

GC Tutorials : & U-Tube SRI 8610C

Chromalytic > Tips for beginners

NEVER use soap solution, Snoop etc for checking for leaks on fitting

- Check outlet for bubbles if possible by dipping detector pipe outlet in water
- use an electronic Leak Detector (eg Restek –expensive)
- Always start carrier gas wait >5 minutes at > eg 10ml/min, AND check for flow at column outlet.
- BEFORE turning on the TCD Filaments
- TCD may take 5 minutes to stabilise say at 150degC for gas analysis generally
- - SRI 8610C has a safety feature pre-set safety thresh-hold 1-2psi below which the TCD filament wont turn-on > oxidation/burnout of filaments WILL OCCUR instantly

NOT foolproof—if column outlet leaks or is disconnected > NO FLOW thru TCD despite the positive pressure on the column inlet BUT pressure on the Inlet EPC could still be > pre-set 1-2psi and the TCD protection is then non function > a RED light WARNING on the GC Front Panel indicates This !

To shut down the GC

Allow column oven to cool down to <40degC

Then turn off GC TCD filament

THEN You can turn off All gases

Otherwise column liquid phases deteriorate more quickly

Column life is dependent >

- on average temperatures being used at but also oxygen content of column carrier gas
- TCD filaments can burn out > expensive to repair but also on water content and reactivity of sample components
- Column Separation
- Max separation efficiency at optimum gas velocity (Column Length /air peak time – cm/sec N2 15-20m/sec He 20-35, H2 30 to 50cm/sec
- Increasing flow rate will decrease separation efficiency

Each Column Liquid Phase has its own unique Max Operating Temperature Packed Columns >> capillary columns

Use High Purity Carrier gas He or Hydrogen generally > 99.995%e specially at High Temperatures eg 300degC

but also any columns >70 deg recommended

A High drifting detector background signal near the Max Column Op temp expected often indicates liquid phase oxidation and bleed

Column Temperature Limits - Gas Analysis

Silica Gel 200degC

Mol Sieve 300degC—but CO2 DOES NOT elute

HayeSep D ~180degC (Note other HS columns are of different polarity and limits)

Precaution >

for “Trace Gas Analysis (& <1000ppM)

- use a High Capacity Oxytrap on the carrier gas inlet and close to the GC NOT at any cylinder manifold with a back-up
 - Do NOT rely on a closed trap as they can & do expire quicky when changing cylinders for example
 - Isolation valves for the GC to prevent back diffusion up the GC Columns system when on GC idle/standby etc)
 - AND on the trap once opened to air - a ‘slug of air “will quickly deactivate the Oxytrap adsorbent
 - Indicating Oxytrap - as a in-line back-up, this ensures there are no leaks to prevent back diffusion of Air from atmosphere
- Any deep pockets / blind spots in the GC column plumbing does take time to diffuse out after the GC has been shut down, WAIT 5 to 10 minutes to diffuse this air out . . . On restarting !
- otherwise oxidation if inner tube surfaces and stationary phase will cause over time troublesome column bleed and drifting baselines . . .
- On ANY type of columns > limiting limits of detection

DON'T FORGET

When the RED GC Lid Is UP during minor maintenance parameter resets ALL Hot Temperature Zones are TURNED OFF taking time to cooldown and restarting again

Injection

Gas Samples inject via the auto Gas Sample Valve for consistency

- But ensure you purge the GSV loops (normally 1cc with at least 3x that volume . . . & just before the injection
- Better still for convenience use the Vacuum Pump Interface device for doing multiple injections of the same sample or auto-injection of multiple field samples use the 10-Port Auto Gas Valve Injections Manifold as an option for the SRI 8610 MG#5 GC This device optionally can use a bank of gas sampling bags or alternatively low volume Sample Vials
- GC / Peak Simple installation
- Set the device No in PS / option overall > 302 device for 6 channel GC
- the USB Port Number must be set (value is on GC side panel
- this also contains GC parameter data for the SRI Test sample
- a flow schematic is also stencilled to the cover of the GSV Oven for guidance



Software > Peak Simple

The **SRI PS Data System** has evolved over 30 - 40 years

It is the Operating System for ALL the SRI GCs

Now 1 or 6-Channel versions

- Also available as a stand-alone separate box system for other GCs and general lab use) **IT HAS TO BE RELIABLE > Proven - IT IS STABLE !**
Only limited by PC H'ware and MicroSoft WIN10 (WIN 7 is actually more stable ! But " sabotaged upgraded to Win 8/9 > but don't use those version)
AND WIN10 with ALL it's "foibles")

Software > Backup

ALL SRI Data is on their Website www.sriGC.com

AND on The GC installation CD-ROM supplied with each Purchased SRI GS

An SRI Test Report is supplied with each GC—relevant to the Application the GC may be customised for

Take NOTE of ANY customised "EVENTS" Tables , TEMP profiles, "Peak Windows" settings RELEVANT TO YOUR APP and the SRI Test Report

As a **START UP** as a Minimum you should try and duplicate the test conditions AND Chromatogram EXACTLY (with relevance ?)

- with Capillary columns Theoretical Plates can be calculated from within "Results"

For each new column you should actually measure this ON YOUR GC !

- in future use this as a "yard stick" to indicate (with some common sense) when column performance deteriorates and when to replace a column (1/2 the Plate No is of concern !)

S'ware bugs > known

Different versions of WIN10 (with / without updates) and PS V4.88 have proven to be problematic talking to each other

- Minimum PC or Laptop ? > don't try and "skimp" too much on this > false economy !
- >get a decent size Laptop or PC RAM and Disk space > it's all becoming low(er) cost anyway !
My Lap Top > 2.4GHz, 8GB RAM and 100Gb on Internal Hard Drive (SSB ??? >of Dubious merit !) . . . Is perfect if albeit
> an overkill PS is only 12Mb in size . . . in theory ! But WIN10 and MS Office are both "dogs" in size !)

PS DDE Data Dump to MS Excel

- from PS Results and if checked in Post-Run in PS it is auto

- Currently the PS data is dumped to MS Notepad as a data block (with Excel "open")

> import each block into a single cell in Excel

- U then manipulate the data in Excel as U require sort "fields" and > report etc

Some **SRI GC U-Tube Videos** (active 2020 but UTube is hardly reliable > deletes things at random ?)

Introduction to GC - Fundamentals

A <https://www.youtube.com/watch?v=uD-29-mV3N0>

B <https://www.youtube.com/watch?v=eHqSVI0vkwQ>

GC Tips and Tricks for Method Optimisation—Agilent <https://www.youtube.com/watch?v=fJRzxAo3P70>

SRI

- SRI PS Intro

https://www.youtube.com/watch?v=M5_jcgwth8Y

Peak Simple more detail— GC Tutorial SRI 8610C Pt2 https://www.youtube.com/watch?v=cky1fvY_KjA GC Tutorial

Pt3 8610C Setup <https://www.youtube.com/watch?v=kA6LRraq2IM>

BEWARE :

PeakSimple is designed as the dedicated Windows to ALL SRI GCs Operating System

DO NOT COMPROMISE BY USING A NETWORK PC

(controlled compromised by IT Admin tights etc)

eg don't use a University / Corporate installed "secure" PC as part of the GC System

2020 The are still issues with "notorious WIN 10 and Peak Simple (v4.88)

> USE ONLY Proven PS v 4.54)

IT MAY NOT EVEN CONNECT TO the SRI GC

Use a stand-alone PC (Win 7 or Win 10 but with PS V4.54 (32bit or 64 bit as appropriate)

IF Acces IS required to the Internet THEN use a separate IT Connected PC . . . **B'Ware !**

TO AVOID CONFLICTS /VIRUS' AND POSSIBLE PS PROBLEMS

PS may not even Connect properly

At least until you her familiar with the PS File Structure

install PS as directed by SRI

keep ALL PS Files for an App in the same folder as the PS.exe file

It does get cluttered !

but separate the data into other folders after ensuring you back up ALL data in a separate folde and store the

data via the DDE Link einto > NotePad > MS Excel

Excel > Only a crude Field (as per PS Results / Format vs Sample RUM table

U need to restructure the Excel Data > the best U can !

BUT Test & Test again > Data / chromatograms can easily be Lost FOREVER! > **BEWARE ! BE WARNED !**

