# ChemStation E-Seminar Agenda

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Short description</th>
<th>Agilent Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Oct. 2008</td>
<td>ChemStation Data Storage Concept</td>
<td>Steven Brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ortrud Emde</td>
</tr>
<tr>
<td>12. Nov. 2008</td>
<td>ChemStation Navigation Table</td>
<td>Steven Brown</td>
</tr>
<tr>
<td></td>
<td>How to improve Review and Reprocess</td>
<td>Ortrud Emde</td>
</tr>
<tr>
<td>10. Dec. 2008</td>
<td>Integrating My Results in ChemStation</td>
<td>Steven Brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ortrud Emde</td>
</tr>
<tr>
<td>14. Jan. 2009</td>
<td>How to set up a calibration table in ChemStation</td>
<td>Steven Brown</td>
</tr>
<tr>
<td>04. Feb. 2009</td>
<td>Various Reporting in Chemstation</td>
<td>Steven Brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ortrud Emde</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ortrud Emde</td>
</tr>
</tbody>
</table>
# Seminar 5: Various Reporting

<table>
<thead>
<tr>
<th>Topics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ChemStation Reports in Data Analysis</td>
<td></td>
</tr>
<tr>
<td>General Reports (Single Runs/Sequence Summary)</td>
<td></td>
</tr>
<tr>
<td>System Suitability and Noise Calculations</td>
<td></td>
</tr>
<tr>
<td>Spectra Library and Purity Reports</td>
<td></td>
</tr>
<tr>
<td>ChemStation Reports in Report Layout (Custom Reports)</td>
<td></td>
</tr>
<tr>
<td>Other Reporting Solutions</td>
<td></td>
</tr>
<tr>
<td>Agilent New Reporting Solution: OpenLAB Intelligence Reporter</td>
<td></td>
</tr>
</tbody>
</table>
ChemStation Reports in Data Analysis
General Reports (Single Runs/Sequence Summary)
Report Tools

Specify Report

Identify Peaks, Calculate & Preview Results

Print Report

Current Report Style
ChemStation (since B.03.01 SR1)
ChemStation Report Styles

**Styles**

- None
- Short
- Detail
- Header + Short
- GLP + Short
- GLP + Detail
- Short + Spectrum
- Detail + Spectrum
- Full
- Library Search
- Performance
- Performance + Noise
- Performance + Lib Search
- Extended Performance

![ChemStation Report Styles](image_url)
Save the Report Parameters with the Method
Print Report

Use right mouse button to access this menu
Sequence Summary Report

The „Sequence Summary“ Report reports easy statistic information.

For more complex calculations, you can use ChemStore, Excel or the OpenLAB Intelligence Reporter.
ChemStation Reports in Data Analysis
System Suitability and Noise Calculations
System Suitability

System Suitability Report

✓ Check the performance of your analysis system.
System Suitability - Noise Determination

Baseline noise and drift can be measured automatically.
1. Long-term noise - determined when the selected time range exceeds one hour. 
   $dt$ is 10 minutes.
2. Short-term noise - determined when the selected time range is 
   between 10 and 60 minutes. $dt$ is one minute.
3. Very short-term noise - selected time range is from 1 to 10 minutes.
   $dt$ is 0.1 minute.
Noise Calculation

Six times the standard deviation of the linear regression of the drift.

\[ \text{noise} = 6 \times \text{SD} \]

Noise as maximum peak to minimum peak distance

\[ \text{noise} = \text{max. peak} - \text{min. peak} \]
System Suitability - Edit Performance Limits

<table>
<thead>
<tr>
<th>Quality Criteria</th>
<th>Instrument 1</th>
<th>Instrument 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention time</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Peak height</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Peakwidth at half height</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Sigma Peakwidth</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Peak symmetry</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>k'</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Plates (tangent method)</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Plates (halfwidth method)</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Resolution (tangent method)</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Resolution (halfwidth method)</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Skew</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Library match factor</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Measured mobility</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>high</td>
</tr>
</tbody>
</table>

*Note: Values falling outside any defined range will be indicated in the report!*
System Suitability Report Styles

- **Performance**
  Produces a report according to limits specified in the Edit Performance Limits dialog box.
  
  - retention time
  - peak area
  - peak height
  - symmetry
  - true half-height peak width
  - capacity factor (k’)
  - efficiency
  - resolution

- **Performance + Noise**
  Combines Performance report style with Noise calculations for the noise ranges defined in the Edit Noise Range dialog box.
  
  - Calculates signal/noise ratios.

- **Extended Performance**
  Produces an Extended report with all parameters from the peak performance calculations and individual plots of each peak. This report style includes only calibrated peaks.

- **Performance + Lib Search**
  Combines the Performance and Library Search styles.
Before the data is acquired, specify void time or volume. It is not possible to add this information later on.

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Description</th>
<th>BatchID</th>
<th>SerialID</th>
<th>ProductID</th>
<th>Max. p (bar)</th>
<th>Max. T (°C)</th>
<th>Max. pH</th>
<th>Length</th>
<th>Diameter</th>
<th>Size</th>
<th>Void</th>
<th>Unit</th>
<th>Com</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>no</td>
<td>Eclipse XDB-C18</td>
<td>S2305-302</td>
<td>6.00</td>
<td>50</td>
<td>3.0</td>
<td>50</td>
<td>4.0</td>
<td>1.8</td>
<td>60.00</td>
<td>3%</td>
<td>mL</td>
<td>Min</td>
</tr>
<tr>
<td>2</td>
<td>no</td>
<td>SB-C18</td>
<td>S2259-302</td>
<td>6.00</td>
<td>50</td>
<td>3.0</td>
<td>50</td>
<td>2.7</td>
<td>2.7</td>
<td>50.00</td>
<td>3%</td>
<td>mL</td>
<td>Min</td>
</tr>
<tr>
<td>3</td>
<td>no</td>
<td>SB-C18</td>
<td>S27575-302</td>
<td>6.00</td>
<td>50</td>
<td>3.0</td>
<td>50</td>
<td>5.0</td>
<td>1.8</td>
<td>60.00</td>
<td>3%</td>
<td>mL</td>
<td>Min</td>
</tr>
<tr>
<td>4</td>
<td>yes</td>
<td>SB-C18</td>
<td>B2259-5302</td>
<td>4.00</td>
<td>60</td>
<td>3.0</td>
<td>70</td>
<td>4.0</td>
<td>5.0</td>
<td>60.00</td>
<td>3%</td>
<td>mL</td>
<td>Min</td>
</tr>
<tr>
<td>5</td>
<td>no</td>
<td>Eclipse Plus C18</td>
<td>565941-302</td>
<td>6.00</td>
<td>50</td>
<td>3.0</td>
<td>50</td>
<td>4.0</td>
<td>1.8</td>
<td>60.00</td>
<td>3%</td>
<td>mL</td>
<td>Min</td>
</tr>
<tr>
<td>6</td>
<td>no</td>
<td>Eclipse XDB-C18</td>
<td>565907-302</td>
<td>4.00</td>
<td>60</td>
<td>3.0</td>
<td>70</td>
<td>4.0</td>
<td>1.8</td>
<td>60.00</td>
<td>3%</td>
<td>mL</td>
<td>Min</td>
</tr>
</tbody>
</table>
ChemStation Reports in Data Analysis
Spectra Library and Purity Reports
Automated Library Search

Parameters for Automatic Identification Using Spectral Library: Instrument 1

- Time range from: 0 to 999 minutes
- 1. Library: Selection C:\CHEM32\SPECLIBS\DEMODAD.U
- 2. Library: Selection
- 3. Library: Selection
- 4. Library: Selection
- Purity check? Yes
- Library match threshold: 950

Library search mode:
- Identify by spectral library search
- Target compound analysis using calibration table
- Target compound analysis using spectral library

OK  Cancel  Help
### Library Search Report Styles

<table>
<thead>
<tr>
<th>Meas. RetTime</th>
<th>Library Rettime</th>
<th>CalTbl Rettime</th>
<th>Sig</th>
<th>Area %</th>
<th>Purity Factor</th>
<th>#</th>
<th>Library Match</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.396</td>
<td>1.571</td>
<td>-</td>
<td>1</td>
<td>0.36218</td>
<td>734</td>
<td>d</td>
<td></td>
<td>Biphenyl</td>
</tr>
<tr>
<td>4.654</td>
<td>4.647</td>
<td>-</td>
<td>1</td>
<td>1.51302</td>
<td>1000</td>
<td>u</td>
<td></td>
<td>Acenaphthylene</td>
</tr>
<tr>
<td>4.654</td>
<td>4.727</td>
<td>-</td>
<td>1</td>
<td>1.51302</td>
<td></td>
<td></td>
<td>1000</td>
<td>Triphenylene</td>
</tr>
<tr>
<td>5.344</td>
<td>5.211</td>
<td>-</td>
<td>1</td>
<td>1.48835</td>
<td>1000</td>
<td>u</td>
<td></td>
<td>Triphenylene5.607</td>
</tr>
<tr>
<td>5.915</td>
<td>5.821</td>
<td>-</td>
<td>1</td>
<td>1.46908</td>
<td>1000</td>
<td>u</td>
<td>996</td>
<td>Chrysene</td>
</tr>
<tr>
<td>5.915</td>
<td>6.226</td>
<td>-</td>
<td>1</td>
<td>1.46908</td>
<td>1000</td>
<td>d</td>
<td>43</td>
<td>Anthracene</td>
</tr>
<tr>
<td>6.974</td>
<td>6.795</td>
<td>-</td>
<td>1</td>
<td>3.70405</td>
<td>968</td>
<td>u</td>
<td>866</td>
<td>Benzo[j]fluoranthene</td>
</tr>
<tr>
<td>7.215</td>
<td>7.198</td>
<td>-</td>
<td>1</td>
<td>1.39044</td>
<td>999</td>
<td>1</td>
<td>999</td>
<td>Benzo[b]fluoranthene</td>
</tr>
<tr>
<td>7.794</td>
<td>7.702</td>
<td>-</td>
<td>1</td>
<td>5.02372</td>
<td>953</td>
<td>u</td>
<td>999</td>
<td>Dibenz[a,c]anthracene</td>
</tr>
<tr>
<td>7.794</td>
<td>7.901</td>
<td>-</td>
<td>1</td>
<td>5.02372</td>
<td>953</td>
<td>d</td>
<td>441</td>
<td>Benzo[k]fluoranthene</td>
</tr>
<tr>
<td>8.312</td>
<td>8.221</td>
<td>-</td>
<td>1</td>
<td>3.13615</td>
<td>1000</td>
<td>u</td>
<td>993</td>
<td>Benzo[a]pyrene</td>
</tr>
<tr>
<td>8.312</td>
<td>8.562</td>
<td>-</td>
<td>1</td>
<td>3.13615</td>
<td>1000</td>
<td>d</td>
<td>13</td>
<td>Pyrene</td>
</tr>
<tr>
<td>8.312</td>
<td>8.221</td>
<td>-</td>
<td>1</td>
<td>3.13615</td>
<td></td>
<td></td>
<td>992</td>
<td>? Benzo[a]pyrene</td>
</tr>
</tbody>
</table>

- **u** - compound identified at the upslope, Purity factor exceeds threshold.
- **d** - compound identified at the downslope, Purity factor exceeds threshold.
- **x** - the value is below the defined threshold
- **?** - this is a second proposal for the compound in the line above
Automated Peak Purity Analysis

- Instrument Conditions
- Chromatogram
- Peak Purity Plots
- Quantitative Results

Short + Spectrum

Detail + Spectrum

- Header RPTHEAD.TXT
- Instrument Conditions
- Chromatogram
- Quantitative Results
- Calibration Curves
- Peak Purity Plots

Full

GLP + Detail + Spectrum
Using Batch for Reporting

Using the combination **CTRL+C** and **CTRL+V** it is possible to directly copy/paste the Batch Table into Excel.

Using the Batch Output, the resulting report (Batch summary report with some statistics) is extracted to an Excel file. The ChemStation exports the Dezimal Point, not the comma – so depending on your localizate Excel version a modification is mandatory.
ChemStation Reports in Report Layout (Custom Reports)
Report Layout

New section have to be added here.

To activate, click on the Triangle.
The blue color changes to red.
Open a section in the Report Layout

Identify the position of each section by moving the lower border. „Header“ and „Footer“ are sections repeating on each report page.
Layout Tools

Use report designer tools to edit the report template. You can activate any of the tools by clicking on the icon in the tool bar.
To insert elements:

- Create enough white space to insert the graphic, e.g. chromatogram.
- Select the graphic tool.
- Click and drag a placeholder box.
- Select the desired graphic from the list of elements.
Table Tool

![New Element: Instrument 1 dialog box](image1)

- **Calibrated Signals**
- **Result Signals**
- **Cal. Peaks sorted by Ret. Time**
- **Res. Peaks sorted by Ret. Time**
- **Cal. Peaks sorted by Signal**
- **Res. Peaks sorted by Signal**
- **Calibrated Compounds**
- **Result Compounds**
- **Cal. Compounds and Cal. Peaks**
- **Res. Compounds and Res. Peaks**
- **Internal Standards**
- **Compound Groups**
- **Calibration Errors and Warnings**
- **Quantification Errors and Warnings**

![Setup Calibrated Signals: Instrument 1 dialog box](image2)

- **Not Printed Columns**
  - **Start Time**
  - **End Time**

- **Printed Columns**
  - **#**
  - **Signal Desc.**
  - **Raw Data File**
  - **Delay**
  - **Area Sum**
  - **Height Sum**
  - **Response Sum**
  - **Amount Sum**
  - **Amt Sum (Unknowns)**

The current table layout is 93 characters wide. The table’s bounding box is 24 characters wide.

Warning: The layout is wider than the bounding box. The table will be truncated in the print out!
### Table Tool

**Edit Format of Calibrated Signals: Instrument 1**

<table>
<thead>
<tr>
<th>#</th>
<th>Width</th>
<th>Align Left</th>
<th>Fixed Point</th>
<th>Exp. Format</th>
<th>Precision</th>
<th>Exp. Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

| Signal Desc. | 20 |       |            |             |           |                 |
| Raw Data File | 20 |       |            |             |           |                 |
| Start Time   | 7  |       |            |             |           |                 |
| End Time     | 7  |       |            |             |           |                 |
| Delay        | 7  |       |            |             |           |                 |
| Area Sum     | 7  |       |            |             |           |                 |
| Height Sum   | 7  |       |            |             |           |                 |
| Response Sum | 7  |       |            |             |           |                 |
| Amount Sum   | 7  |       |            |             |           |                 |
| Amt Sum (Unknowns) | 7 |       |            |             |           |                 |

**Edit Footer of Calibrated Signals: Instrument 1**

- **Line 1**: 
  - #
  - Signal Desc.
  - Raw Data File
  - Start Time
  - End Time
  - Delay
  - Area Sum
  - Height Sum
  - Response Sum
  - Amount Sum
  - Amt Sum (Unknowns)

- **Line 2**: 
  - no Delimiters

- **Line 3**: 
  - @sum

**Options**
- No Footer
- 1 Line
- 2 Lines
- 3 Lines

**Buttons**
- Show Footer
- OK
- Cancel
- Help
Text and Number Tools
Adding Calculations and Macros
Adding Calculations and Macros

One Macro file is already present: Shortutl.mac

The report macro is placed as well in the directory \chem32\repstyle
Add the Custom Report Style to the Existing Report Styles

First Save the Template, and than add it to the report styles. This new report style is then present in the „Specify Report“ in the Data Analysis View for selection.
Other Custom Reporting Solutions
Using Excel within ChemStation

Multiple workflows with Excel/csv Files are implemented:

- Export of analytic data to *.csv or *.xls
- Macro Solution Control Charts
- Macro Solution Excel Reports
The ChemStation Treasure Chest Part 3

Microsoft Excel reporting for ChemStation with Add-on software Chem2XL

Publication Number: 5989-7152EN (or Agilent literature search for “ChemStation Treasure Chest”)

ChemStation Partner Solution Add-on Chem2XL www.Chem2XL.com
ChemStation B.04.01 Family of products

ChemStation B.04.01 with:

a) OpenLAB ECM

b) OpenLAB Intelligence Reporter

c) ChemLaunch
New! - ChemStation B.04.01 and OpenLAB

**General Functionality (New)**
- Save manual integration in data files
- Signal overlay (incl. ECM data)
- Partial acquisition sequence
- Improved ECM workflow

**Advanced Reporting (OpenLAB Intelligence Reporter)**
- Custom fields
- Summary reports
- Statistics and custom calculations
- Trend charts

**Regulatory Compliance (OpenLAB)**
- File Security, versioning and audit trail
- Mandatory log-in/connection to ECM
- Session Lock (time out)
- Granular ChemStation user roles and privileges
- Method audit trail functionality
- Results audit trail

**Infrastructure**
- New Installation
- Windows Vista – Windows XP SP3
- ChemLaunch (Citrix Terminal Server)

→ Best control of Agilent Instruments
→ Over 200,000 licenses sold
From the Lab Bench to the Desktop

**Lab**

- Store all data/reports centrally
- Security, versions, audit trail
- unifies data, information and regulatory compliance

**Office**

- Reprocess from anywhere
- Easily find data and results
- Create custom reports
- Collaborate Word, Excel, PDF

ChemStation’s – LC, GC, CE, A/D, LCMS, GCMS, ICPMS*, UV-Vis*
OpenLAB Intelligence Reporter

- Reports from any Instrument*
- Dynamic report templates
- Database reporting
- Automatic report generation
- Simple to advanced calculations with control charts
- Easily export results to Excel, PDF, or other formats
- Reports and templates managed securely in ECM
- Report templates work across different analysis/sites
- *Support for ChemStation, ChemStore, ICM result data
OpenLAB Intelligence Reporter
OpenLAB Intelligence Reporter A.01.01

• Search-based reporting
• Simple and advanced calculations
• Trend charts
• Support for Agilent ChemStation, ChemStore and OpenLAB ICM result data
• Integrated into Agilent ChemStation and OpenLAB ICM
• Scalable reporting infrastructure based on ECM
• Database-based reporting for ECM systems with Oracle or MS SQL Server
• Manage report templates and filter definitions in ECM
Typical Reporting Workflows

Single Sequence OpenLAB Summary Report
• A single sequence acquired on a ChemStation or Agilent OpenLAB ICM, is reviewed in the CDS first. The OpenLAB summary report is created for this single sequence only.

Multiple Sequence Summary Report
• Multiple sequences are acquired over time (days to weeks). A user searches for these sequences and creates a summary report from them.

Study/Project Summary Report
• A large number of sequences (10’s to 100’s) are acquired over time (weeks to months). A user searches for ALL data for these sequences and creates a complex study summary report based on these data.
Possible OpenLAB Intelligence Reports

<table>
<thead>
<tr>
<th>Some Example Report Solutions</th>
<th>to view, click on the report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Sequence Report – Directly in ChemStation: Sequence overview, marking of manual integration, statistic calculation per calibration level / per compound</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>Diagnostic Report (Cross Sequence): Based on diagnostic data (pressure), sequence overview about pressure drops during a sequence series</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>Instrument Maintance Report (Cross Sequence): Colum Usage Report, per column, per Instrument over the time</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>Cross-Sequence Trend Charts (Cross Sequence): cross sequence report for statistic calculations on various compounds, per level</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
</tbody>
</table>
Report Templates

A report template defines

- Which data, results and information are reported on
- How the data are sorted, filtered and grouped
- How additional values and results are calculated
- How results are presented (tables, trend-charts, etc.)
- Formatting / Layout
- Page attributes like size and orientation
- Page header and footer content
Interactive Reporting

- Fields to enter or select report parameter within the final report

- Dropdown lists for displaying details within the final report.

→ First get an overview

→ Second dig into the details

Increase efficiency of data review

One Example Single Sequence  OpenLAB IR

1. Report header with company logo
2. Sequence information
3. Sequence table
4. Results for calibration standards per Level
5. Statistical calculations
6. Results for quality control samples, grouped by sample name
OpenLAB Intelligence Reporter in ChemStation

- Two new icons present in the Data Analysis View
- Corresponding menu item in the ECM Menu (Full Menu)
- OLIR icons/menu only present, if option installed within OpenLAB ECM
ChemStation OpenLAB Option with OpenLAB IR
Main Data flow for Single Sequence Reports

ChemStation | User Actions | ECM DB + Storage
---|---|---

1. Select report template for reporting
2. Store data in ECM (ssizip)
3. Report preview / print

*Reporting DB and services may run on ECM servers

Publish report templates on reporting server
Step 1: Set up Report Template for OpenLAB IR

- Save the Report template *.rdl with the sequence.s file, as part of the sequence output dialog.
- After acquiring or reprocessing the sequence data, the report can be created in Data Analysis view.
- Report Templates are under version control.
Step 3: Generate an OpenLAB Intelligence Reporter

- In Data Analysis use menu or icon to generate OpenLAB IR

- The data need to be present in the Navigation Table

- OLIR icons/menu only present, if option installed within OpenLAB ECM

- Note: it is yet not possible to generate the OpenLAB IR automatically at the end of a sequence. User Action is required.
Information on ChemStation

Documentation can be found on the Agilent website

• Product Datasheet
• Specification
• Application Notes
• Manuals

OpenLAB Intelligence Reporter

Manuals can be found your ChemStation Installation DVD

• Getting Started with New ChemStation Workflow
  PartNo.G2170-90042

• Understanding your ChemStation
  PartNo. G2070-91125

• OpenLAB Option
  PartNo.G2170-90233

Software Status Bulletin

Customer Trainings (NorthAmerica)
Who to contact for more information about OpenLAB and Agilent software products

1. Agilent Account Managers (sales)

2. Agilent Informatics Product Specialists
   - Eastern US - Marc Mandelbaum – 302-683-7149
   - Pacific Coast (CA, WA, OR) - Spencer Tse 408-553-3655
   - Midwest and South - Johnathon McSayles 847-944-6019
   - Midwest /West/Latin America – Stephen Brown 847-944-6461
Learning Products – North America Course Catalog

Users needing to increase productivity in the lab by utilizing both standard and advanced features available in the Agilent GC/LC ChemStation may want to attend one of the following courses:

- H2606A - ChemStation for GC Data Analysis and Reporting (2 days)
- H5928A - Agilent HPLC (2D) Data Analysis and Reporting (2 days)
- H4039A - Agilent HPLC (3D) Data Analysis and Reporting (3 days)

Course Features

- Data acquisition and method creation
- Data analysis including integration and calibration
- Sequencing
- Reporting

For more information concerning course content, dates and locations, please visit:
Users needing to increase productivity in the lab by utilizing both standard and advanced features available in the Agilent GC/LC ChemStation may want to attend one of the following courses:

- H4033A – Agilent HPLC (3D) Method&Run Control, Data Analysis and Reporting (4 days)
- H8718A - Agilent HPLC (3D) Data Analysis and Reporting (2 days)
- H5928A – Advanced User Training, Quantification and Result Reporting (2 days)

**Course Features**

- Data acquisition and method creation
- Data analysis including integration and calibration
- Sequencing
- Reporting

QUESTIONS?