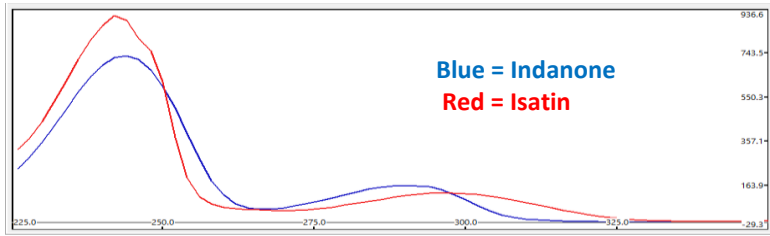


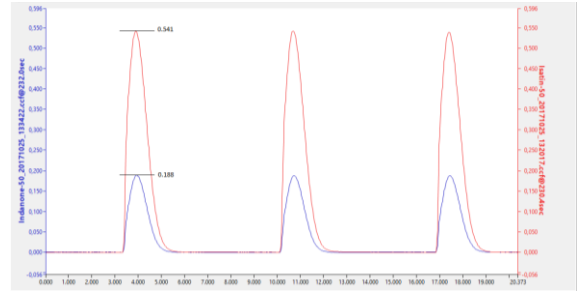
Spectral Deconvolution:

Real-Time Spectral Deconvolution:

PDR's Spectral Deconvolution is real-time and can plot concentration of individual molecules, even if spectra are very similar. The example below shows real-time deconvolution using the WL range of 220-350 nm of triplicate FIA (flow injection analysis, no column, no separation) injections on Agilent HPLC with DAD using Indanone and Isatin analytes.

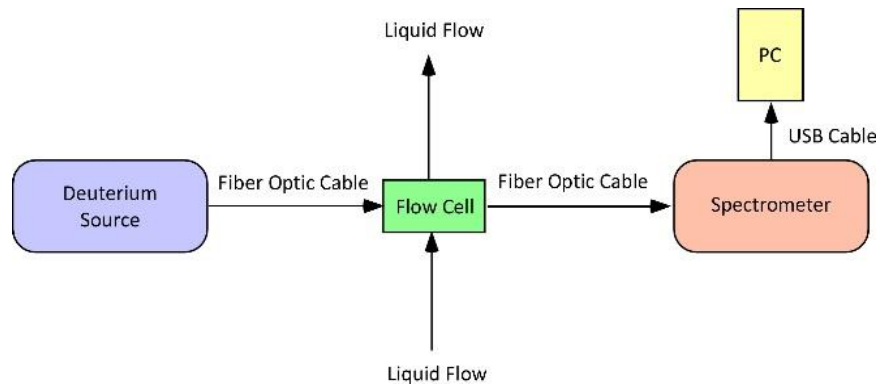


Spectra of Indanone and Isatin



Deconvolution of Indanone and Isatin (2017.10.25)

PDR's Spectral Deconvolution can be applied at any scale from analytical using Agilent DAD to large scale using an inline fiber-optic spectrometer as diagrammed below. Applications from analytical peak purity to process monitoring.



Block Diagram of Fiber Optic Spectrometer

In 2013 PDR was encouraged by a big-pharma company to monitor and control the purification of UV absorbing compounds on SMB. They wanted to isolate trace impurities in APIs for proper analysis and characterization, and wanted to make short runs using very little time to develop methods. A poster was presented at Prep 2015 and an oral presentation was given at Prep 2016 on this work. PDR inserted a flow cell before the recycling pump, connected flow cell to a spectrometer and light source via fiber optic cables, collected UV spectra, and mathematically deconvolve the UV spectra based on known spectra of components. PDR continued development of algorithms to simplify setup, compensate for UV non-linearities, and extract spectra of coeluting unknowns. Spectral Deconvolution plots component concentrations in real-time and collection decisions can be queued to any component.