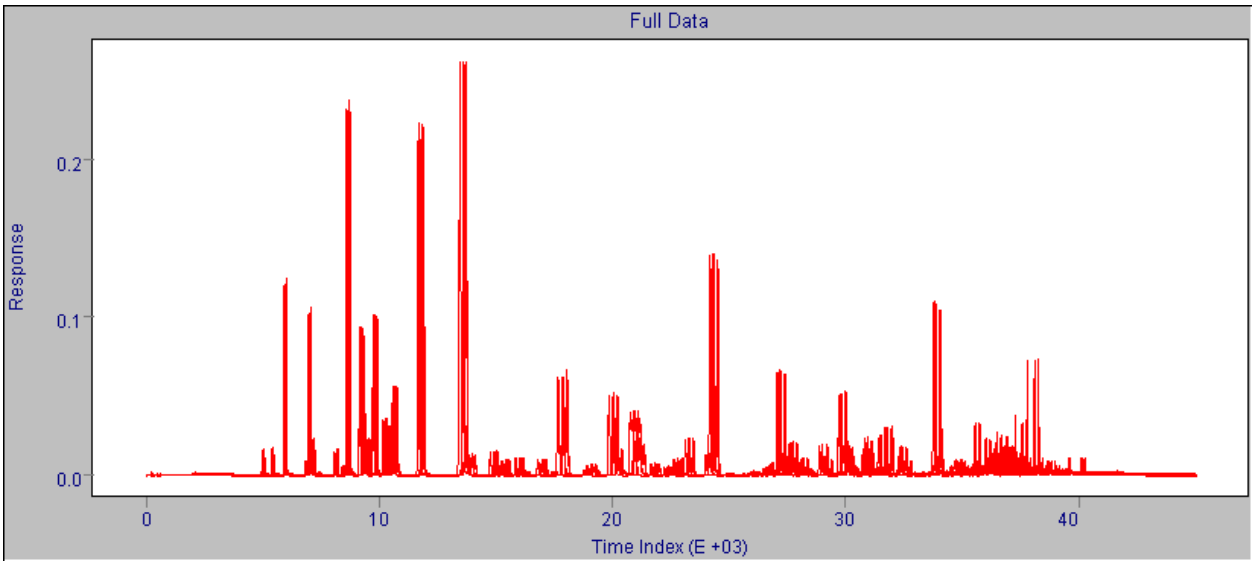
InfoMetrix®

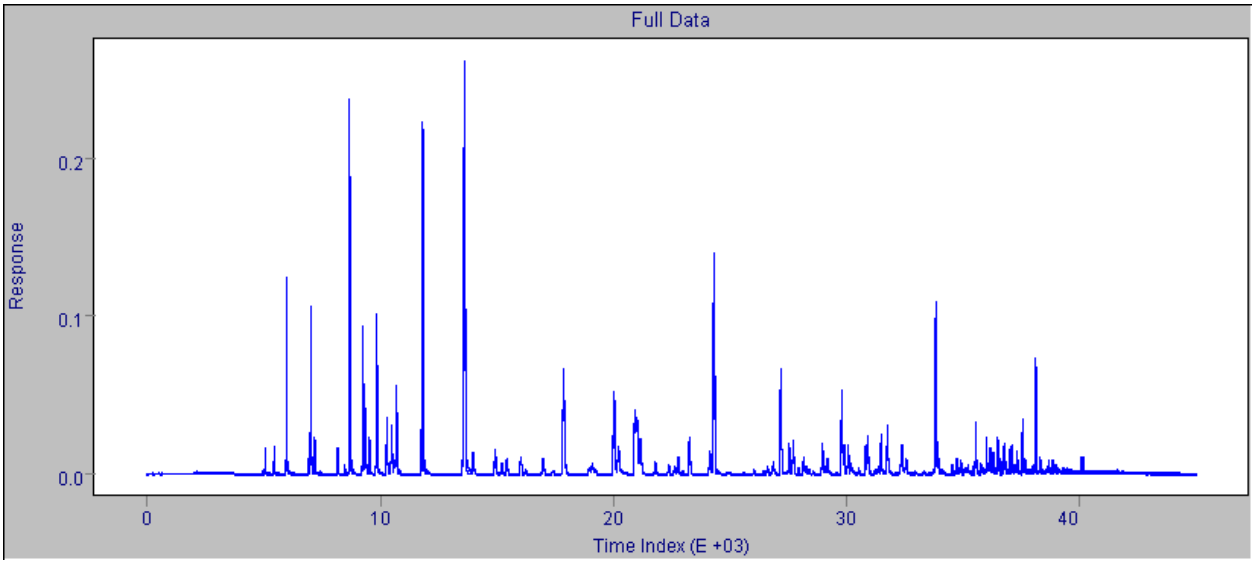
Process Chromatography

Automated alignment using LineUp™

We recently tested a set of data to test an automated chromatographic alignment tool (LineUp) we have been selling into analytical laboratories. We are looking to add this tool into a process GC to account for variations in retention time due to instrument or column changes. In an example of C_1 to C_9 PINA analysis, 6 samples show some variability in retention time that can be significant enough to affect the accuracy of the analysis.



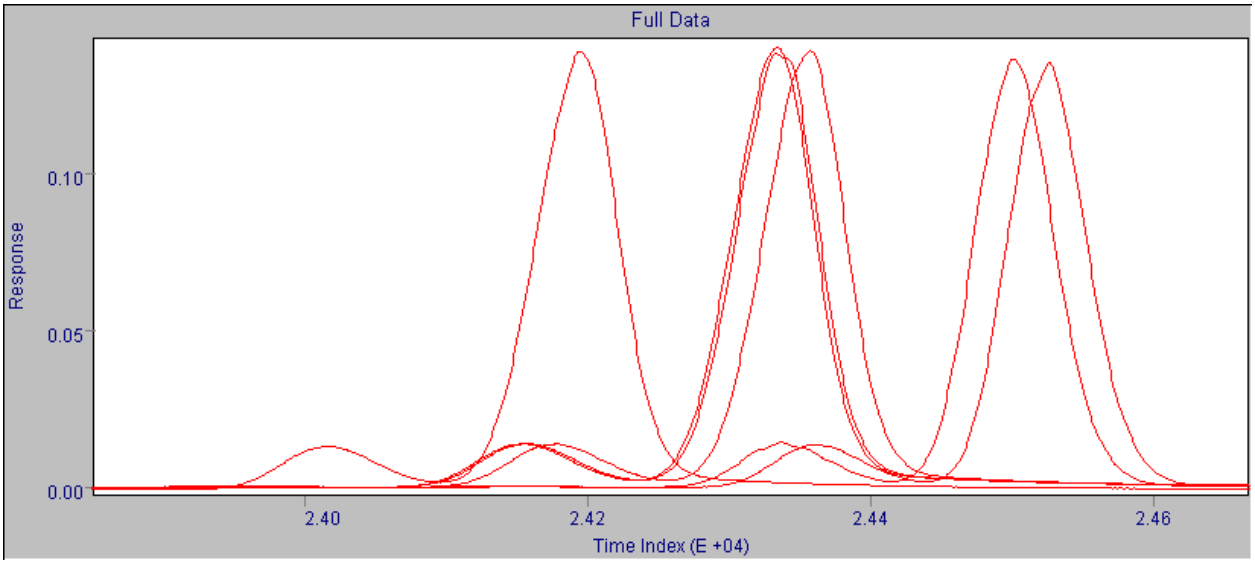
Original data showing 6 chromatograms overlain; retention times are not stable.



The same chromatographic traces after alignment.

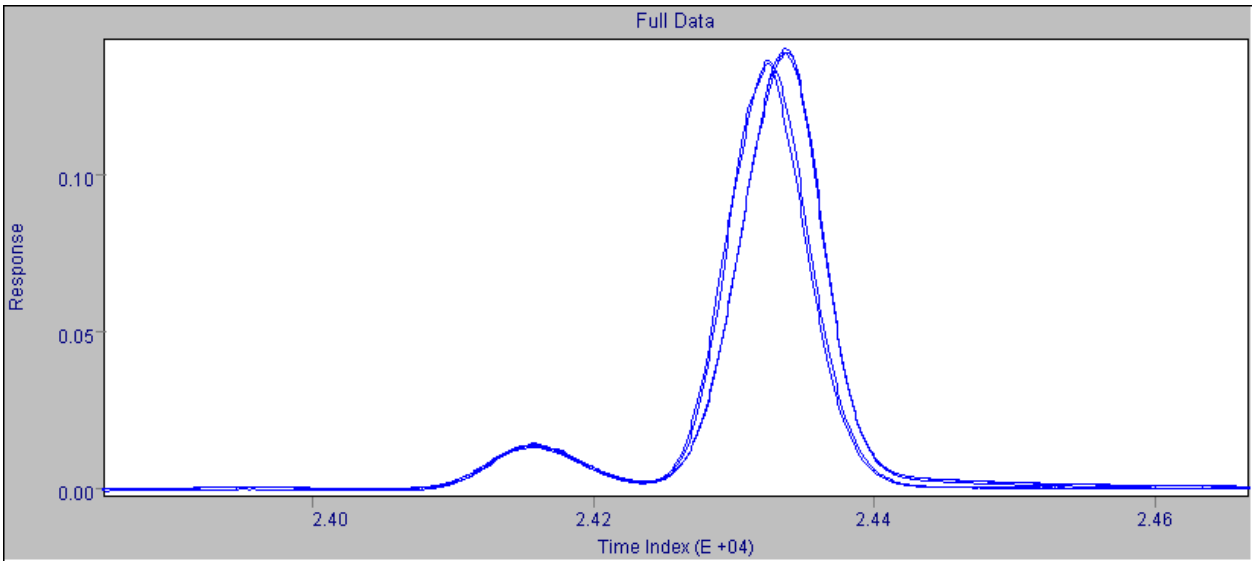
The results of the algorithm can be seen more clearly focussing in on one pair of peaks near center on the above chromatogram.

The retention time variation is more obvious as we zoom in on a peak. The figure below shows a pair of peaks at approximately 40.5 minutes (of the 75-minute run).



A peak pair midway through the chromatogram (6 traces).

Applying the LineUp algorithm, the retention time variability is mostly eliminated.



The same traces after alignment.

The advantage of the technology is that it requires no internal standards and no intervention on the part of the end user. As can be seen from the last figure, the results are not always perfect, but the improvement in precision is significant for most routine operations.

LineUp is available for Agilent GC ChemStations (5890, 6850, 6890) and in an AIA version that covers EZChrom *Elite*™ and most all other chromatographic data acquisition systems.