LabChrom-2 & TR-542a

Chemotron Instruments

1991-2011

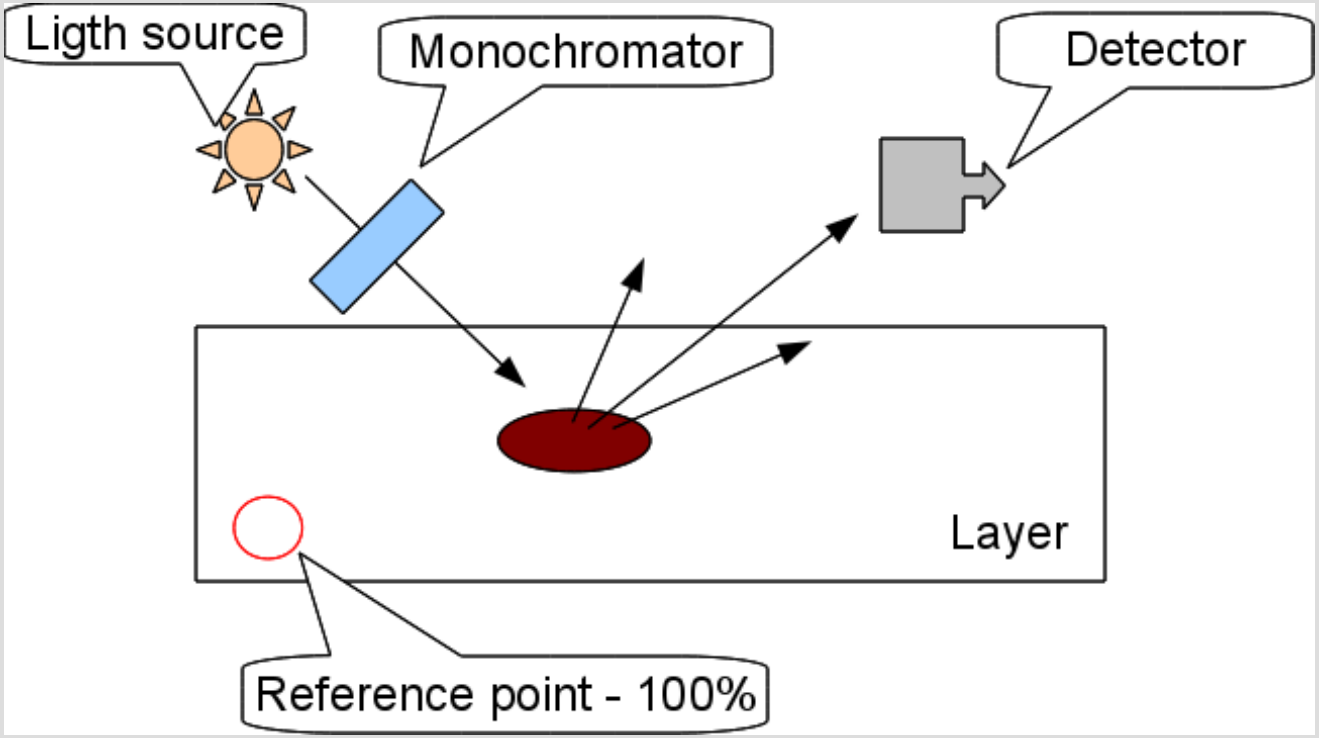
Measurement basics

Three types of measuring methods, by interaction of light

- Reflectance, TLC
- Fluorescence, mainly TLC
- Transmission, gel

Measurement basics

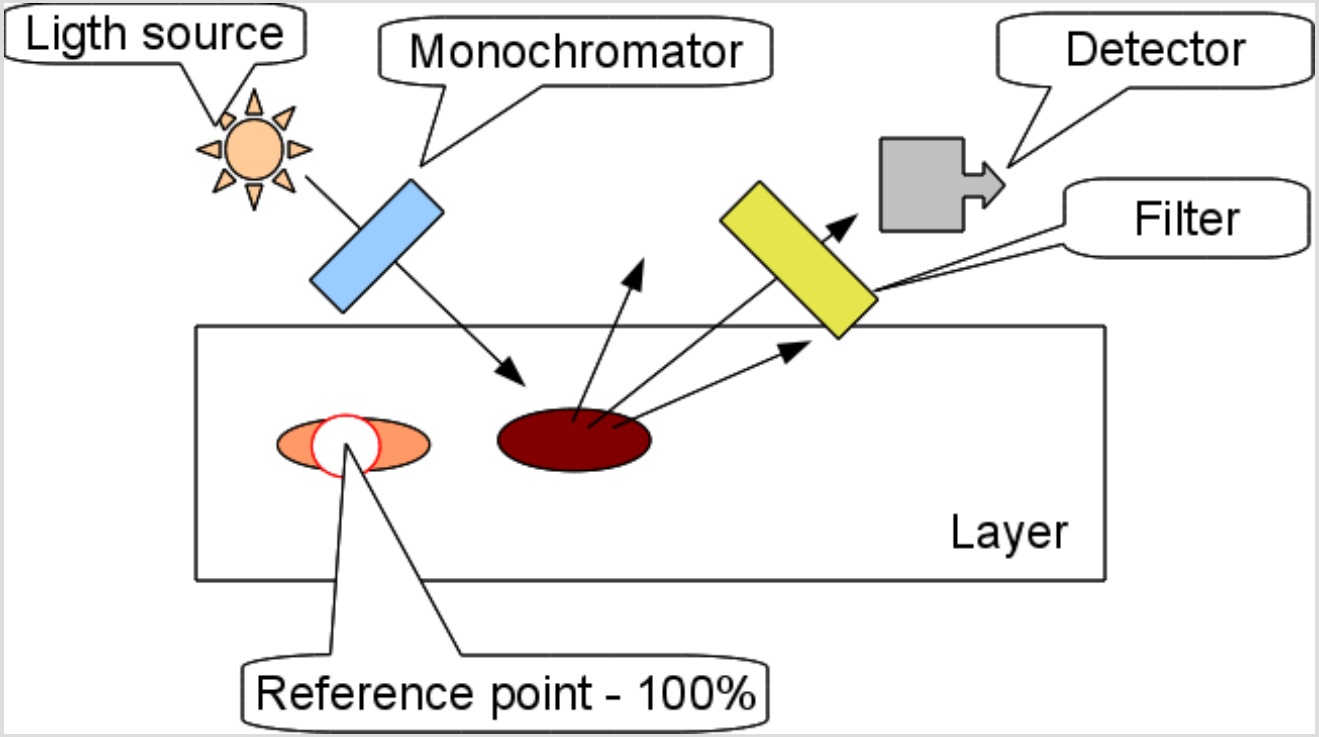
- Reflectance



The reference point is the „whitest” (lightest) area

Measurement basics

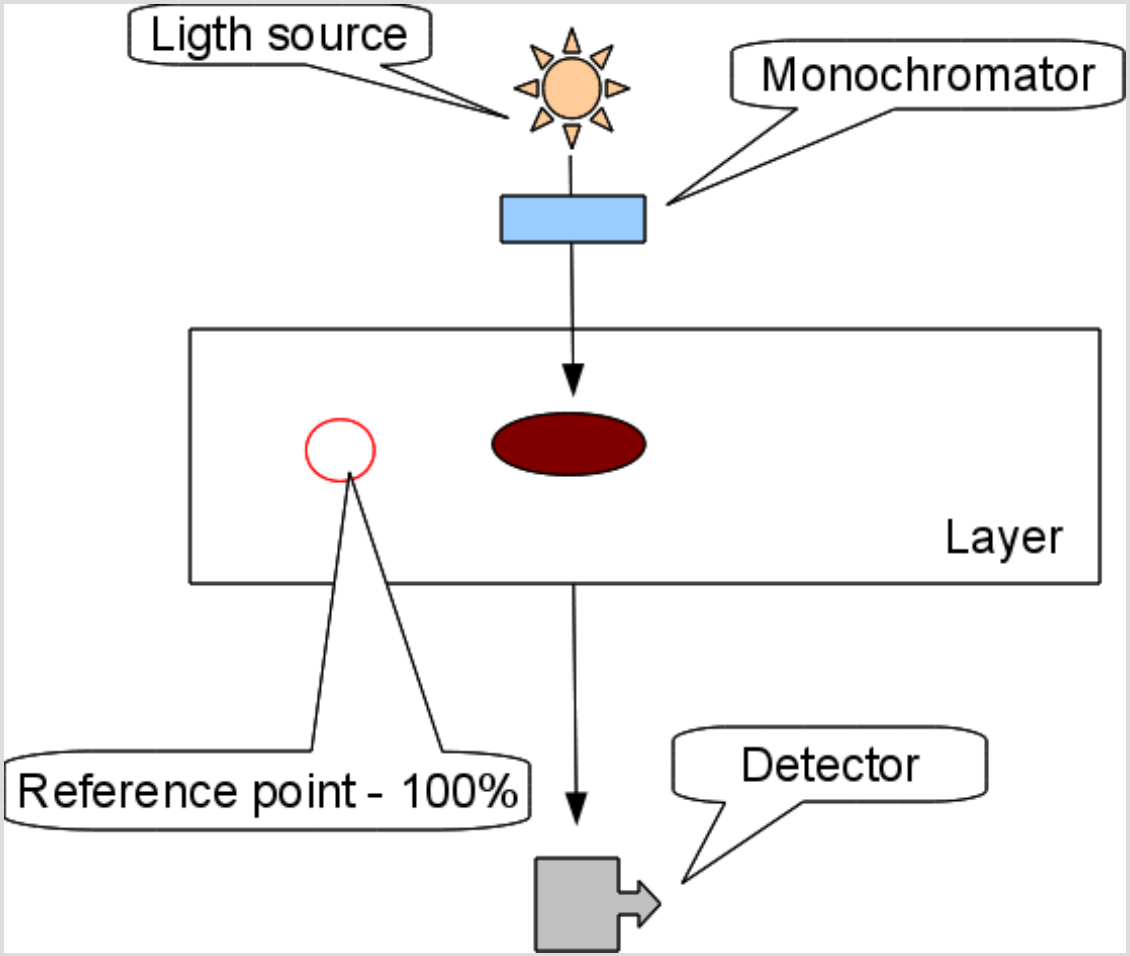
- Fluorescence



The reference point is the lightest spot on the layer

Measurement basics

- Transmission

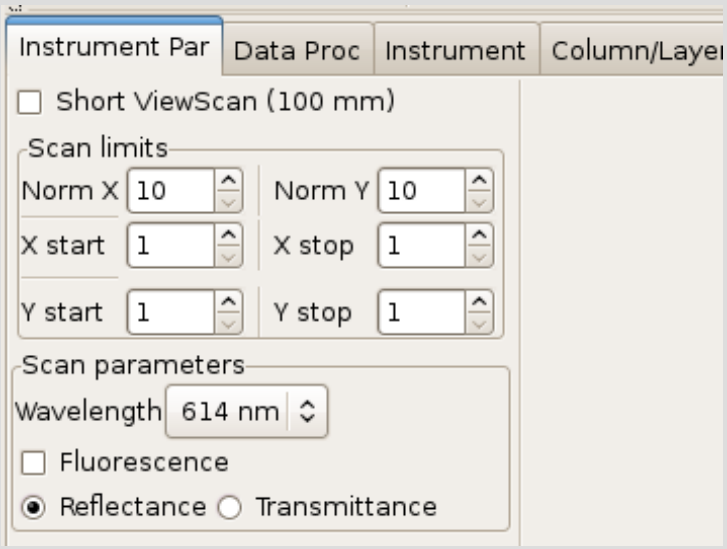


Measurement settings

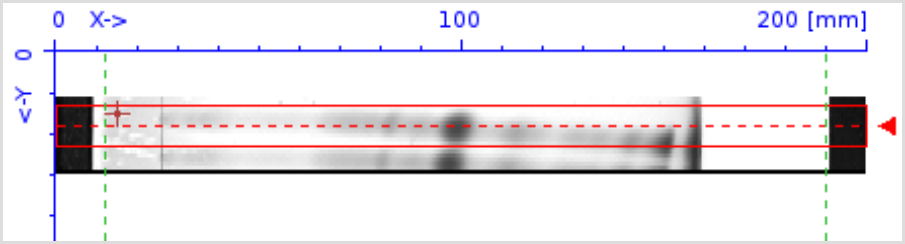
- Make a ***Method*** file
- Save it
- Set in ***Preferences***
- Start measure
- Make modifications if necessary

Measurement settings - Make a Method file

- Main window → Method



- Short ViewScan – for 100 mm wide layers
- Norm X,Y – coordinates for reference point, designated by a light red cross, usually in upper left corner
- X start, stop – chromatogram recording start-stop retentions (in mm unit)
- Y start, stop – upper and lower track limits



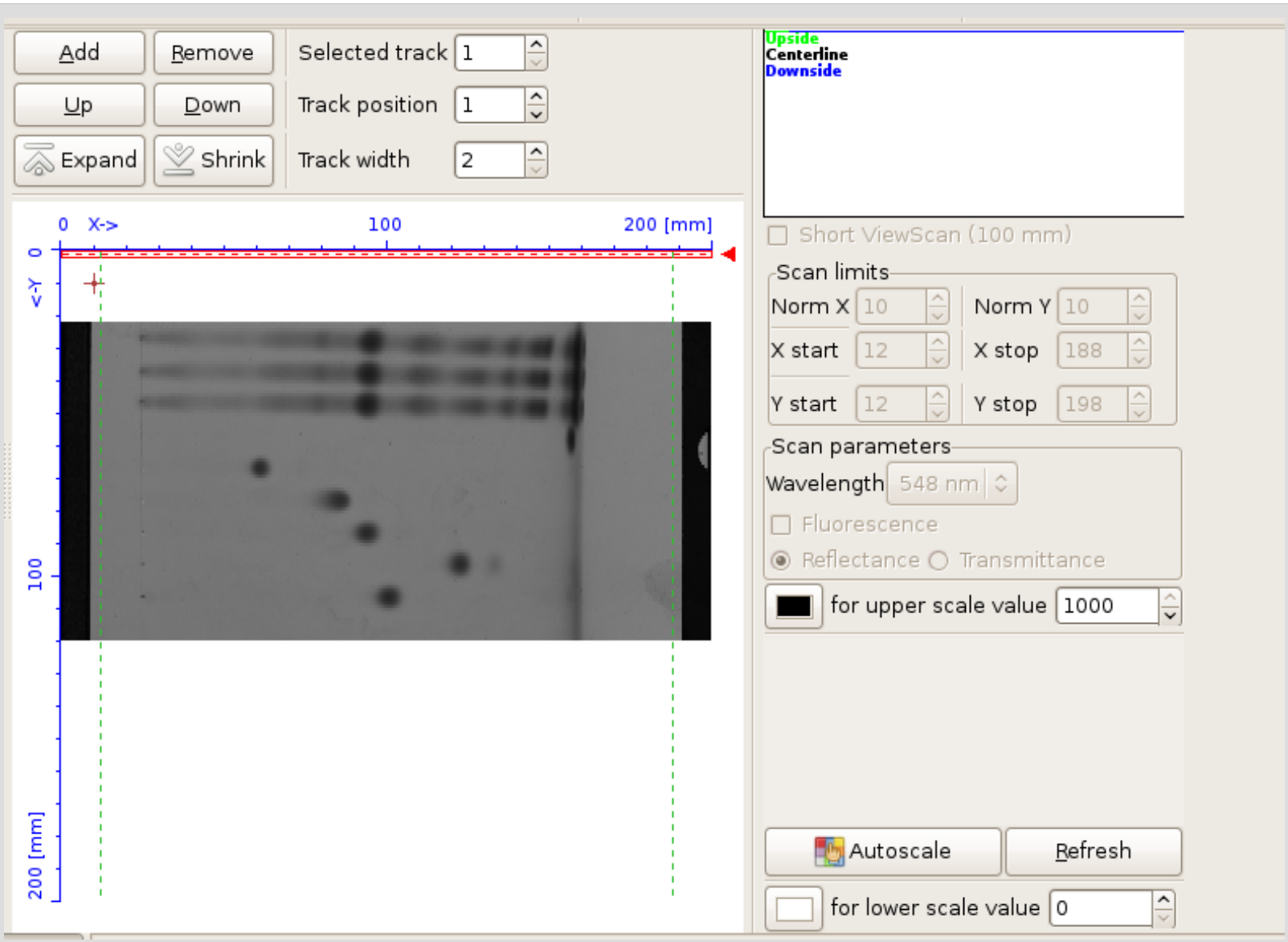
Measurement – The ViewScan

The ViewScan is a full resolution layer scan, between Y start/stop limits and in 200 mm (or 100 mm in case of short view) length of the layer.

The purpose: to get the whole layer data and in the next step you can easily select the desired tracks.

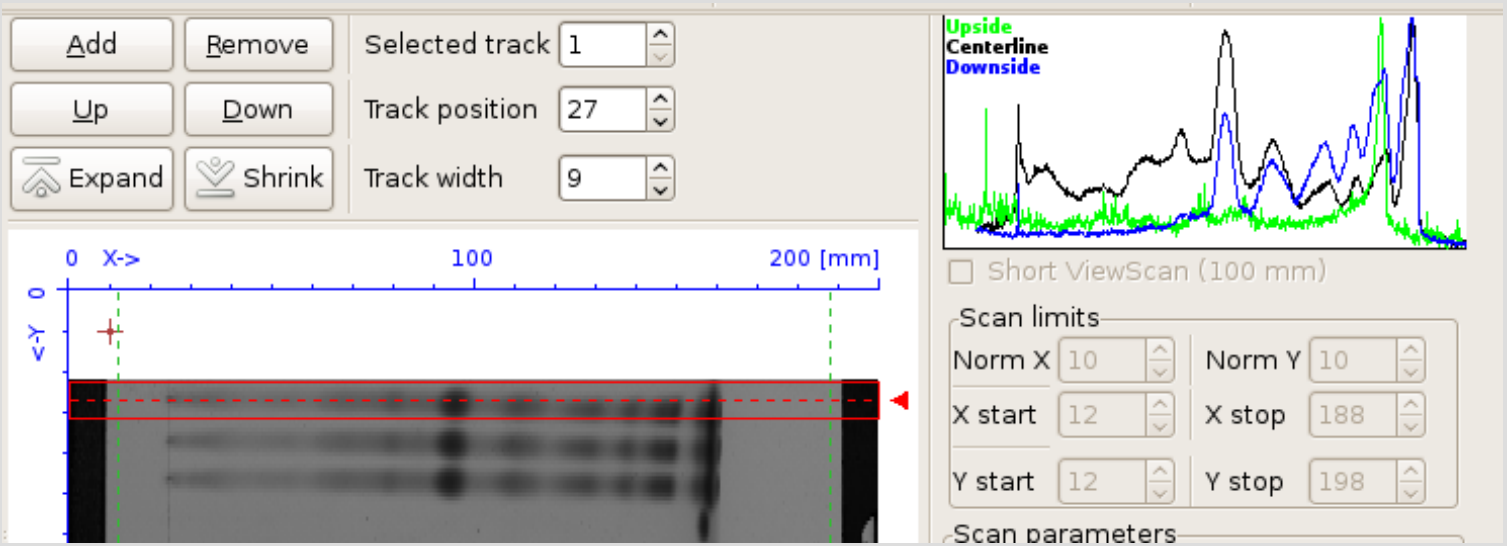
All the data is available now.

The ViewScan



Track handling

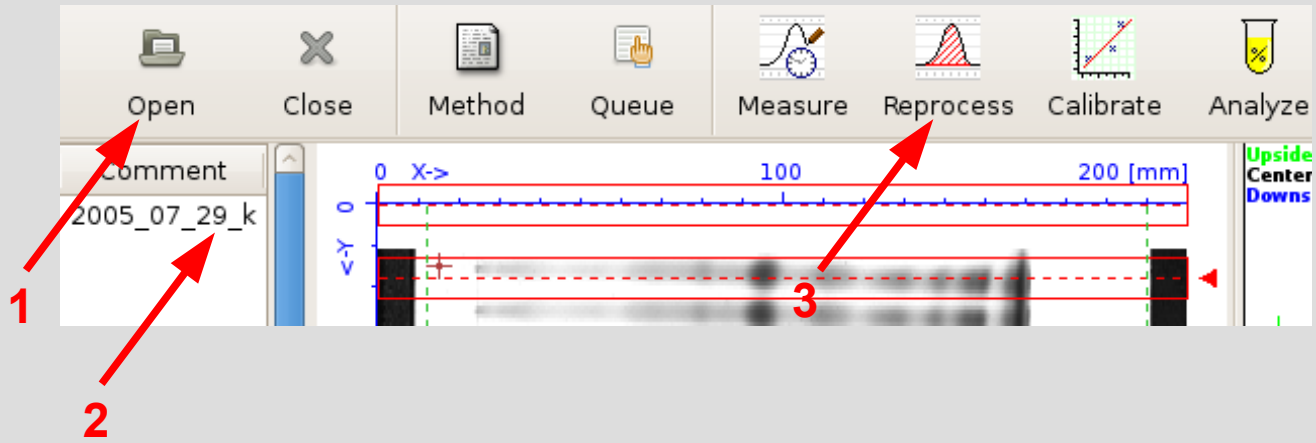
- After the ViewScan executing we can handle tracks:



•Add, remove tracks
•Modify their positions
•Modify the track width
•Visually detect the track side, if their width is too wide or too narrow

Main window - Open an existing layer

- Click on the ***Open*** button and select the *„.lay”* file which you need (1)
- Select the track from the list that you want to process (2)
- Go to ***Reprocess*** window (3)



The Reprocess window

- Reintegrate
- Compare / overlay
- Save
- Export
- Print

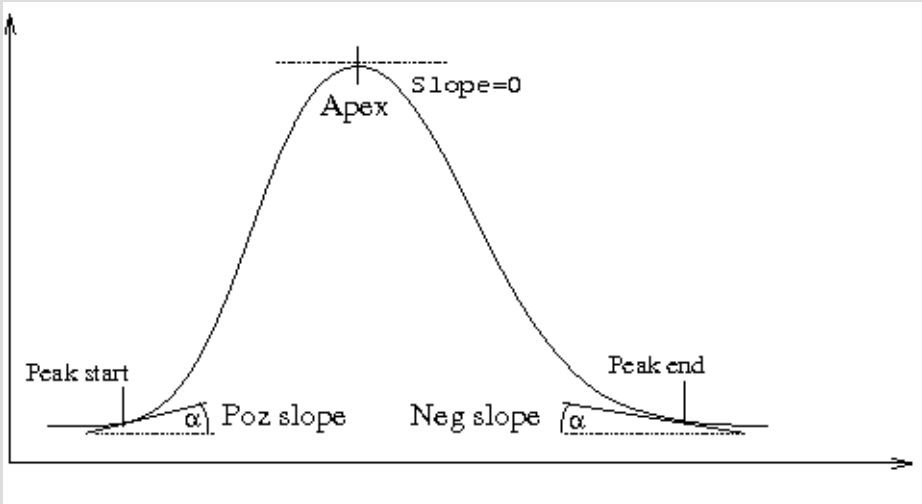
  the chromatograms.

  The integration can be

- automatic (by parameter set)
- manual

Integration basics

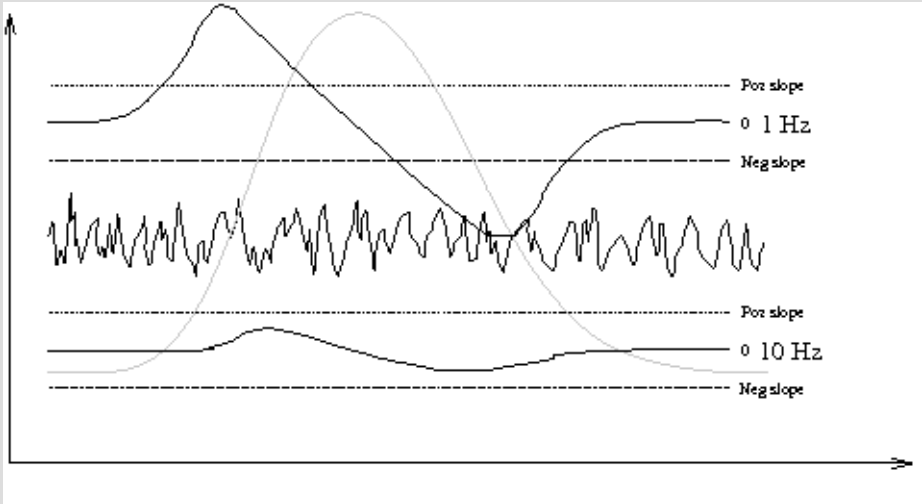
- How to detect a peak?



The software continously calculates the derivative values of datat stream. When the derivative value is higher than a previously set threshold value it detects as a peak start.
When this valus's sign turns from pisitive to negative, this signs it is a peak apex.
The peak end is detected by a negativ slope threshold, smiliar to the peak start.

Peak detection - derivation

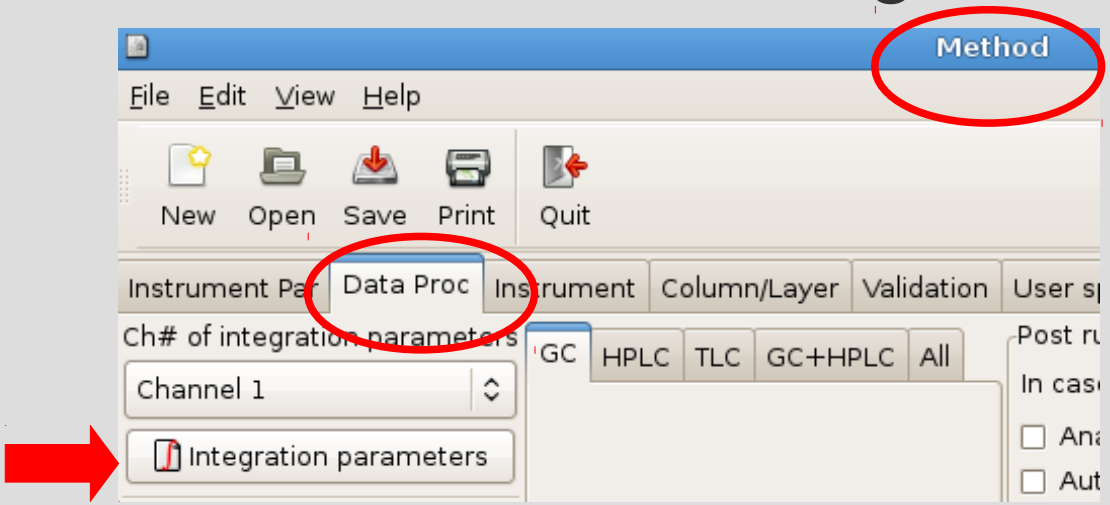
- Look, how does it work



When the sampling rate is not in concerning with peak width, the derivative data values can be too low, the peaks can not be detected.
In TLC scanning the sampling rate therefore is 0.2 mm, that give detectable peaks.

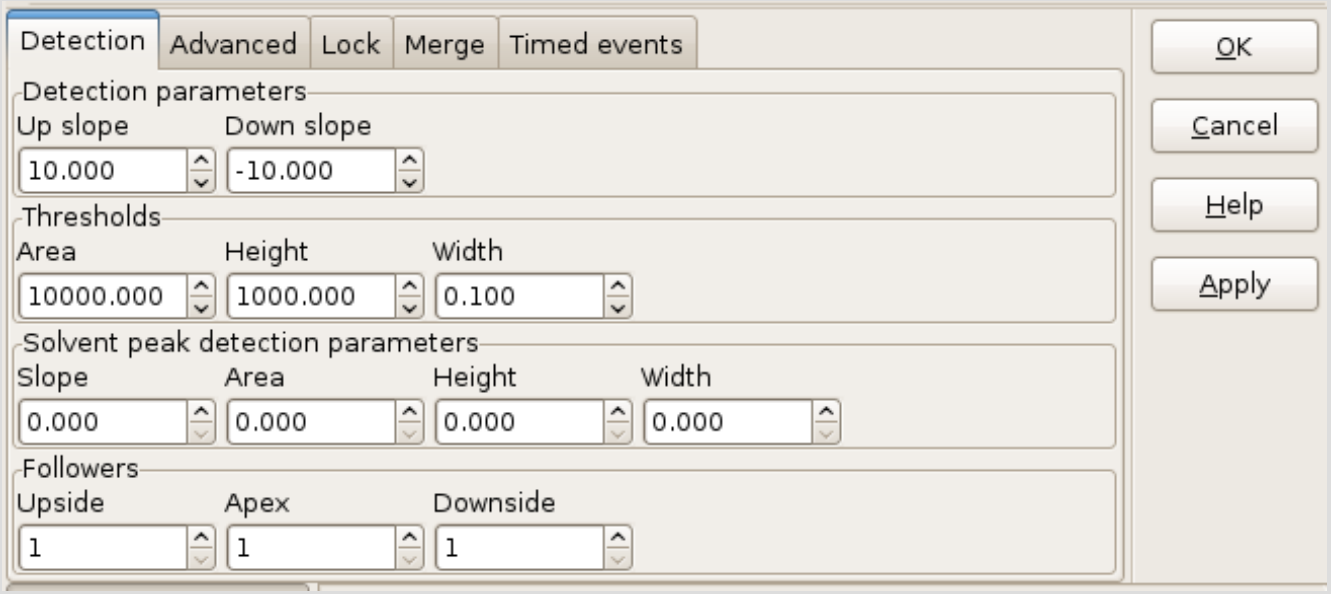
Integration parameters

- Select the integration button to set the parameters.
- If the parameters give acceptable result, then you can store these parameters in the ***Method*** file and the next measure process will be finished with good automatic results



Integration parameter settings

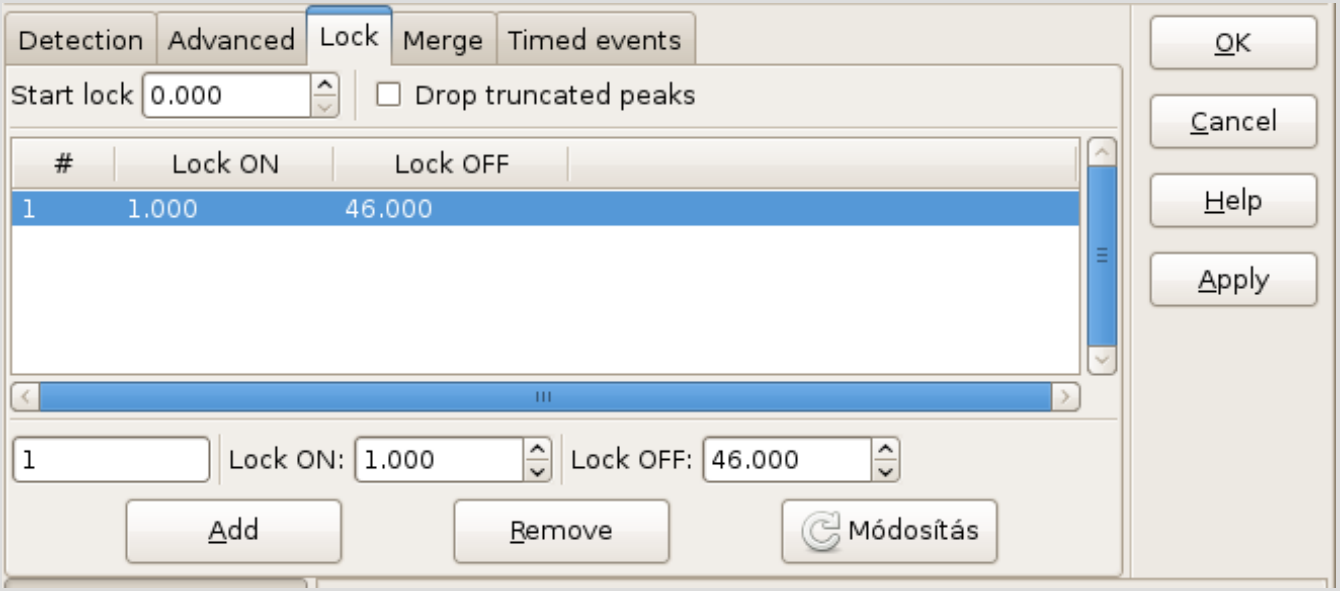
- The detection parameters: slope and treshold



•Slope: as shown on *Integration basics* slide
•Thresholds: **All** the three thresholds values have to be override to detect a peak. They have logical *AND* connection.
•Solvent: Do not care in TLC scanning, it is a GC speciality
•Followers: If the signal is to noisy, the peak detection can be unstable, try to increase the appropriate values to 2 or 3. Those are calculated in data points unit.

Integration parameter settings

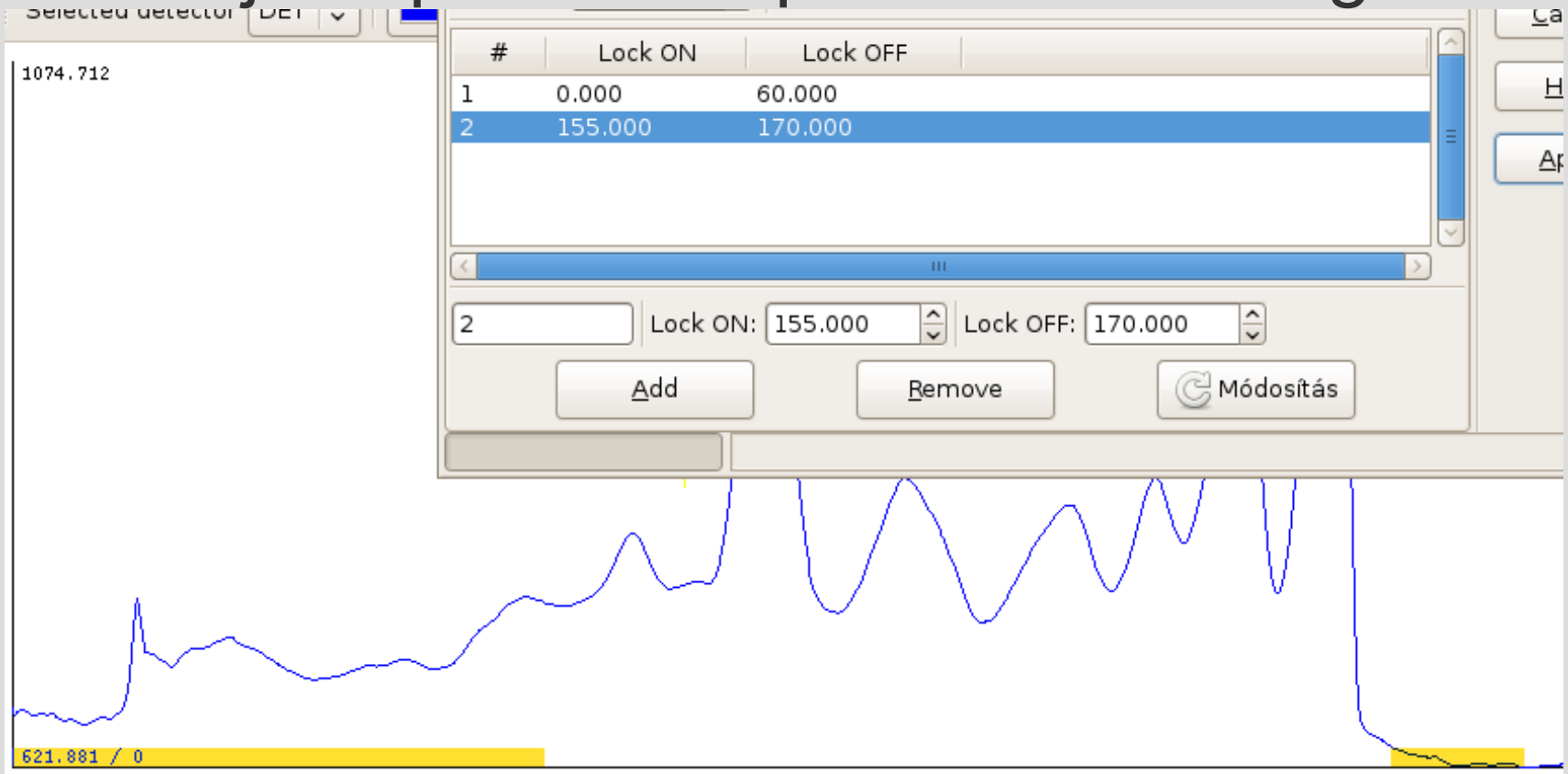
- The lock table



You can add, remove and modify existing lock areas.

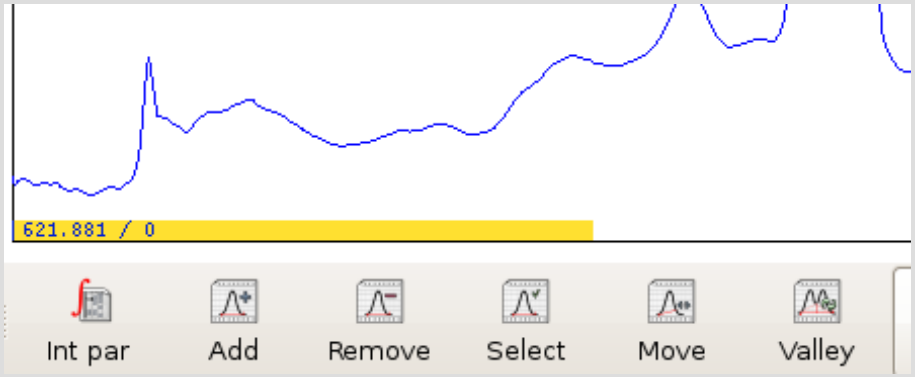
How lock works?

- The locked area are excluded (shown with yellow bars) from integration, it is very useful when junk peaks are present in the signal.



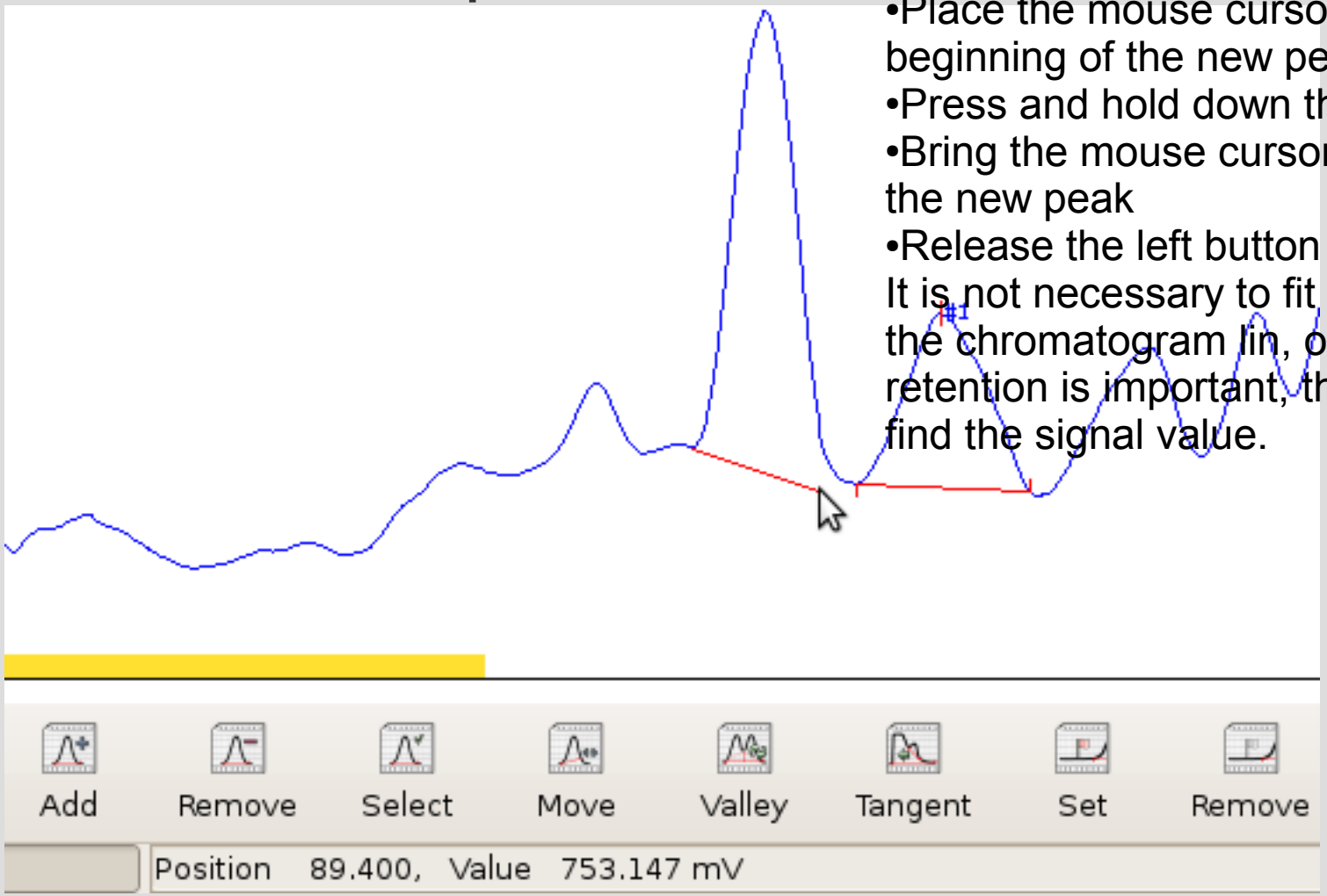
Manual integration

- You can add, remove, modify peaks manually



Add peak

- How to add peaks?

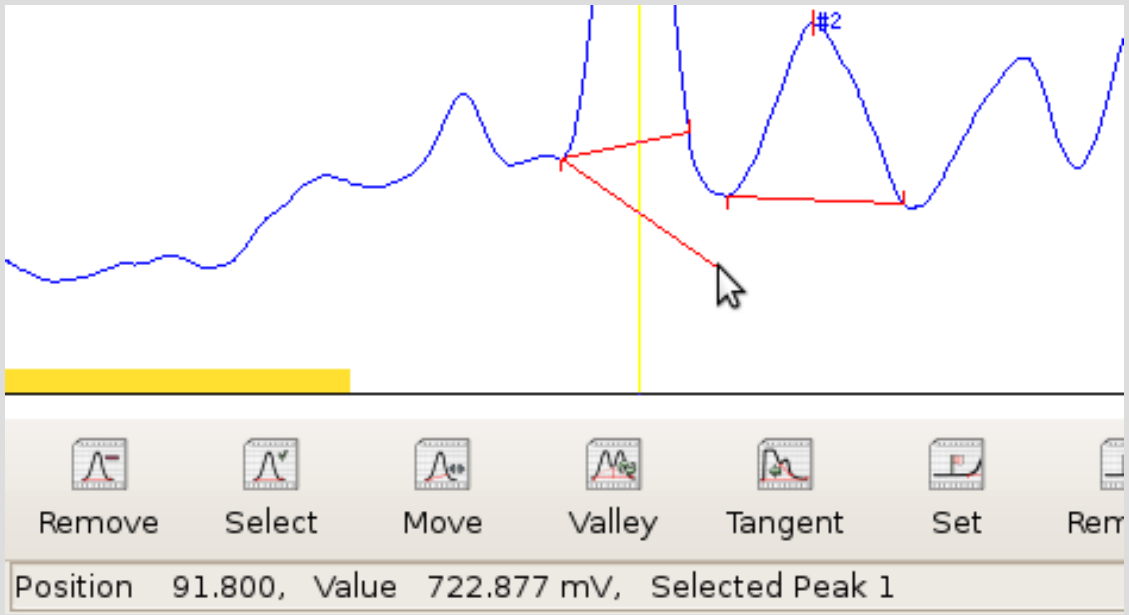


- Press ***„Add”*** button
- Place the mouse curso to the beginning of the new peak
- Press and hold down the left button
- Bring the mouse cursor to the end of the new peak
- Release the left button

It is not necessary to fit the points to the chromatogram lin, only the retention is important, the software will find the signal value.

Delete - Move

- To delete a peak from the list, first click in the peak area, the yellow cursor lin will be placed there. Then press ***Remove*** button.
- To move a basepoint, press ***Move*** button, drag the basepoint and drop to the new place.

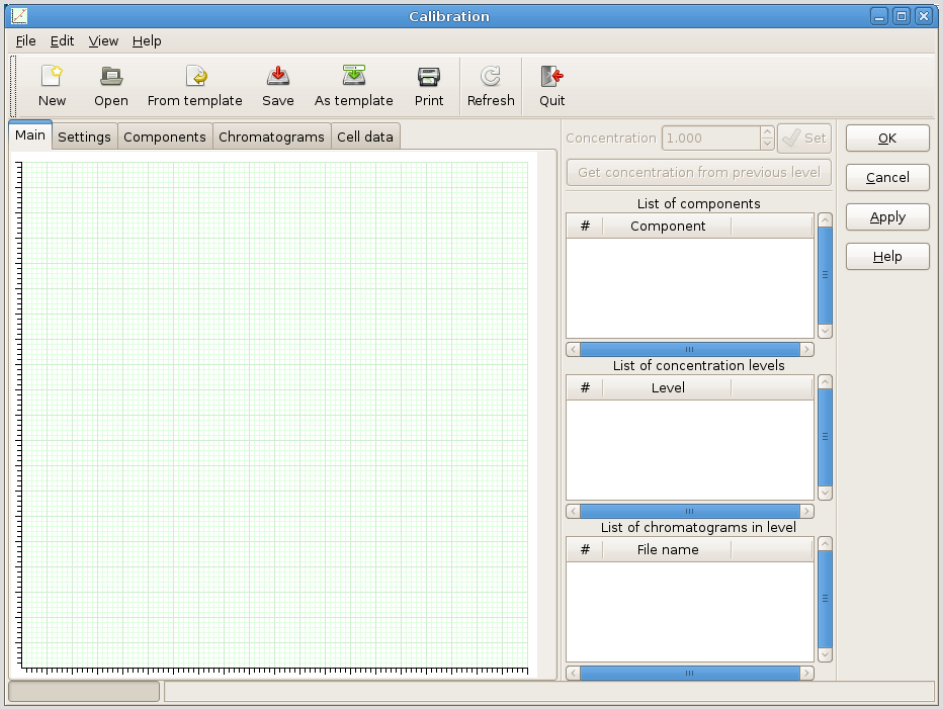


Print

- To print the results press ***Print*** button.
- Select the printer.
- Press Print button.
- Before you print, in the menupoint ***„Printer settings”*** you can set the graphical parameters for the print.
- The report can be directly print to a PDF file.

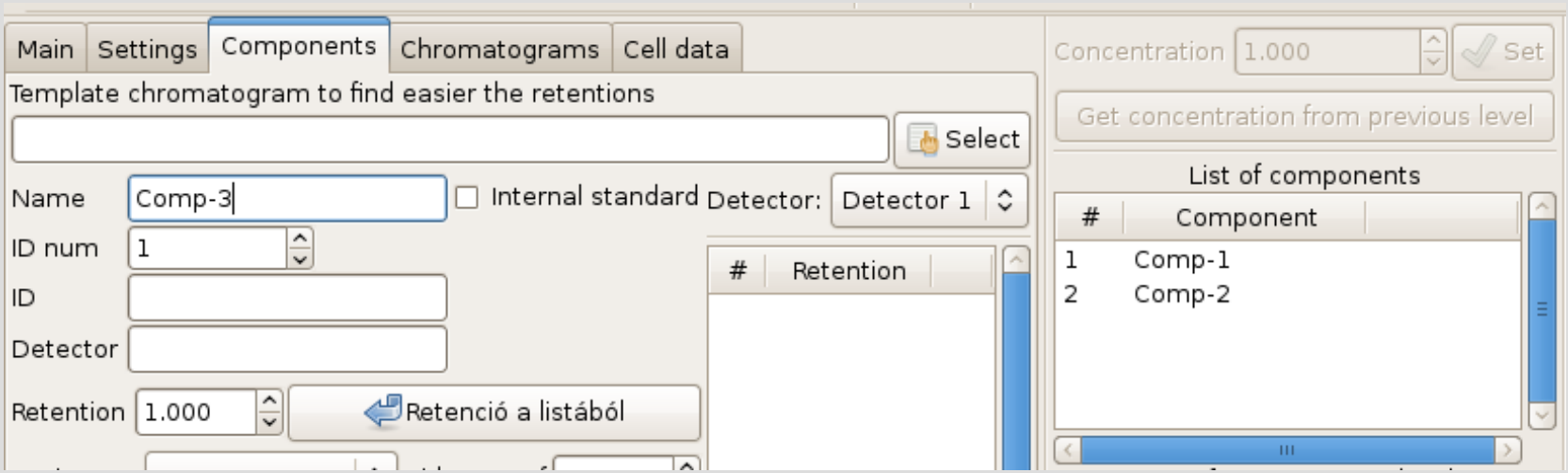
Calibration

- Multi component
- Multi level (concentrations levels)
- Multi chromatogram (parallel chromatograms inside in one level)



Component settings

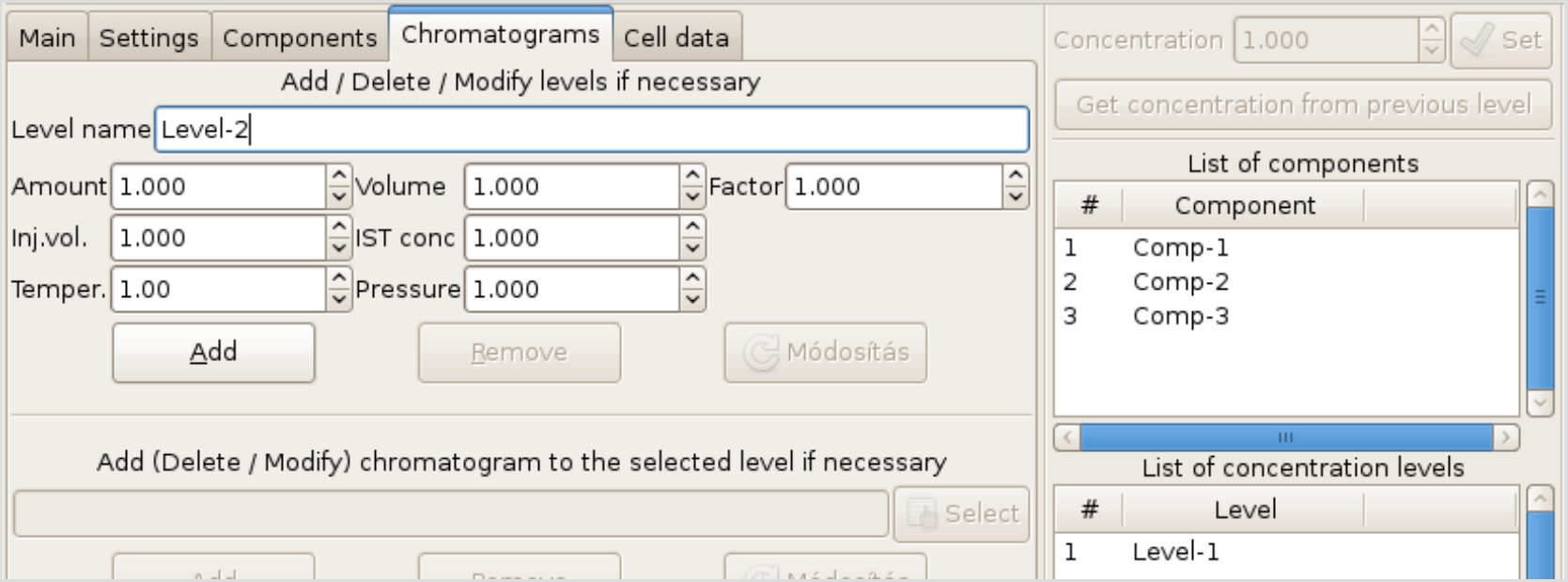
- Fill the component list



When you filled the fields, press ***Add*** button.

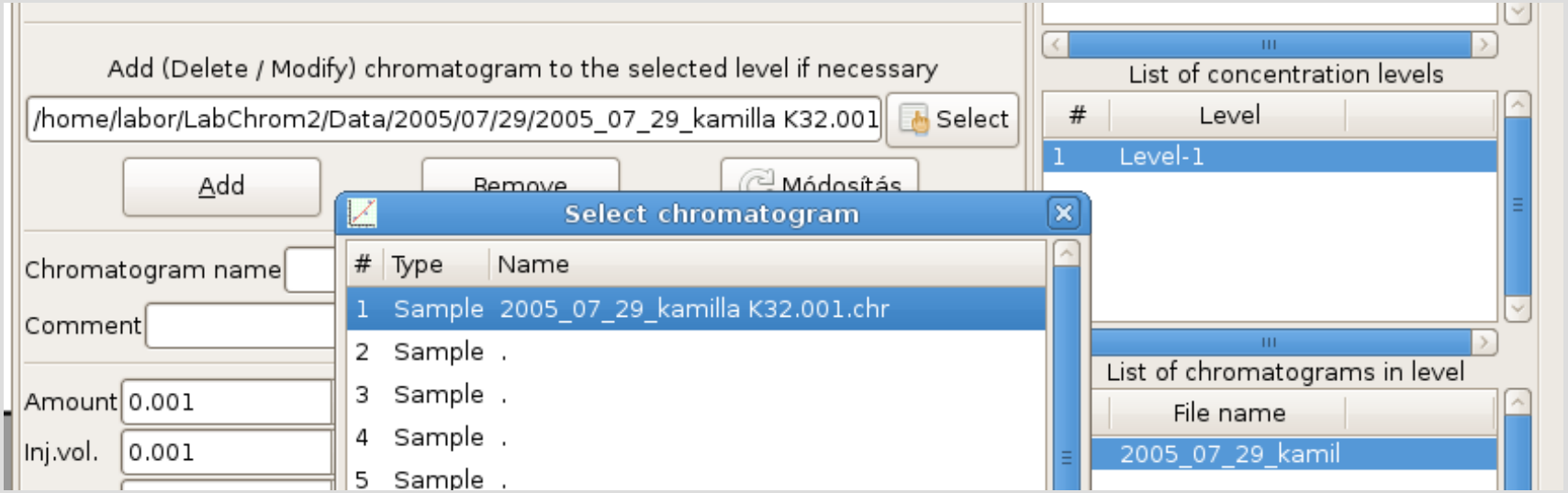
Level settings

- Add level names



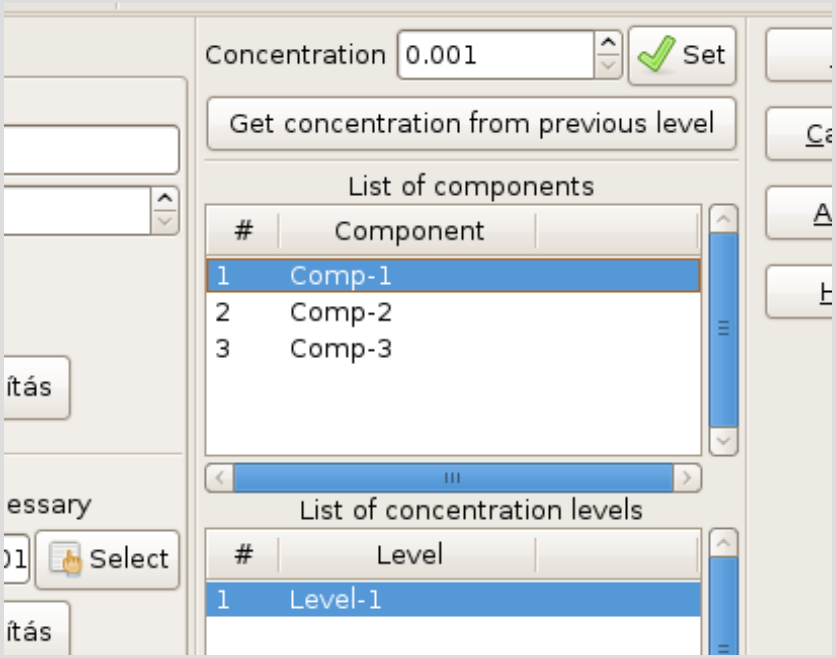
Fill levels with chromatograms

- Select a level and ***Select/Add*** the chromatogram in to the level.



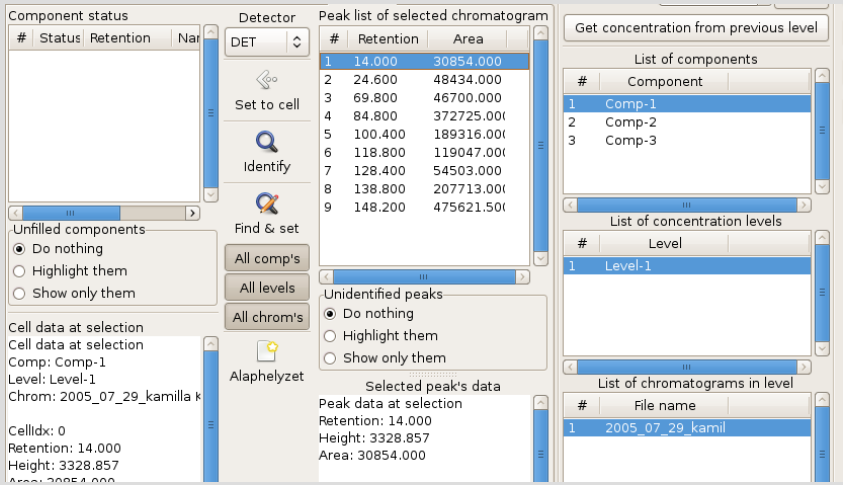
Set concentrations

- Select a Component **and** a Level, now you can fill the Concentration field.



Fill cells

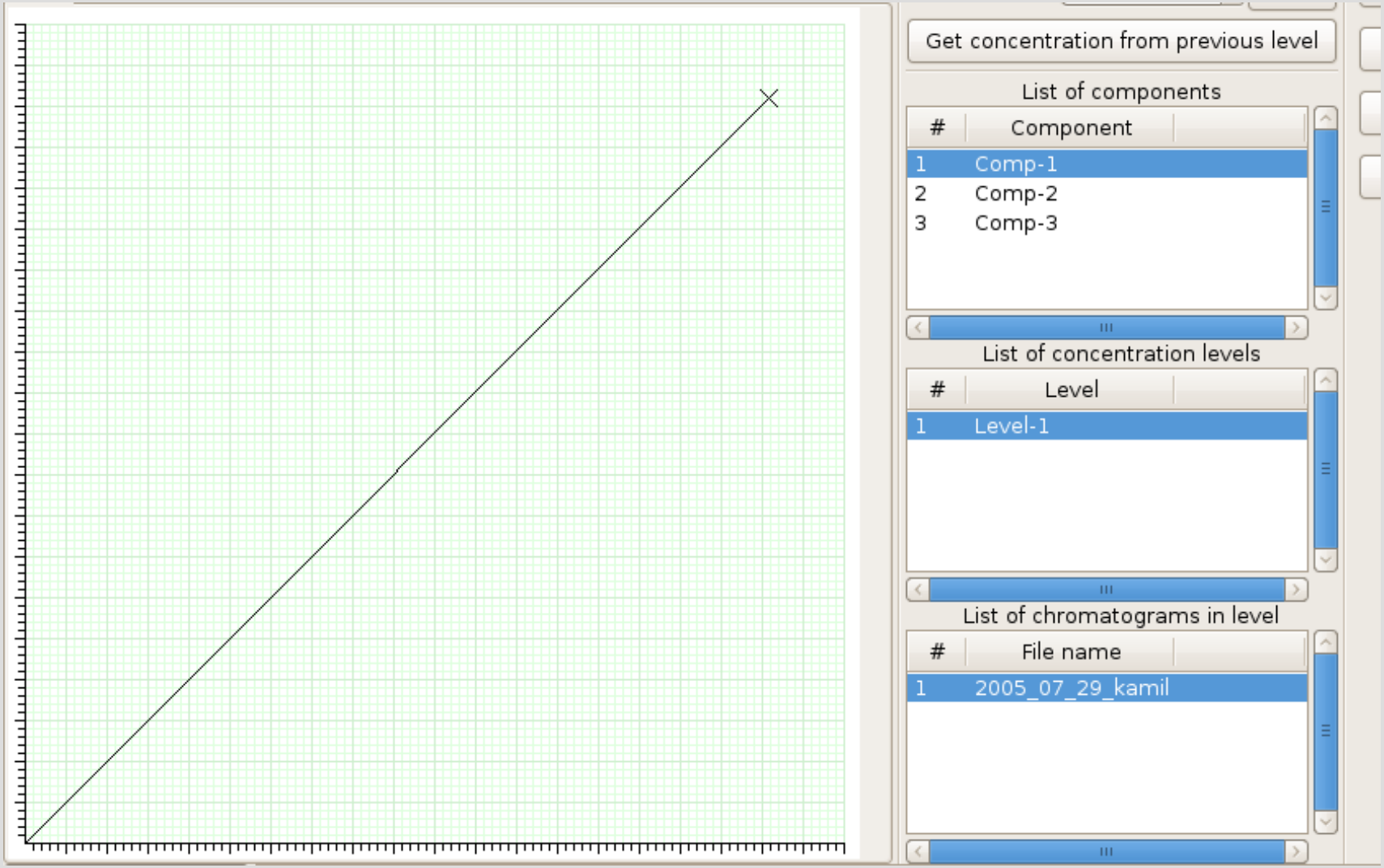
- If you filled all the component names, all the level names, assigned all the chromatograms to their levels, you can fill the cells.



This filling means you must select the Component, the Level, the Chromatogram (each of them), the peak from the chromatogram (in the middle block) and pressing the button ***Set to cell***.This process must be repeated to each of the components, levels, chromatograms.

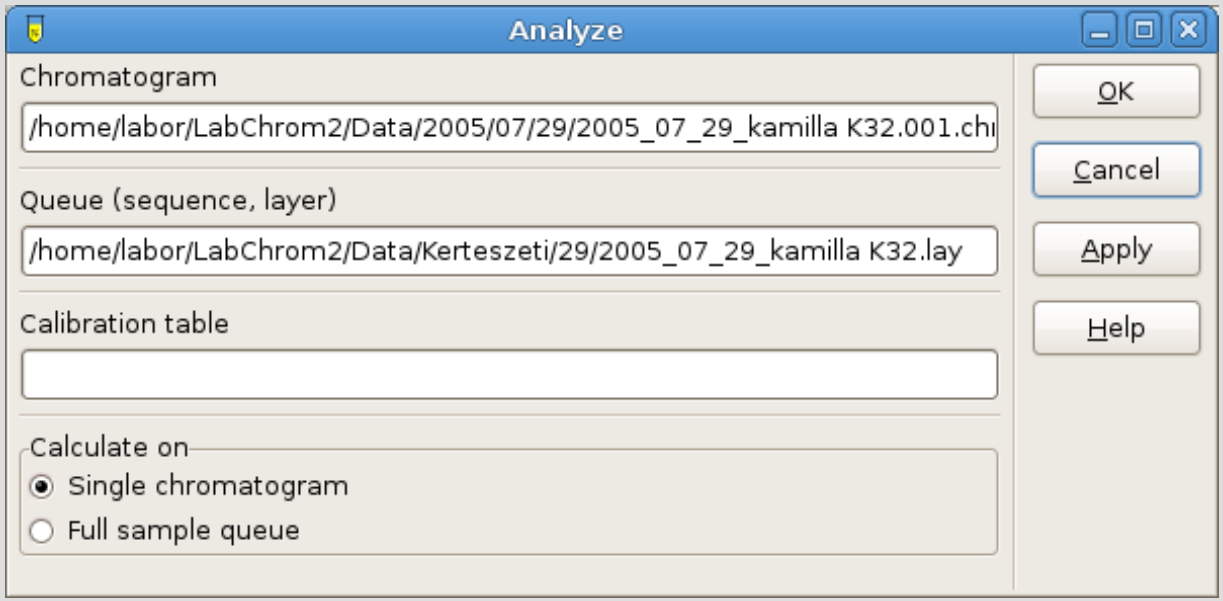
Curve

- Then you can see the calibration curve



Analysis

- If you finished the calibration table, you can select the ***Analyze*** function.



You can analyze either a single chromatogram or the full table. Analysis menas the component identification and the calculation of the concentrations.

More information

www.chemotron.hu/service

- New software versions
- Presentations
- Upgraded user manuals
- Application notes