Two Short Virtual High Pressure Liquid Chromatography (HPLC) Courses by Waters

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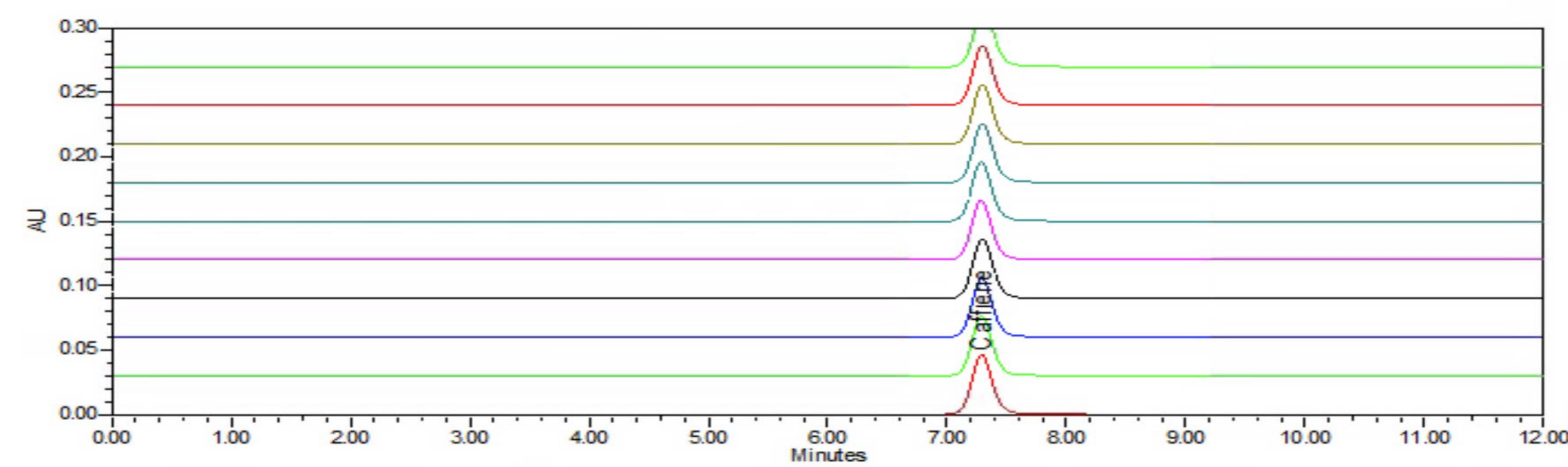
Introduction

- Many of the High Pressure Liquid Chromatography (HPLC) instruments used to run analyses at MRIGlobal were built by Waters, an analytical laboratory instrument and software company whose focus is to improve human health and well-being through the application of high-value analytical technologies and scientific expertise.

- In addition to vending analytical products, Waters offers multiple virtual and in-person seminars and training courses to assist analysts with improving their technical and chromatographic skills.

- A large focus of the "Fundamentals Course" was the types of columns that exist and how they can be modified.

- The focus of the "Reviewing Data Electronically with Empower 3" course was using the Audit Trails and Result Audit Reviewer functions in the Empower software.

The core objective of attending the two virtual 8 hour courses was to become well-acquainted with the set-up, running, and troubleshooting of an HPLC instrument and Empower software in order to enhance my capabilities within the organization as an analyst and reviewer.

Applications of Courses and Hands on Training

- Prepped Caffeine sample curve, set-up, and ran HPLC instrument after attending courses and shadowing HPLC trainer for a few weeks

- Processed data and demonstrated proficient knowledge of Empower software and report generation to trainer
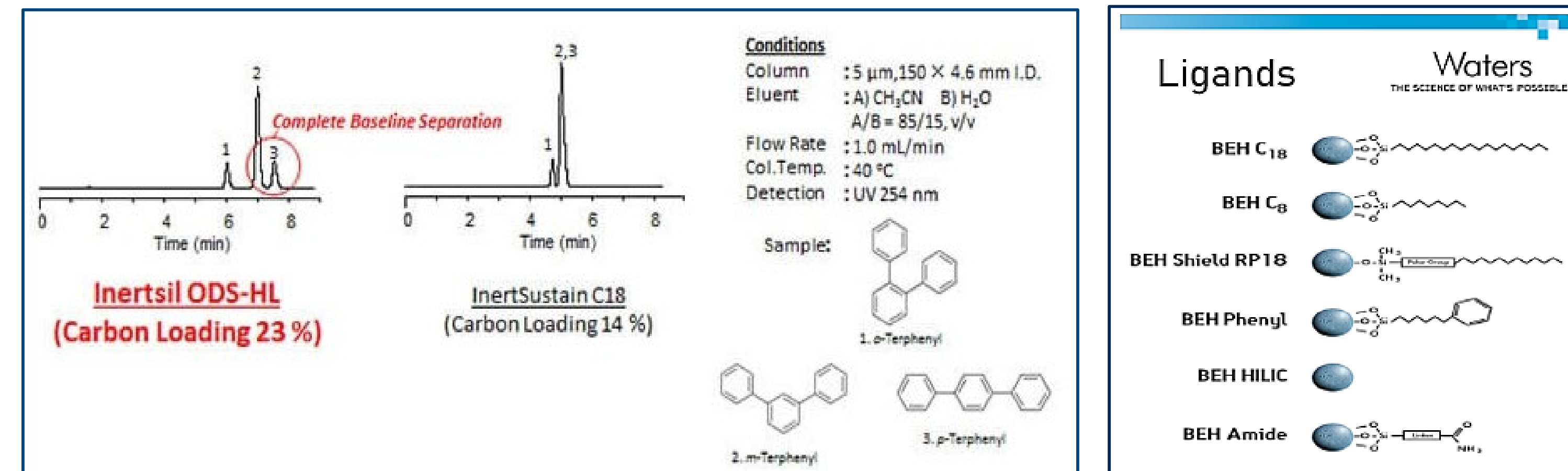

System Suitability Summary Results
Name: Caffeine

	Sample Name	Vial	Name	RT	Area
1	SS	2	Caffeine	7.288	578340
2	SS	2	Caffeine	7.288	579213
3	SS	2	Caffeine	7.290	578874
4	SS	2	Caffeine	7.295	578891
5	SS	2	Caffeine	7.284	579470
6	SS	2	Caffeine	7.286	579856
7	SS	3	Caffeine	7.296	577532
8	SS	3	Caffeine	7.296	579626
9	SS	3	Caffeine	7.297	579334
10	SS	3	Caffeine	7.304	579466
11	SS	3	Caffeine	7.305	579883

	Sample Name	Vial	Name	RT	Area
Mean				7.294	579135.097
Std. Dev.				0.007	701.224
% RSD				0.1	0.1

Course 1: HPLC Fundamentals and Troubleshooting

- There are many types of packing materials for columns
  - Hybrid packing material such as the Bridged Ethane-Silicon Hybrid Particles settle into the column more uniformly and are stable at a greater pH range than silica
  - Packing material can be modified with ligands to achieve greater selectivity
  - Modifying the material by carbon loading and end-capping improves the resolution and peak shape of the chromatography
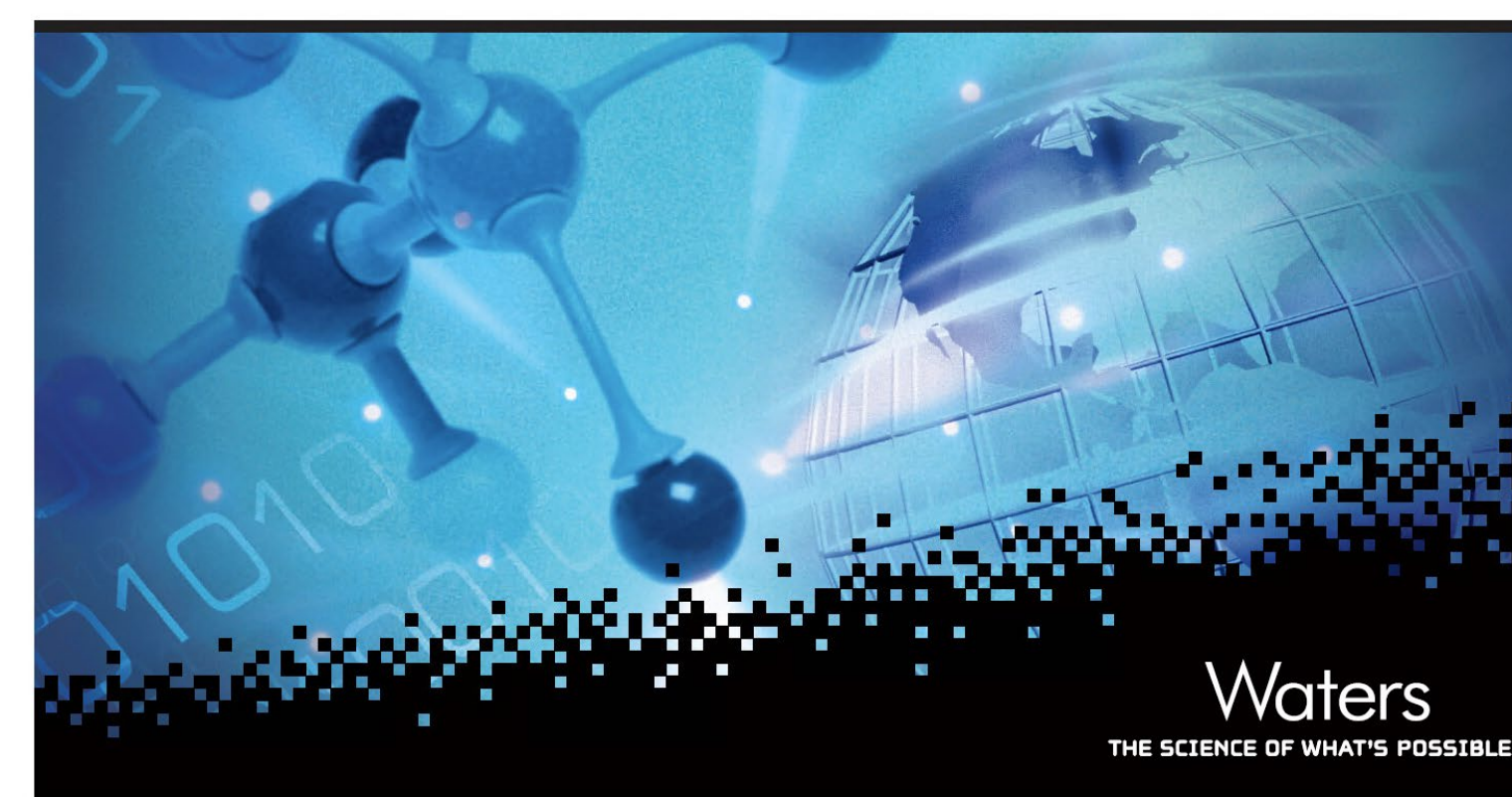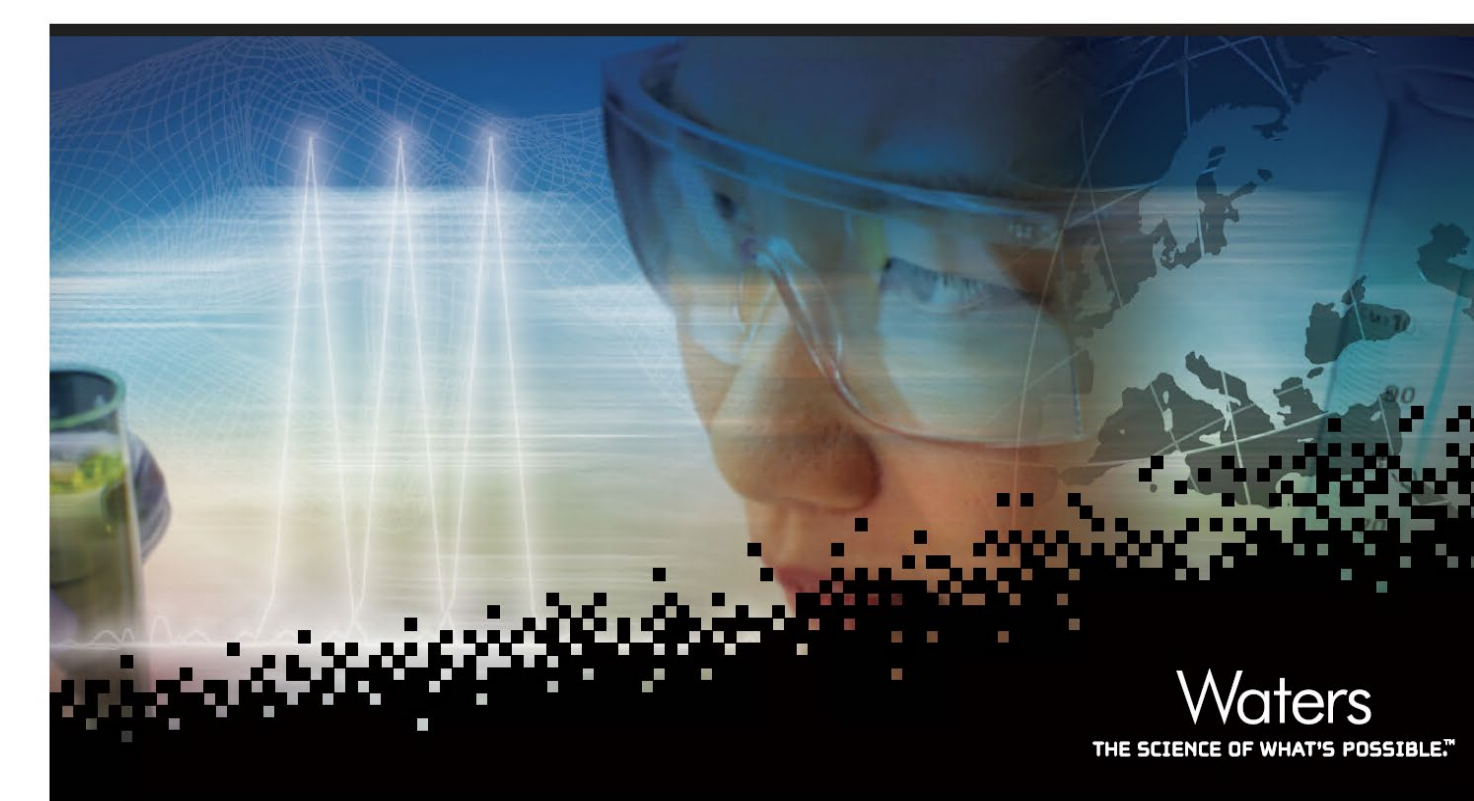

Deliverables and Conclusions

- Obtained resources for future analysts to access
  - HPLC Fundamentals and Troubleshooting Downloadable Training Manual
  - Reviewing Data Electronically with Empower 3 FR2 Downloadable Training Manual
- Obtained Certificates of Completion for both courses
- Completed sample curve and analysis wet run and was signed off on HPLC Training by trainer

Goals Going Forward:

- Meet project needs by running samples by HPLC or reviewing HPLC data packets

- Research how HPLC connects to mass spectroscopy and become familiar with mass spectrometry data

- Practice reviewing mass spectrometry data

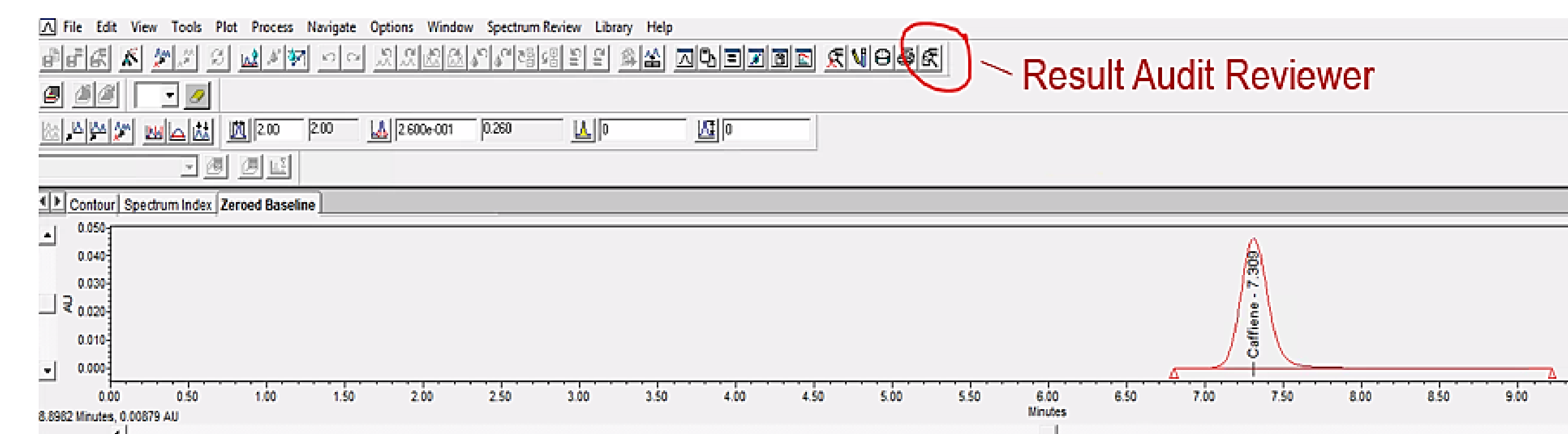Reviewing Data Electronically with Empower 3 FR2

HPLC Fundamentals & Troubleshooting

Course 2: Reviewing Data Electronically with Empower 3

- The "Audit Trails" function in Empower tracks changes made at the system, project, method, and sample level including who made the changes and what time and day they were made

- "Result Audit Reviewer" is a tool that allows the reviewer to look at a sample chromatogram and see the details about the sample run and the source the details came from

- These tools strengthen the scientific integrity of data being reported and facilitate technical data review; additionally, this manner of data review is paperless

Contact Information

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