

## Basic Care, Maintenance and Troubleshooting of Capillary GC Systems

This day and a half course will focus on just how gas chromatography works and just what is really going on inside the capillary. The information will be presented first in a very straight-forward way and reinforced with basic chromatographic theory so that the novice as well as the experienced chromatographer can benefit from the discussion. Installing and conditioning the column and then making a successful injection are the keys to starting the chromatographic process and subsequent analysis right. This will be discussed in lecture and reinforced with the hands-on experience with the various manufacturers present, citing the similarities and differences one can expect from instrument to instrument.

Since keeping the GC system up and running is the goal, preventative maintenance is the key. Things that damage the column and ways to prevent problems before they occur will be explored. The four major reasons why columns die will be presented as well as how to avoid those problems so that the column, theoretically, will last forever. After care and maintenance is explored the discussion will shift to troubleshooting. Knowing how to diagnose problems and correct them is not generally taught before the analyst ever gets in front of the instrument. Therefore, experience, trial and error, and dumb luck often lead to remedies that have a lot of "voo doo" attached to them. Knowing what can truly go wrong with capillary and how to fix it will be tackled.

### Outline

GC Introduction and Theory

Column Installation and Conditioning

Choosing Carrier Gas and Flow Rates

Injection

Care & Maintenance of GC Columns

Troubleshooting of GC Systems

Lab Day 2

LAB1- Cutting the Column, Setting the Distances, Leak-free seal

LAB2- Setting/Verifying flows with different instruments

LAB3- Typical Inlet Maintenance (different instruments)

LAB4- "What's wrong with this picture?"

**Daron Decker** works for Agilent Technologies as a technical specialist within the Consumable and Accessories organization. Prior to joining Agilent he performed the same role with Chromatography Inc. a contractor of technical support for Agilent GC and HPLC columns and supplies. He spent ten years working for J&W Scientific, Inc. also in the area of technical support. Daron has given hundreds of seminars, courses and technical papers on GC (both domestic and international). He started his career at an environmental lab in south central Minnesota (MVTTL) and worked there for two and half years as an analytical chemist. He received his BS in Chemistry (ACS Degree) from the University of South Dakota in 1987. Daron has been a long time proponent of the MCF and member since 1987. He currently lives in Pearland, TX (south of Houston) with his

wife of 21 years and their 4 children. Daron was the 2003 recipient of the MCF Palmer Award.