

IC Walkthrough

Metrohm – Ion Chromatography Instrument
Instrument Operation



TrACEES Platform

Trace Analysis for
Chemical, Earth and
Environmental Sciences

Doc No. WT-IC-v1.0

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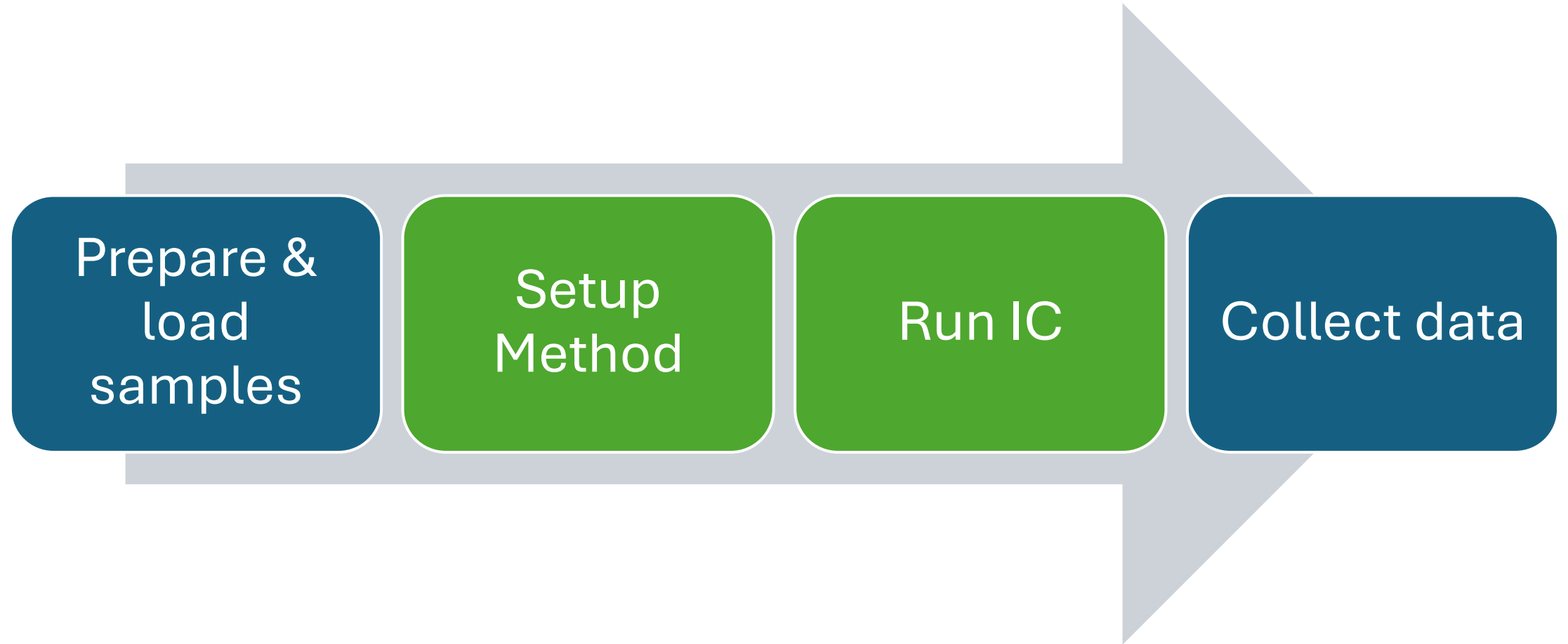
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Approved: Alex Duan

Version 1.0

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Work-flow



Setup IC

Open MagIC Software

Place test tubes in the desired spot (1-54) on the sample processor rack.

- The current method is programmed to have a wash run between every sample. If so, place each tube with a space in between.

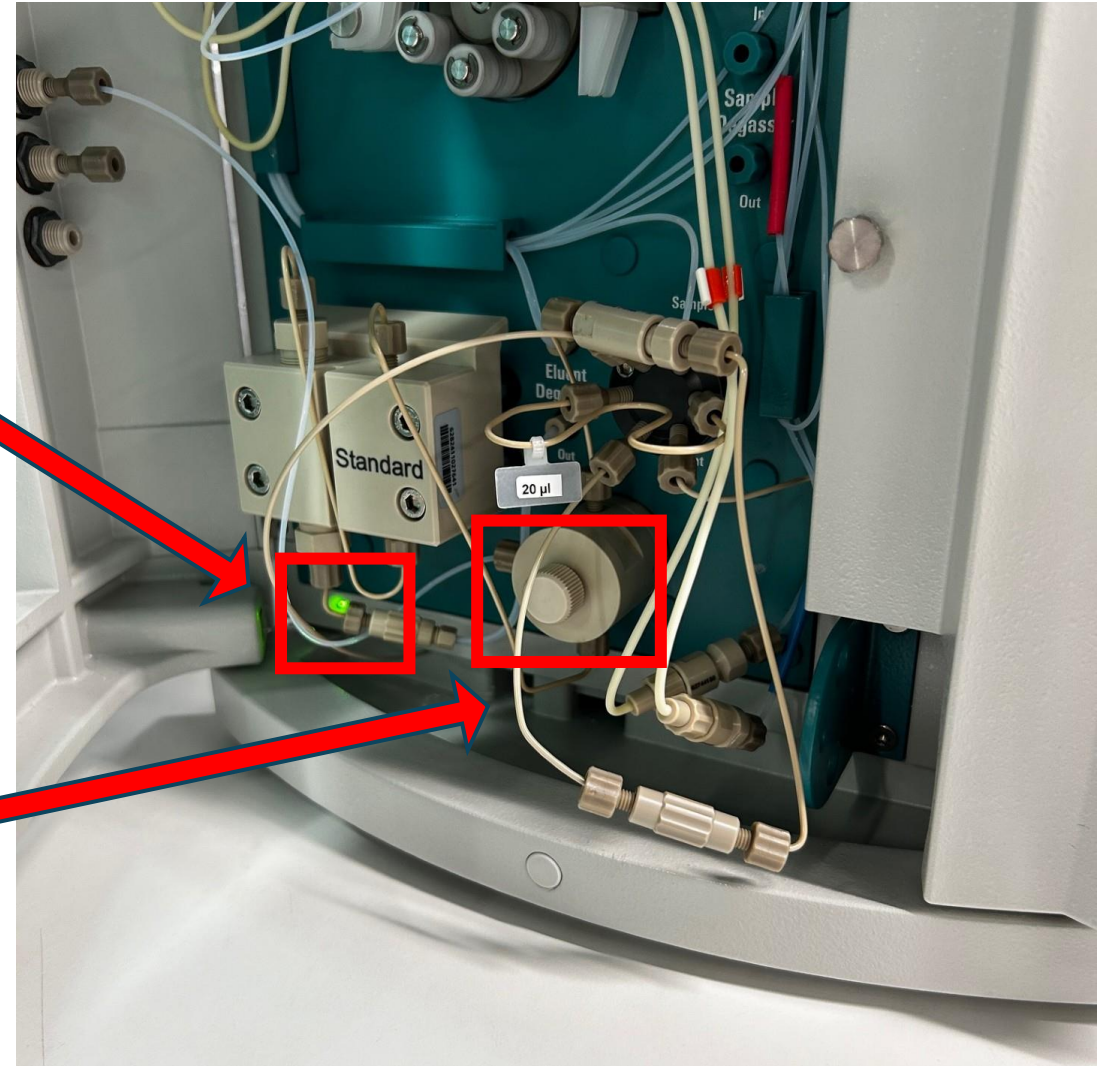
On the computer's desktop double click on the icon to open the IC app.



Turn on IC Metrohm

Turn on the IC Flex at the back and wait for the flashing light at the bottom left corner to stop.

Turn dial 180° to open valve.

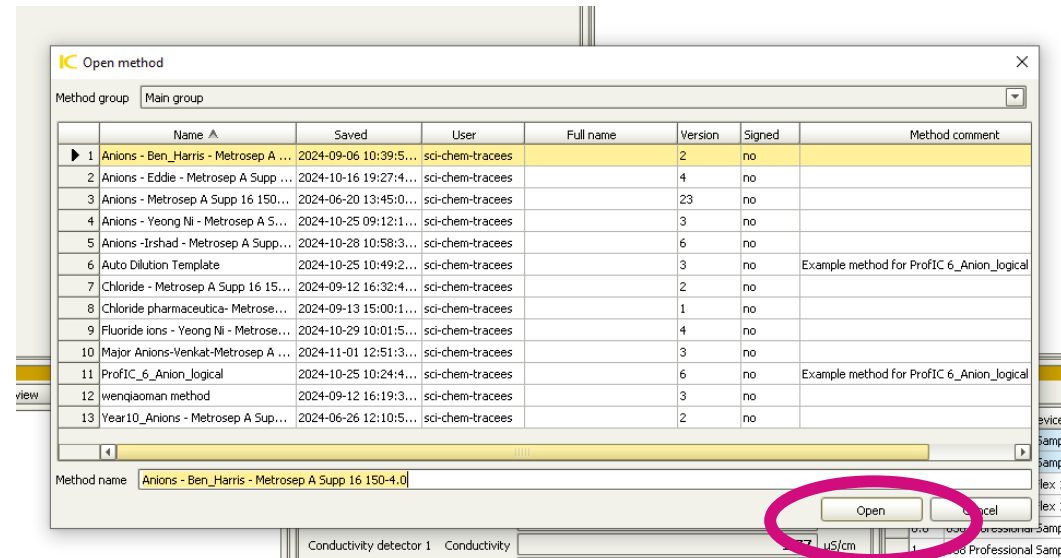
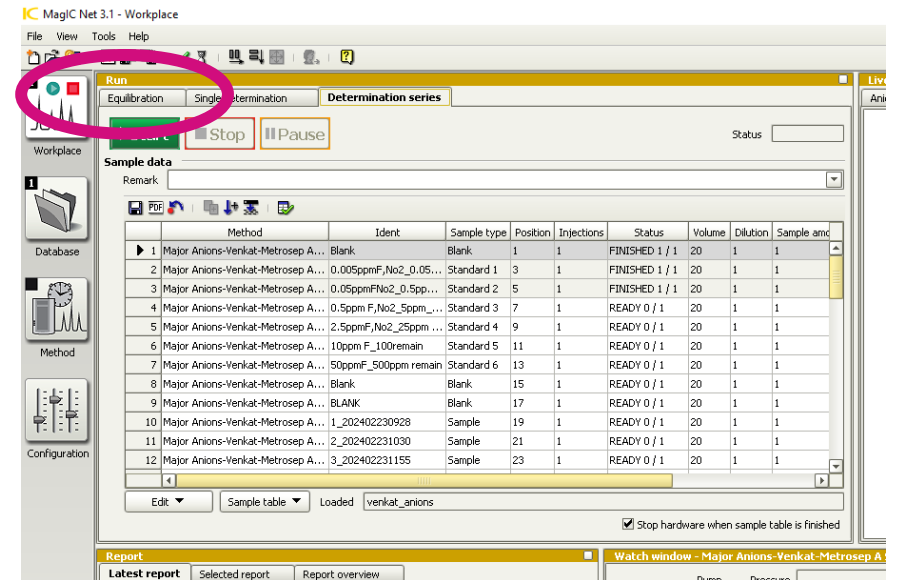


Set up IC Method

Click 'equilibrium'

Choose a previously saved method (*.M)

And click okay



Set up IC Method

Click '**Start HW**'

After 1 minute stop by clicking '**Stop HW**'

Close the valve which was opened before.

Click '**Start HW**' again.

Wait until the oven temperature is at the desired temperature. This might take a while.

The screenshot displays the software interface for an IC method. The 'Run' tab is active, showing 'Start HW' and 'Stop HW' buttons. A red arrow points from the 'Start HW' button to a physical valve assembly. Another red arrow points from the 'Stop HW' button to the 'Watch window' showing the oven temperature at 31.7 °C.

Watch window - Anions - Ben Harris - Metrosep A Supp 16 150-4.0

Component	Parameter	Value	Unit
Pump	Pressure	1.7	MPa
Injector	Position	Fill	
MCS	Status	On	
Degasser	Status	On	
Oven	Temperature	31.7	°C
Conductivity detector 1	Conductivity	1.60	µS/cm
Tower	Rack position	-----	
800 Dosino	Volume	-----	mL
800 Dosino	Port	-----	

Method Editor

Open **method** editor tab

Components:

- Set '**analysis**' to '**anions**'
- Accept or edit the entries of anions and their expected retention times under the current method conditions

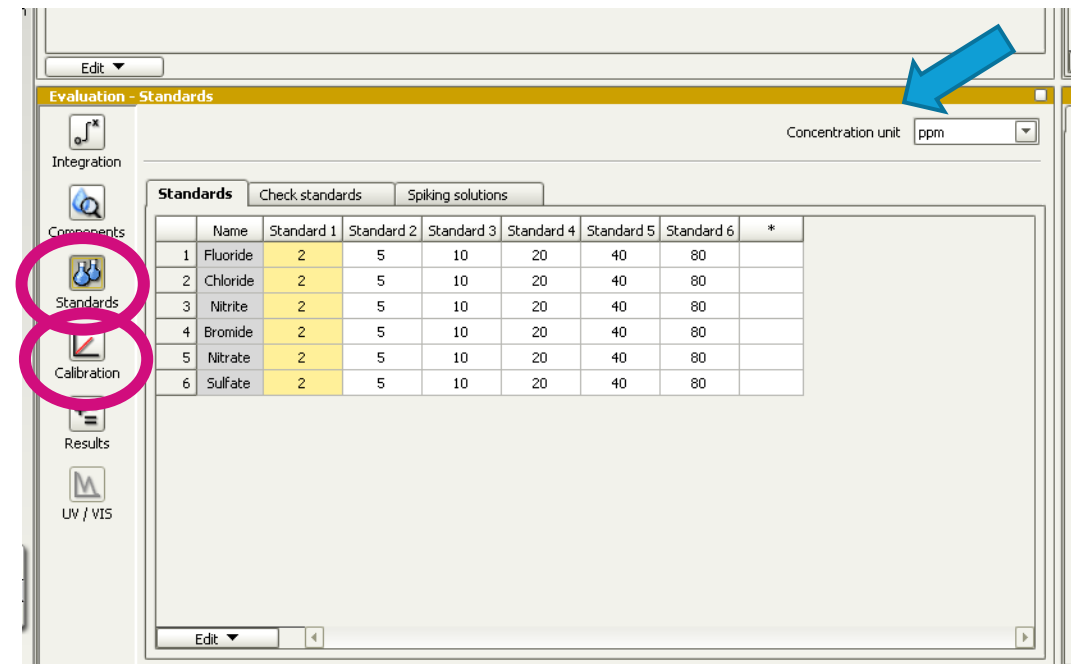
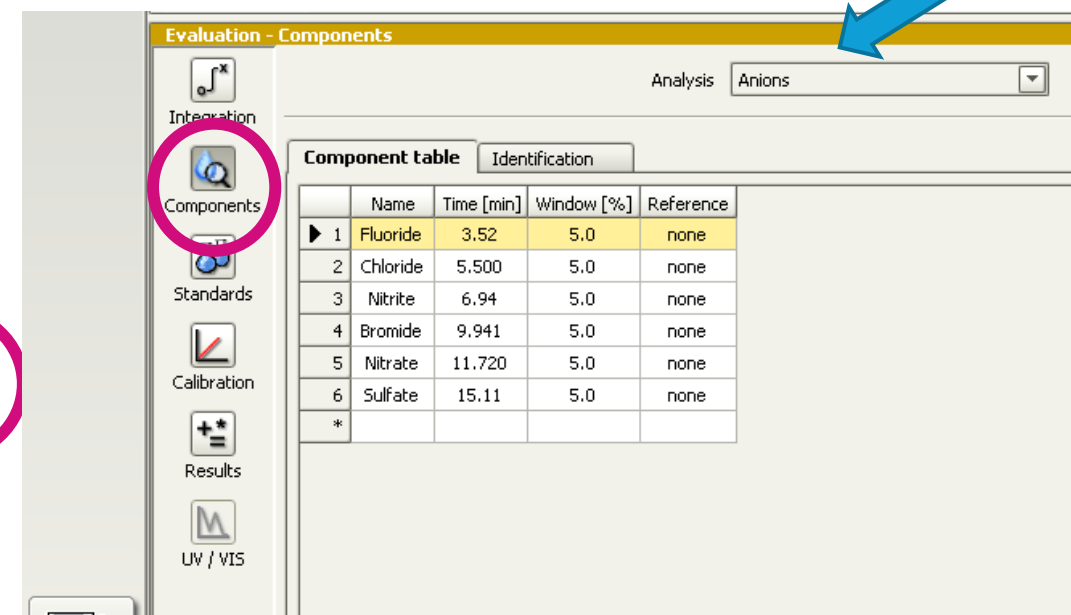
Standards

- Select ppm as the **concentration** unit
- Click **edit>edit** to enter the concentration of each component.

Use  to enter value for standards 2,3 ect.

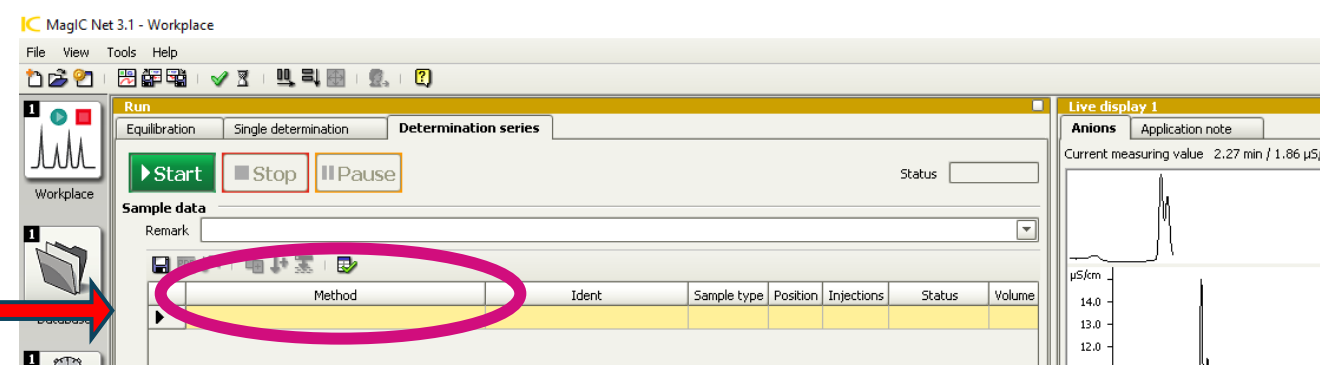
Calibration

- Select the component measured (area, height), curve type (linear, quadratic, cubic) and evaluation (weighting)



Set up Sample Table

Double click 'method'



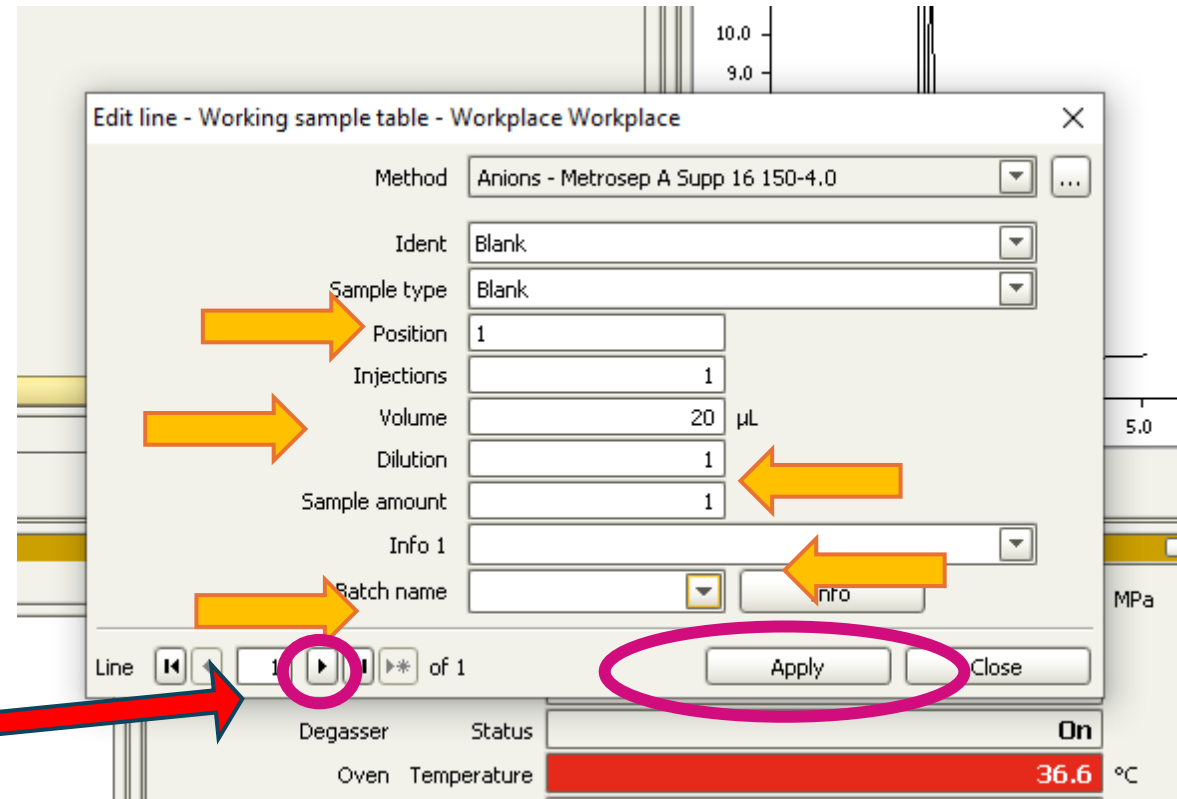
Fill in the information required.

Double check the method is correct.

Note – make sure to include dilution factor as the program will take this into consideration when doing calculations

Make sure to stagger the vials with 1 space between every vial so washes can occur between every run.

Click here to go to the next vial/line.



Click '**Apply**' when you are finished.

Set up Sample Table

Click '**stop hardware**' if you intend to run IC overnight.

Save sample table

Click '**start**'

MagIC Net 3.1 - Workplace

File View Tools Help

Run

Single determination Determination series

Start Stop Pause

Sample data

Remark

Method	Ident	Sample type	Position	Injections	Status	Volume
1. Anions - Metrosep A Supp 16 150-4.0	Blank	Blank	1	1	READY 0 / 1	20
2. Anions - Metrosep A Supp 16 150-4.0	Blank	Blank	3	1	READY 0 / 1	20
3. Anions - Metrosep A Supp 16 150-4.0	Blank	Blank	4	1	READY 0 / 1	20
4. Anions - Metrosep A Supp 16 150-4.0	Blank	Blank	5	1	READY 0 / 1	20

Live display 1

Anions Application note

Current measuring value 8.31 min / 1.56 µS/cm

µS/cm

14.0
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0

0.0 1.0 2.0 3.0 4.0 5.0

Stop hardware when sample table is finished

Sample table Loaded

New
Load...
Save
Save as...
Sample table test...
Run test...
PDF Print (PDF)...
Properties...
Import data...
Export data...
Reset

Report Latest report Sele

Pump	Pressure	11.5	MPa
Injector	Position	Fill	
MCS	Status	On	
Degasser	Status	On	
Oven	Temperature	38.7	°C
Conductivity detector 1	Conductivity	1.56	µS/cm
Tower	Rack position		
800 Dosino	Volume		mL
800 Dosino	Port		

Data Analysis

Data Analysis

Go to 'database'

Select the runs you would like to analysis. Right click on the standards and click 'reprocess' a window will pop up.

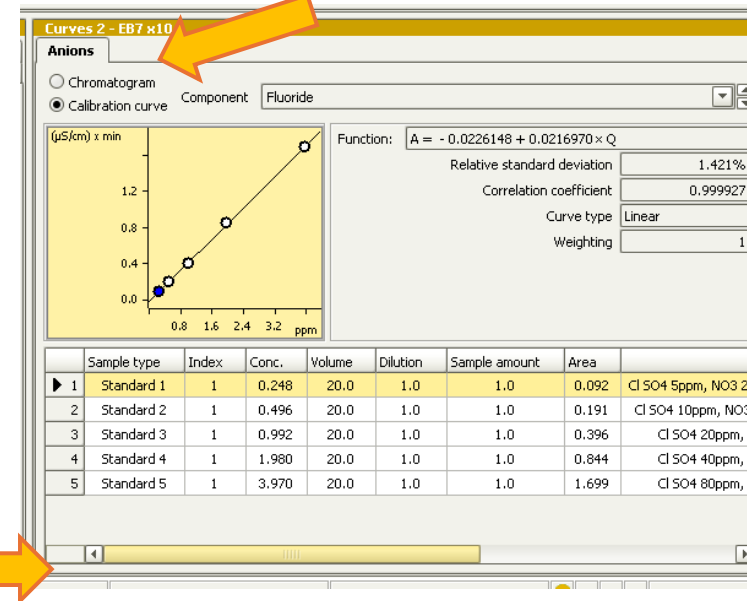
Select **calibration curve** in **chromatograms** window.

- If a standard is an outlier scroll to the end of the tale and right click > **off**

Click **reprocessing** (at the top in the toolbar) > **from standards of reprocessing table** > okay

The screenshot shows the MagiC Net 3.1 interface. The 'Determination overview' table lists various samples and standards. The 'Results' table shows the following data:

Component name	Retention time [min]	Height [µS/cm]	Area [(µS/cm) x min]	Concentration [ppm]	Detection limit, 95% confident [ppm]
Fluoride	3.37	0.065	0.014	1.674	1.199
Chloride	5.16	165.245	37.700	2674.130	10.623
Bromide	9.01	0.102	0.037	12.676	8.848
Sulfate	13.65	10.886	6.349	658.294	26.203



The screenshot shows the 'Reprocess' dialog box. The 'Calibration' tab is selected. The 'From selected determination' radio button is selected. The 'Keep manual integration' checkbox is checked. The 'OK' button is highlighted.

Collecting Data

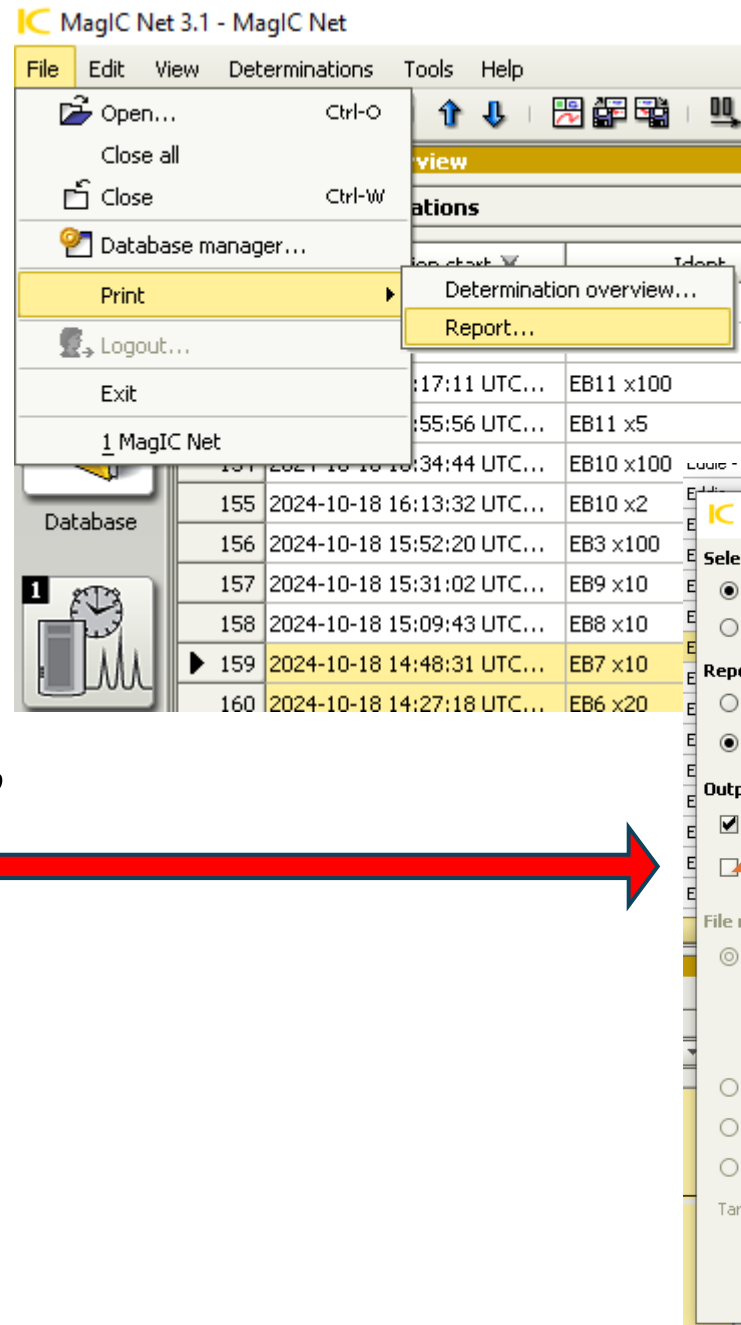
Once you are happy with your analysis:

Click **file > print > report**

Select selected determination

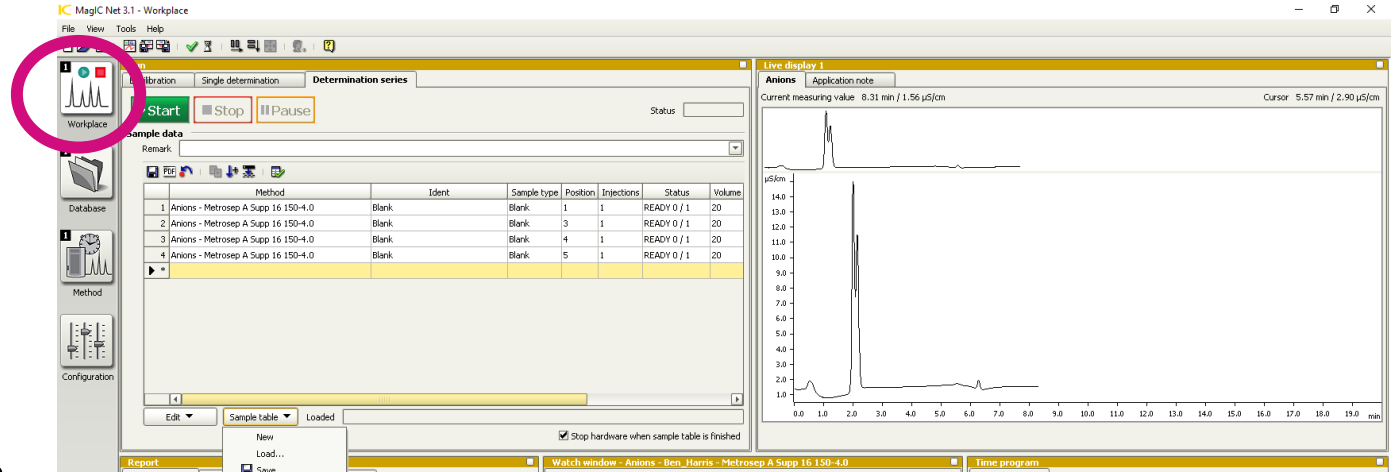
Report template > summary report, anion 3 per page, or results and calibration

Selecter **printer > Microsoft print to PDF**



Shut Down

Go to 'workplace'



Run a blank to clean system (under any method) using de-ionised water

Click '**Stop HW**'

- Make sure pressure goes to 0.0 mPa

Close MagIC Network Software

Turn off the switch at the back of the instrument.

Tips

If you need access to a vial slot that is inaccessible because of the tray position,

Click **'manual'**

Change the **rack position** input number

