

ASD Detector

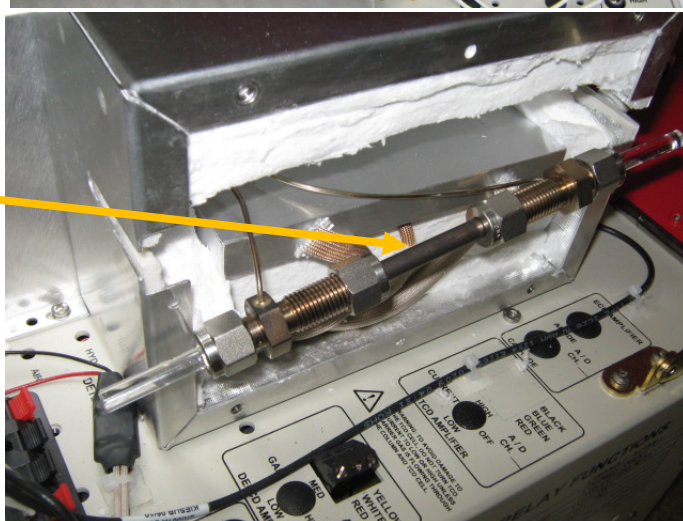
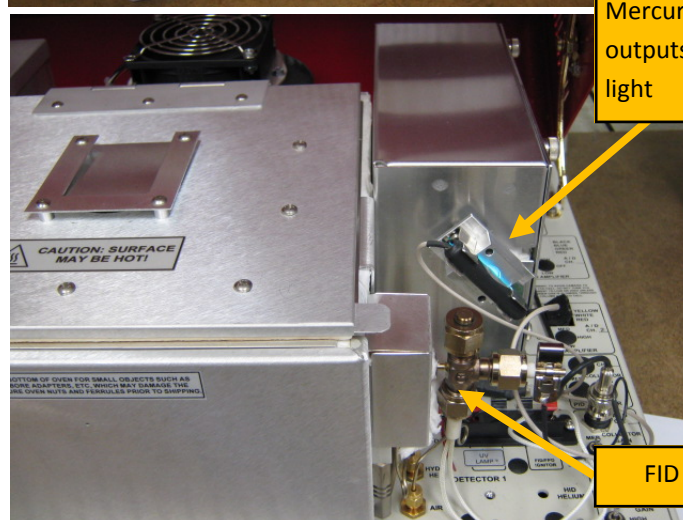
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The SRI Aromatic Selective Detector (ASD) can be mounted on the 8610C chassis as shown at right.

The ASD is a heated (up to 350C) single beam UV spectrometer with a fixed wavelength of 254nm. The light comes from a small mercury lamp whose bluish glow you can see in the photo at right.

On this particular GC, a FID detector is also mounted in series with the ASD so the sample molecules flow first through the ASD and then on to the FID.

The light path is through a 15 cm tube which is mounted in a heated enclosure just above a massive heated aluminum block.



SRI Tech Support: 310-214-5092

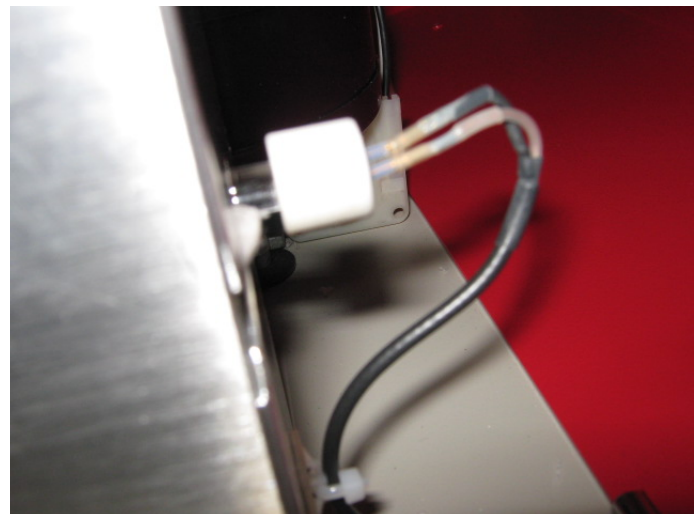
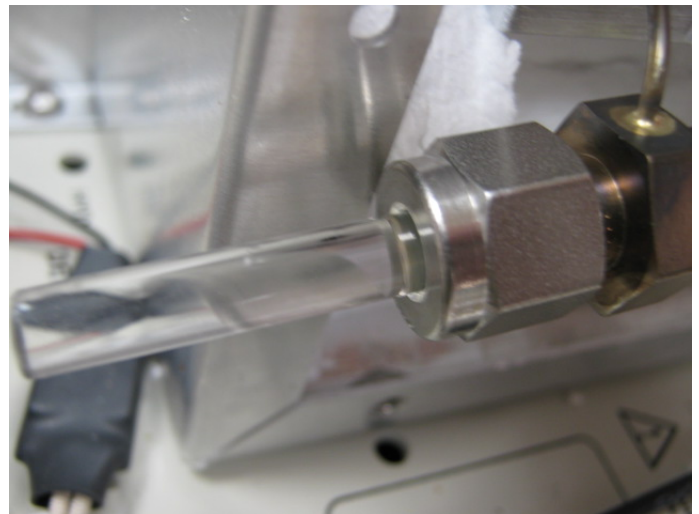
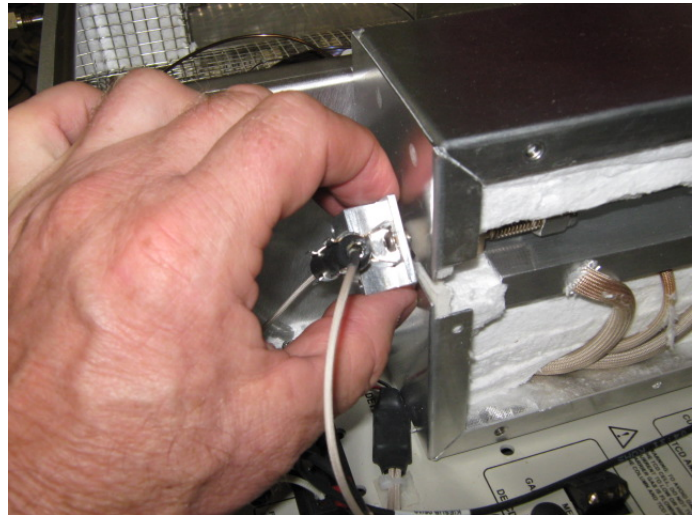
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The mercury lamp is rated for at least 10,000 hours and pushes onto a quartz rod which conducts the 254nm light but stays cool.

The quartz rods at each end of the flow cell isolate the mercury lamp and photodiode from the high heat of the flow cell.

The photodiode pushes onto the quartz rod at the rear of the enclosure.



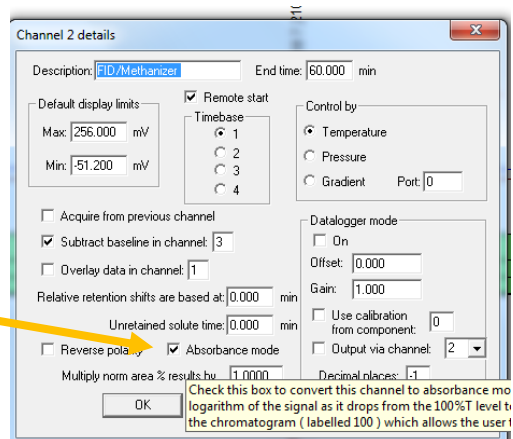
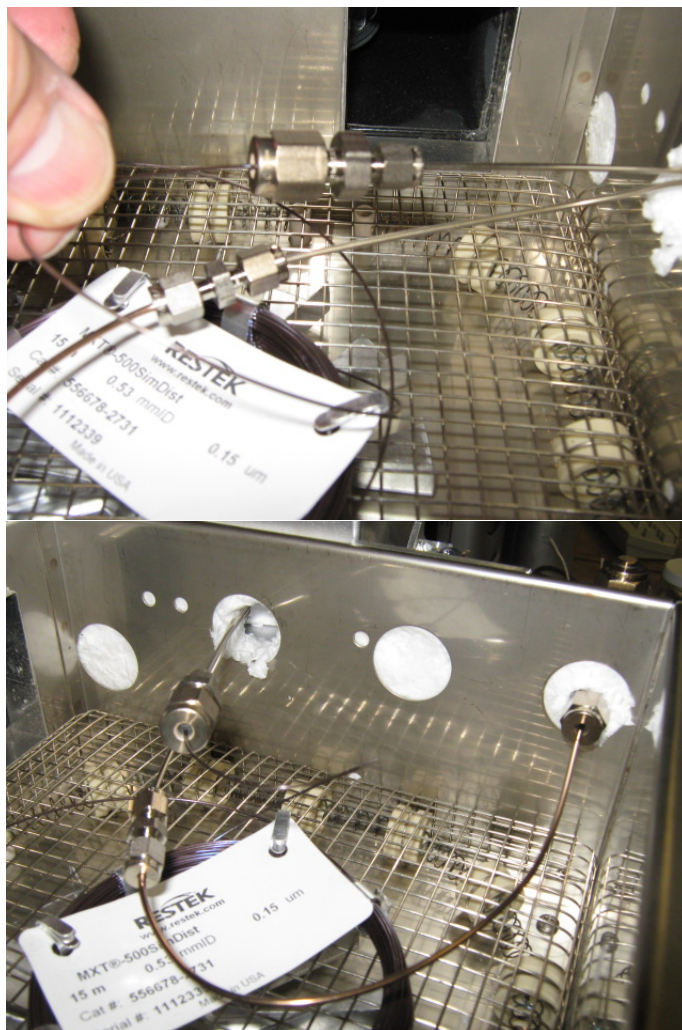
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The column is inserted into the ASD inlet and secured with a graphite ferrule. The design allows the column to be inserted all the way through the tubing and into the flow cell if desired.

The ASD outlet is connected to the FID via a short section of 1/16' stainless tubing.

Since the ASD (which in this case is connected to Channel 2 on the data system) is an absorbance type detector, where the target molecule absorbs the UV light, the transmittance signal must be converted to absorbance units by clicking the box in the Channel 2 Details screen.



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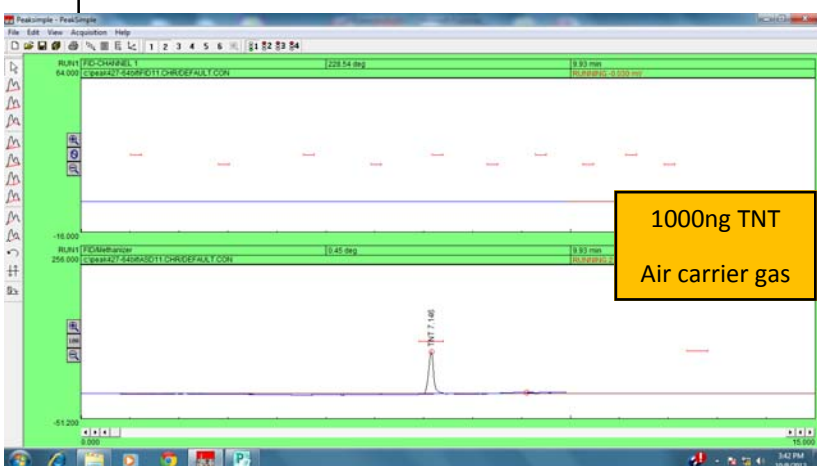
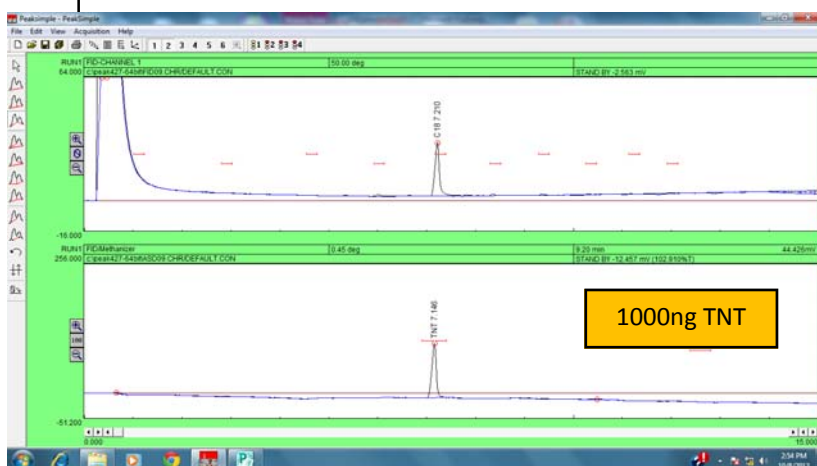


With the temperature program shown, hydrogen carrier gas and

the ASD and FID in series, a synthetic diesel standard composed of even aliphatic hydrocarbons (C10, C12... C28) shows nice peaks on the FID (top trace), but has no response on the ASD.

A 1ul injection of TNT (dynamite) shows a nice peak on both detectors. Note that the acetonitrile solvent shows no response on the ASD.

The same 1ul injection of TNT using air carrier gas sourced from the GC's built-in air compressor illustrates that the ASD equipped GC is capable of operating without gas cylinder of any kind. Of course without hydrogen the FID does not work, so no peaks are detected



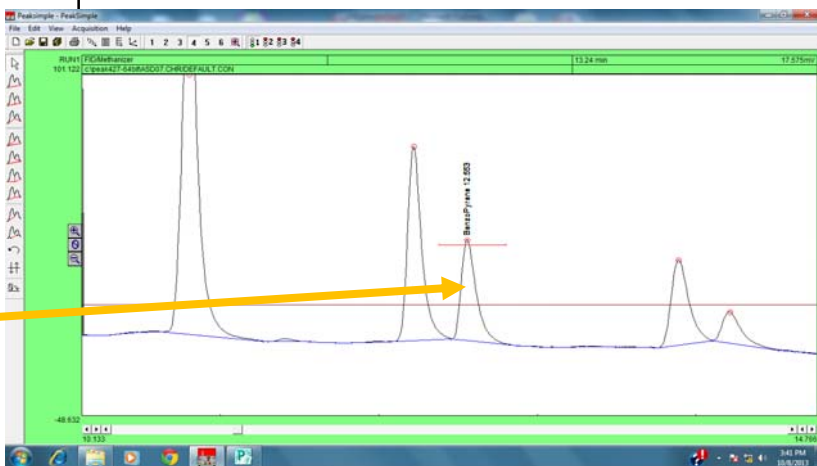
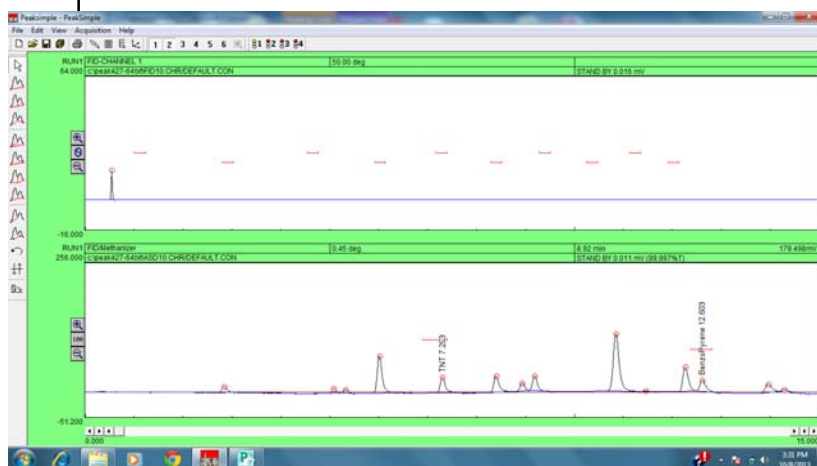
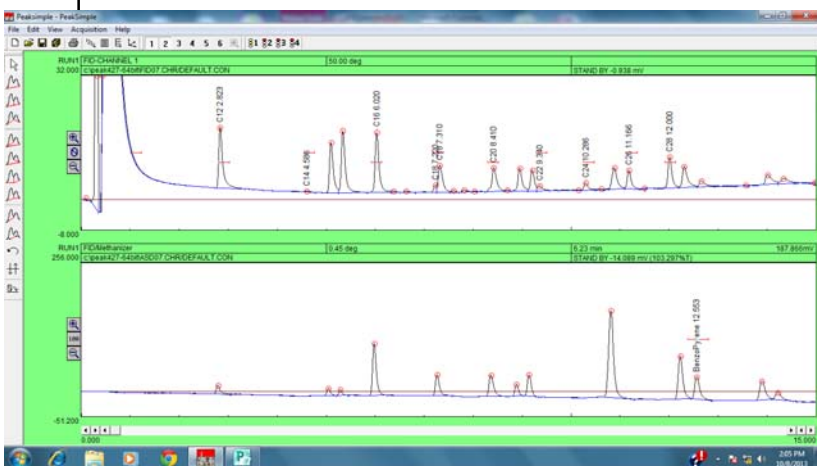
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1ul of 50-100ng/ul each PAH standard was injected with hydrogen carrier. Nice peaks are observed on both FID and ASD.

The same standard was injected with air carrier. The ASD peaks are virtually identical, but of course, no peaks at all show on the FID.

Notice that Benzo-Pyrene, a PAH of particular concern is easily detected at the 50ng level.



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1ul of fresh diesel fuel was injected with hydrogen carrier.

The FID trace shows the typical diesel profile with thousands of overlapping peaks. The ASD just responds to the aromatic molecules in the fuel.

The sample diesel sample was injected this time with PAHs at 50-100 ng/ul in the mix. The additional PAHs clearly show on the ASD trace.

