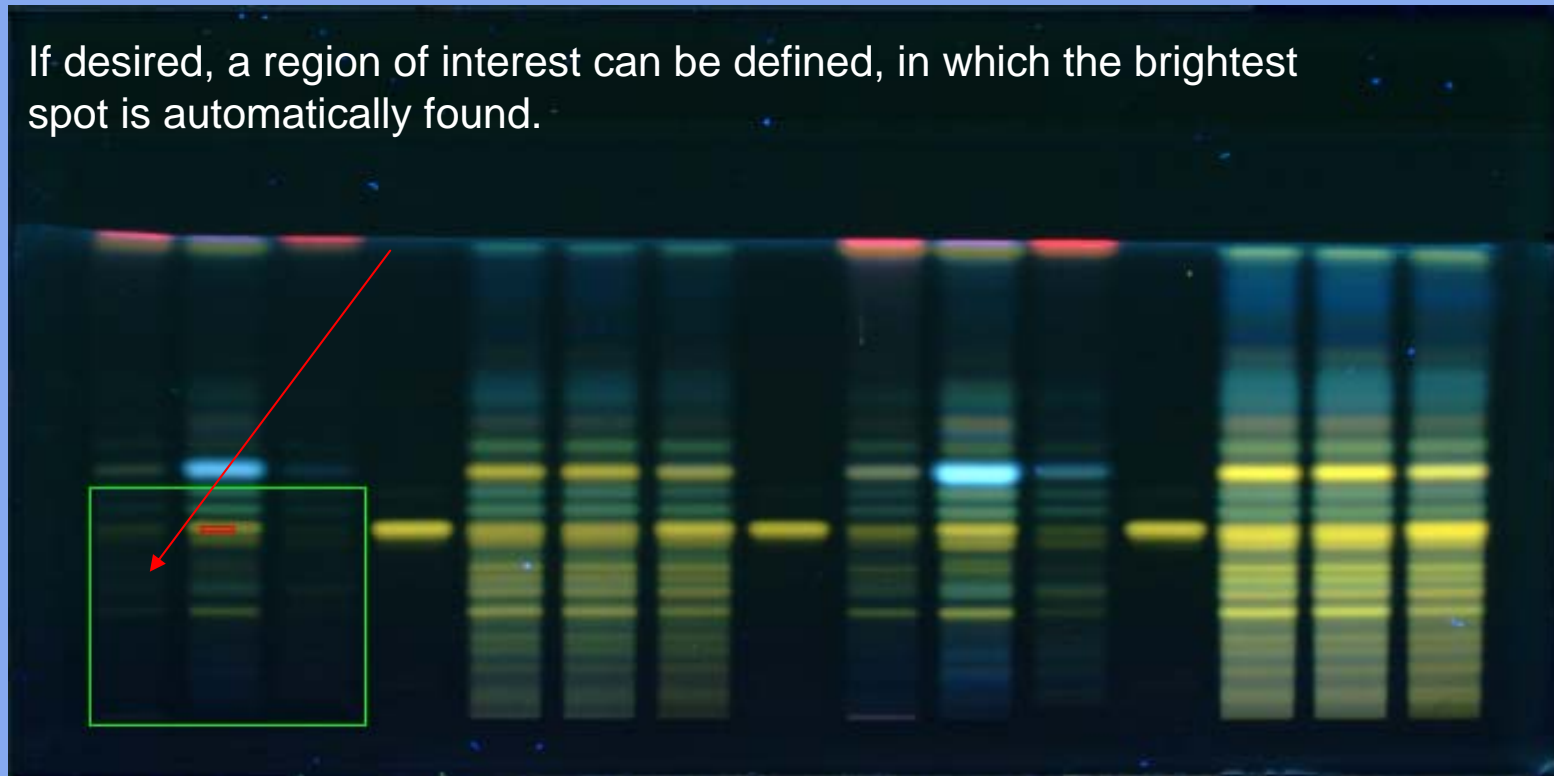Automatically finding the brightest spot (UV 366 mn)

Automatic Optimization

Camera adjusts for optimal illumination of the brightest spot

Manual Optimization

If desired, a region of interest can be defined, in which the brightest spot is automatically found.
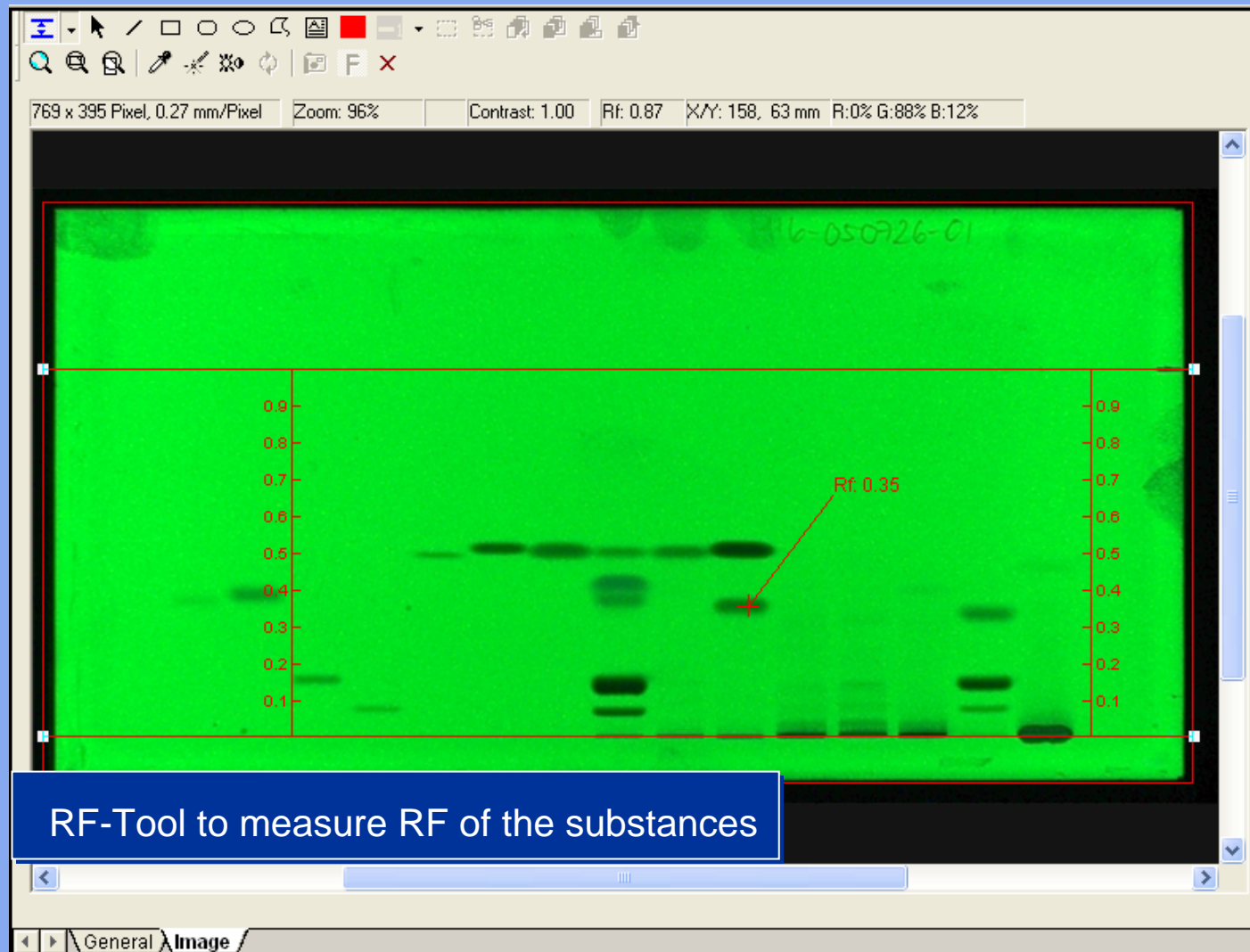
Manual Optimization

Camera adjusts for optimal illumination of the brightest spot in the region of interest

winCATS with TLC Visualizer

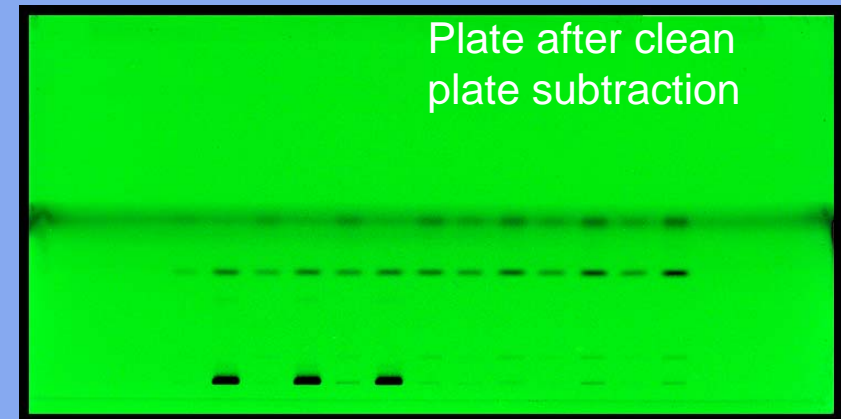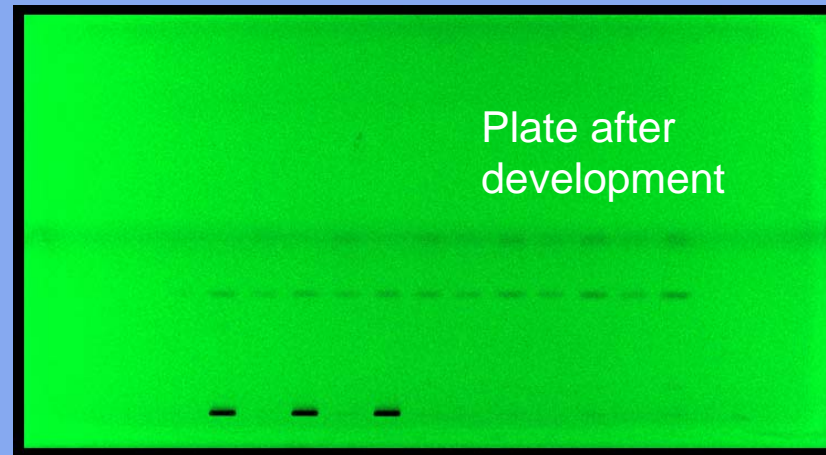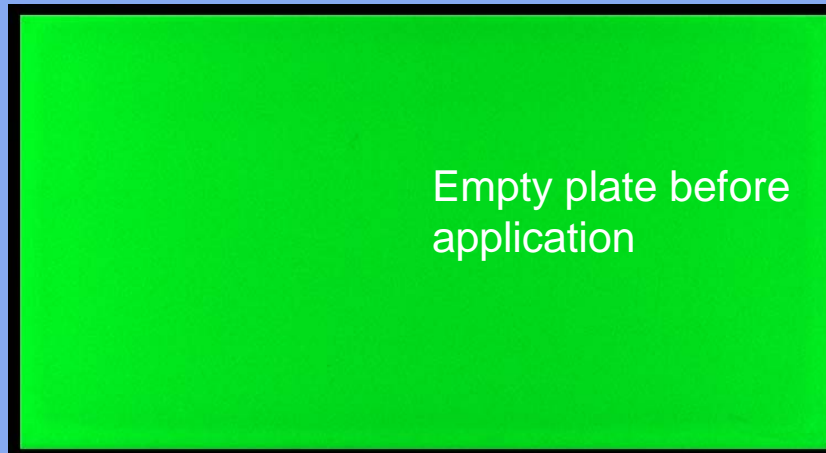RF-Tool to measure RF of the substances

Plate subtraction

Empty plate before application

Plate after development

Plate after clean plate subtraction

TLC Visualizer / Image Comparison

Image comparison viewer
(single and multi plate)

Tracks 19, 15, 3 *(on the left)*
are used for reference

Customer Survey TLC-MS

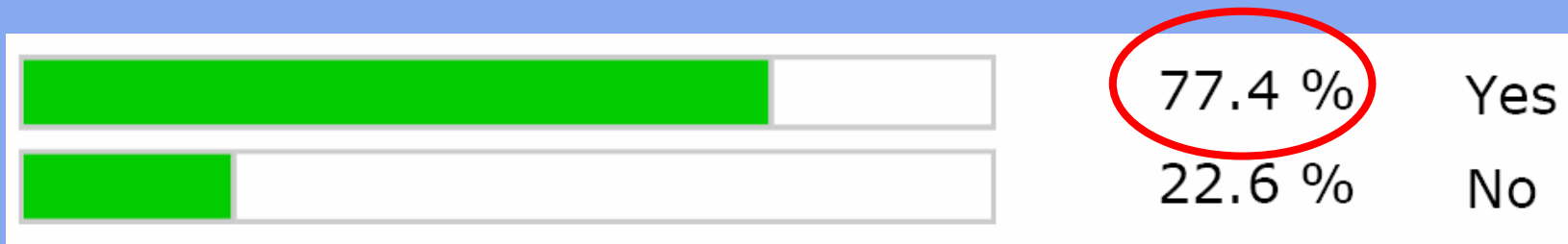- **Do you have samples which you can't analyze with LC-MS**

████████████████████░░	90.5 % Yes
█░░░░░░░░░░░░░░░░░░░░░░	9.5 % No
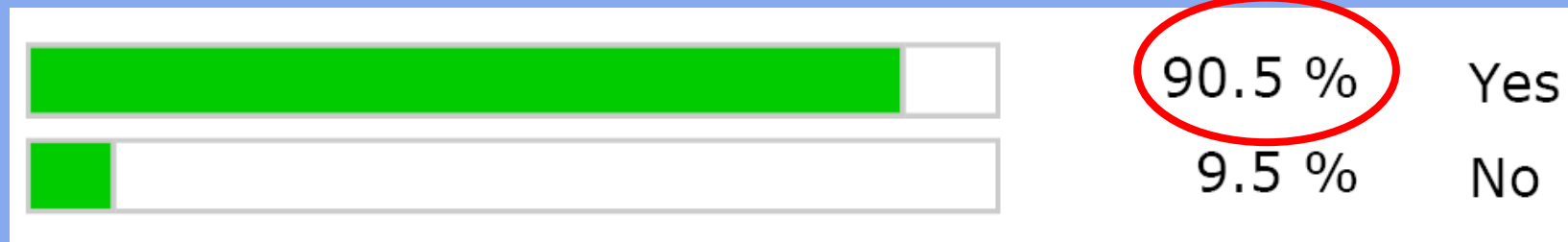
- **Are you interested in a TLC-MS solution?**

█████████████████░░░░░	77.4 % Yes
█████░░░░░░░░░░░░░░░░░░	22.6 % No

TLC-MS Coupling/TLC-MS Interface
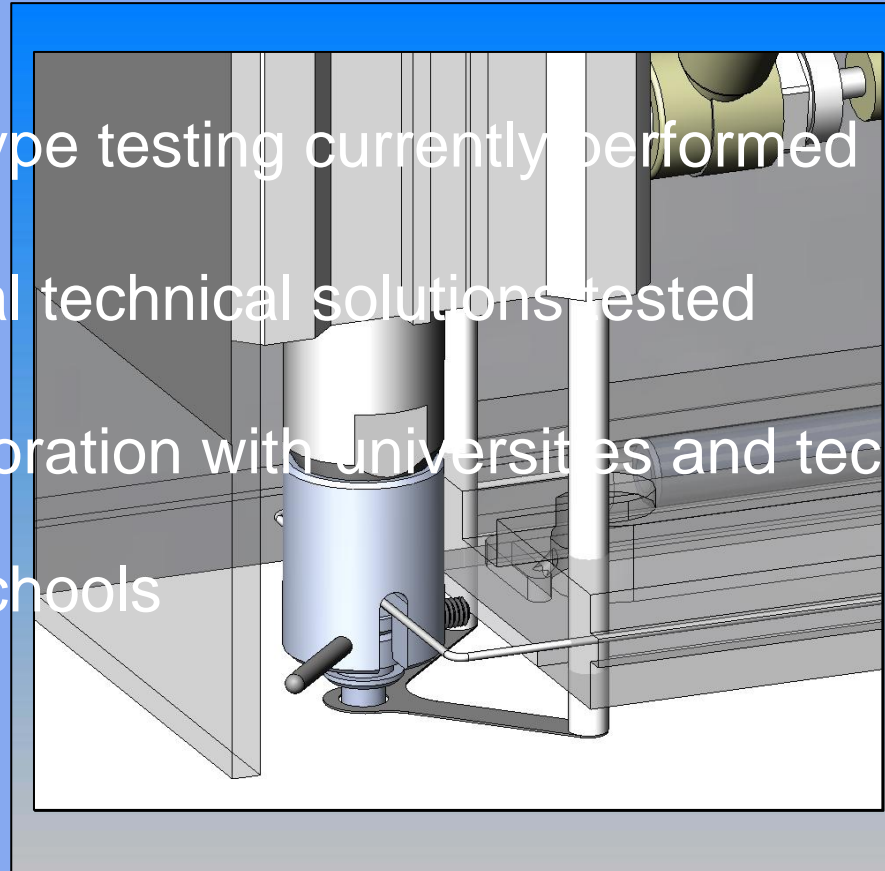
- After this clear interest of the market CAMAG started TLC-MS coupling project
  - Easy and fast MS-analysis of TLC zones
  - Proved extractor principle of Dr. Luftmann (D)

- Semi automatic instrument involving:
  - Automatic plunger movement & force control
  - Automatic cleaning
  - Precise positioning
- TLC-MS Interface should be available for customers Q1 2009

TLC-MS Coupling Interface

- Prototype testing currently performed

- Several technical solutions tested

- Collaboration with universities and technical high schools

Applications fields for Instrumental TLC/HPTLC

Instrumental TLC/HPTLC Applications:

- Historically Pharma was the largest field
- Today there are many other applications fields
- We should promote Instrumental TLC/HPTLC in applications with advantages compared to other methods

Cosmetics - New applications fields for Instrumental TLC

Instrumental TLC enables to analyze different substance classes from complex mixtures as:
- Amino acids
- Ceramides
- Cholesterol
- Fatty acids
- Lipids
- Peptides
- Plant extracts
- Phospholipids
- Squalens
- Sugars
- Sterols
- Wax esters

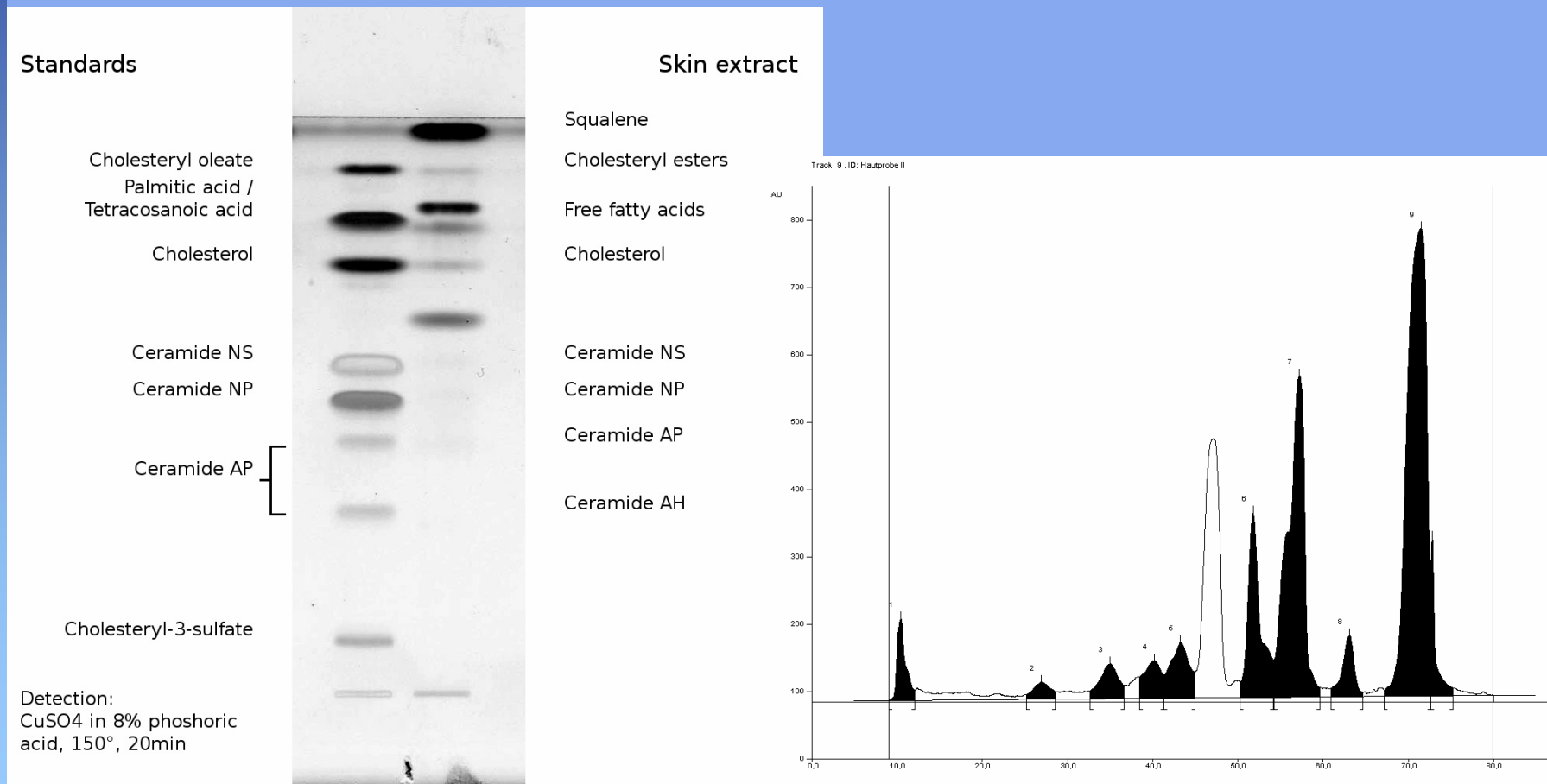**Education of Cosmetic scientist in Instrumental TLC should be our goal to further establish the method in this field.**

Cosmetics - New applications fields for Instrumental TLC

Separation of various lipid components with Instrumental TLC:

H. Farwanah, R.H.H. Neubert, S. Zellmer, K. Raith, J. of Chromatogr. B, 780 (2) (2002) 443-450,
Poster with improved procedure in preparation

New applications fields for Instrumental TLC/HPTLC

Forensics/Ink Project with US Secret Service :

- CAMAG Laboratory has developed a method to analyze various ink types
- CAMAG has analyzed more than 8300 coded samples provided by the US Secret Service
- University Lausanne works on a intelligent database to identify type of ink at an investigation
- We aim that this database can be accessed from other Forensic Laboratories around the world
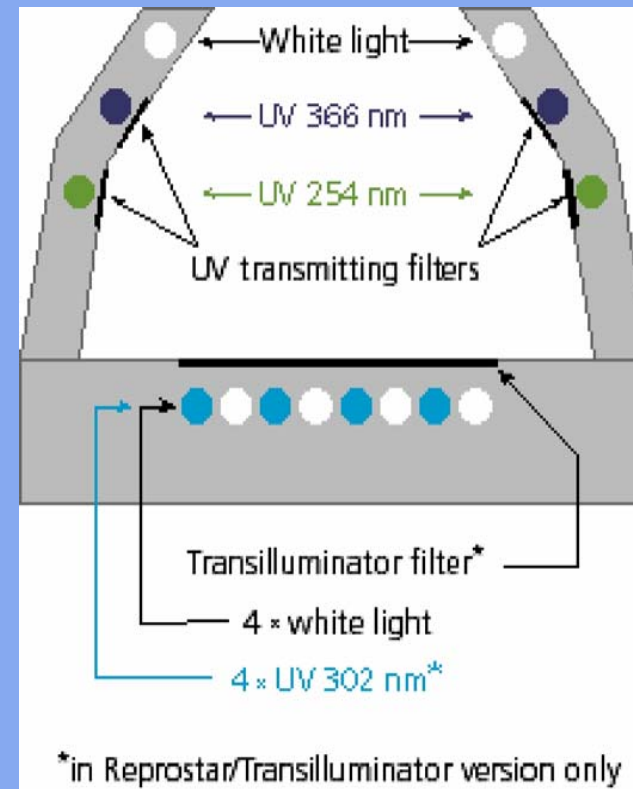
Ink Project with US Secret Service
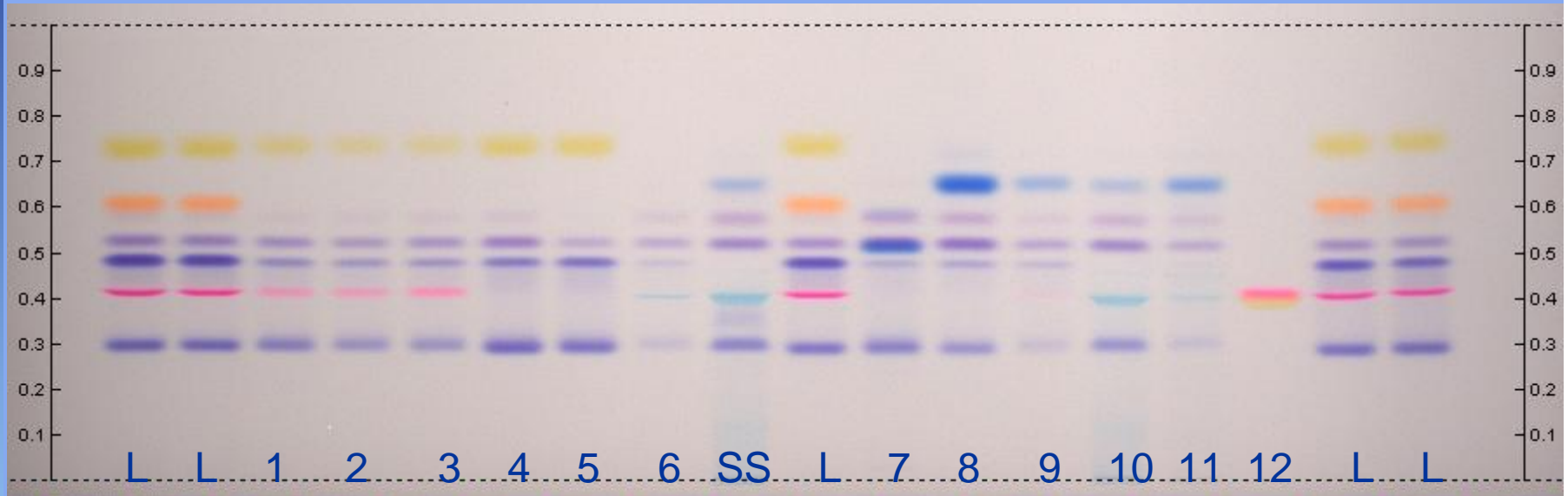
L: Ladder (Standard mixture)

SS: System suitability test

1-12: Various samples of ball point inks
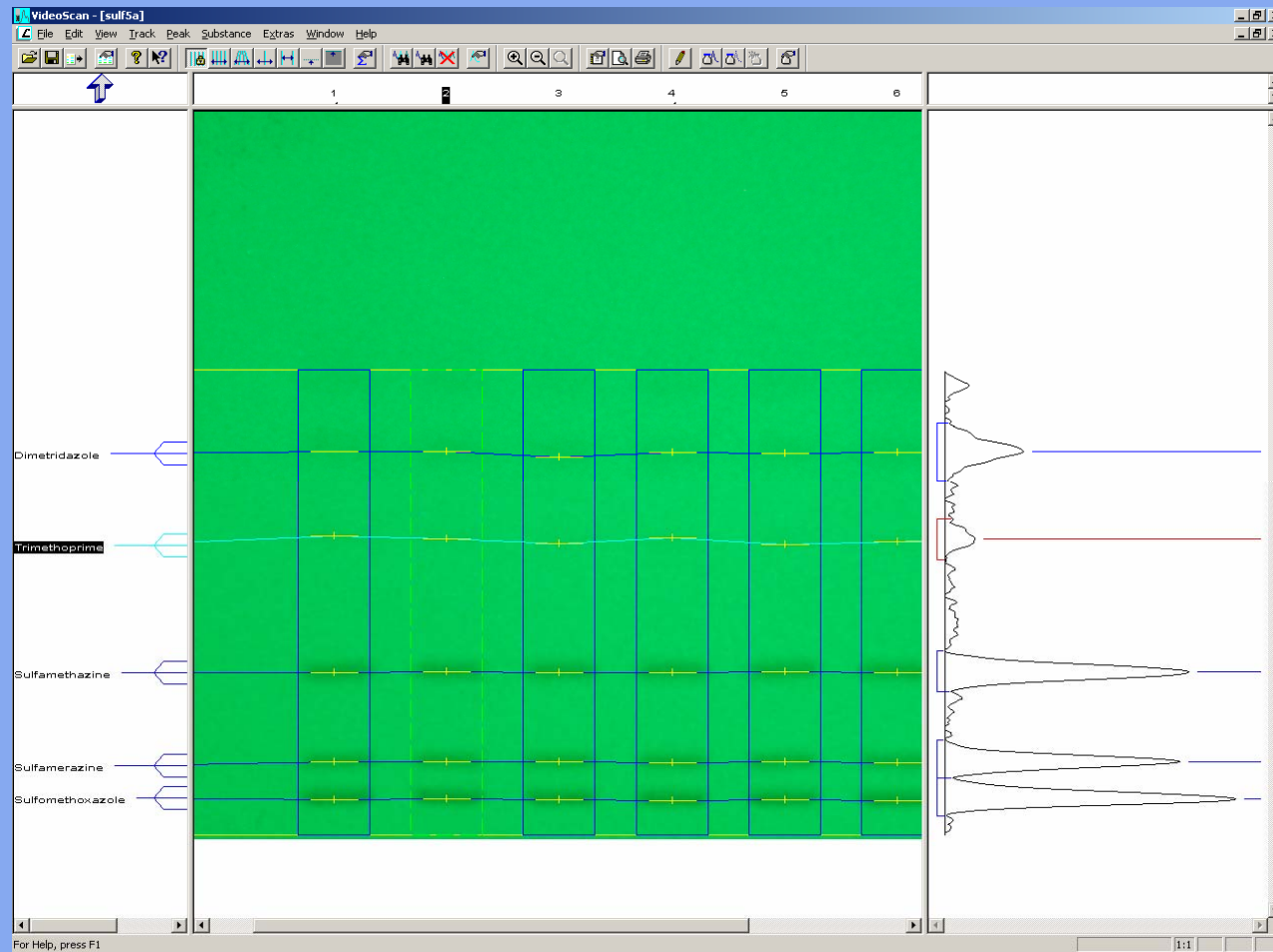
■ Thank you for your interest

TLC Visualizer

VideoScan

- Quantitative chromatogram evaluation

- Integration of all tracks

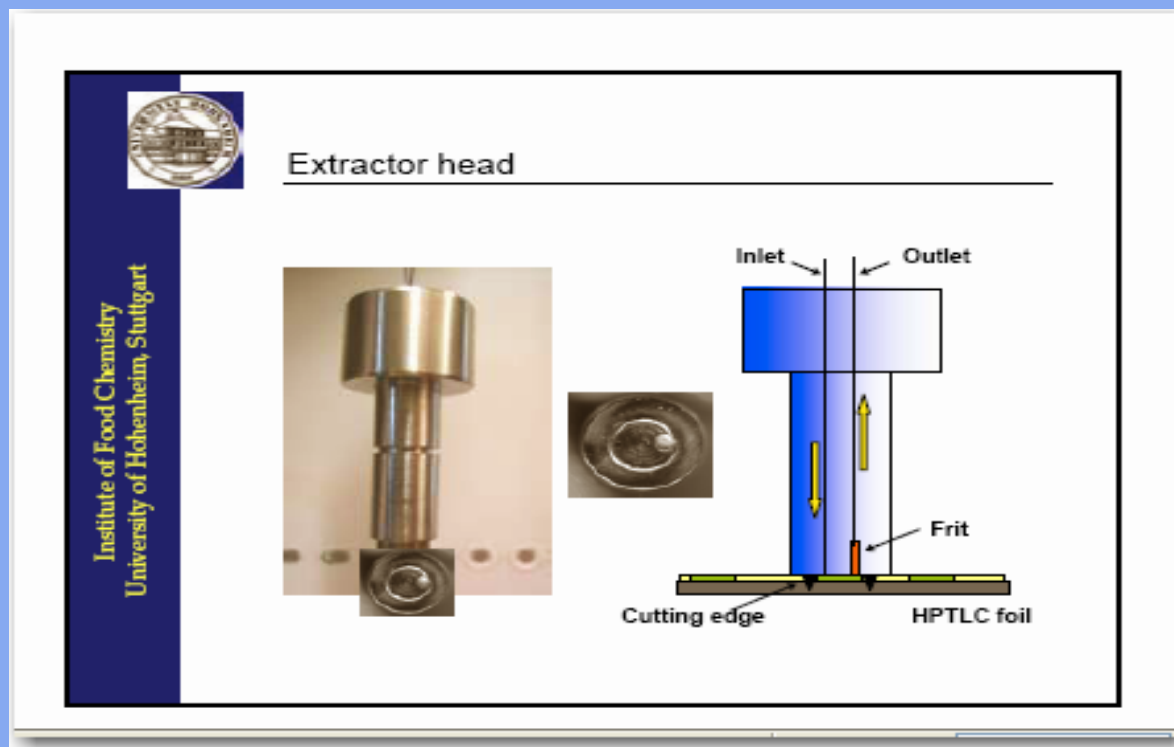- Labeling all substances

- Quantitative report

- GMP - compliant

VideoScan — image pixel conversion → analog curve

Principle of TLC/MS Coupling

HPTLC/ESI-MS

Principle of TLC/MS Coupling

Valve control

- Standby position

  → solvent bypasses extractor

- Extraction position

  → solvent passes extractor