McPHERSON

Deep ultraviolet absorbance spectroscopy of liquids and gases

Absorbance is among the most widely used spectroscopic techniques for studying liquids and gases. It is simple, accurate, and usually easy to do. An absorbance spectrum can be used as a qualitative tool to “fingerprint” substances, or as a quantitative tool to measure concentration, for example. We’ve taken the sensitivity and selectivity of absorbance to the next level with deep UV tools free from interference.

Absorbance measurements take many forms. They work well for gases and liquids, and have found their way into many applications. Samples no longer need to fit into the standard 1 cm path length cuvette! Flow cells, dip probes, multi-pass cells, and more, allow sampling to be customized. For example, McPherson has special flow cells for gas and liquid analysis at very short wavelengths. Our absorbance instruments work from 115 or 120 nanometers in the deep UV and up to the Visible light region.

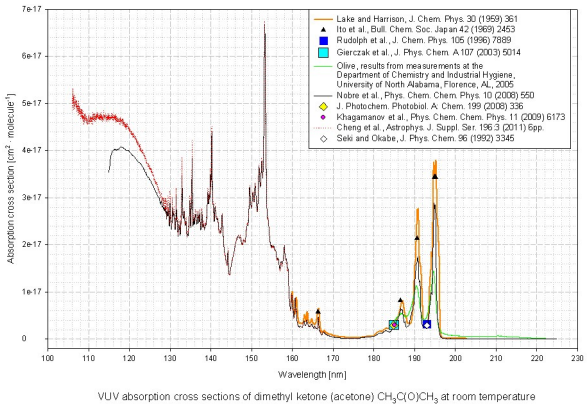

Figure 1. Acetone absorbance below 220 nm (data from the atlas Keller-Rudek, H., Moortgat, G. K., Sander, R., and Sörensen, R.: The MPI-Mainz UV/VIS spectral atlas of gaseous molecules of atmospheric interest, Earth Syst. Sci. Data, 5, 365–373, (2013)

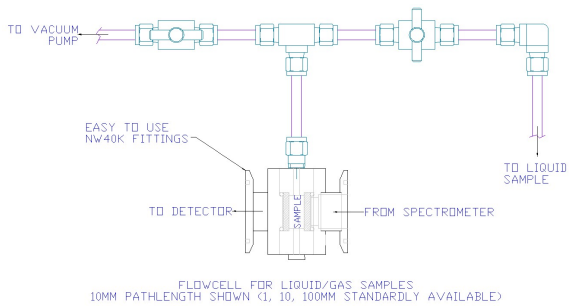

Figure 2. Connection of the deep UV flow cell

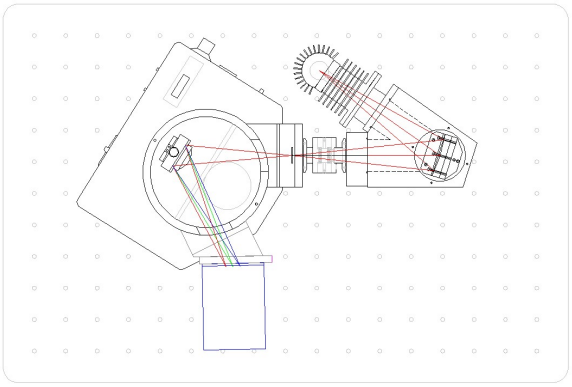

Figure 3. Layout of a typical deep UV absorbance detection system with fast, sensitive CCD detection of wavelengths

McPherson’s spectroscopy systems provide flexibility. Users can determine the wavelength range and resolution requirement and then move easily to sampling optics for measurements in the lab or field. With our diverse spectrometers, light sources, and accessories, we can help you to create an optimized system.

Applications

Kinetics: reaction monitoring, endpoint detection, protein and DNA, enzyme kinetics

Quality & process control: pharmaceutical manufacturing, ethylene production, polymer processing

Chemical analysis: fluorophore characterization, phenol determination, column liquid chromatography, trace detection of metals

Research: analysis of freshwater and marine environments, UV stability studies of compounds

Environmental monitoring: SO_2 detection, fence line monitoring, airborne pollution monitoring, soil contamination analysis, ozone monitoring

Food testing: composition in dairy products, predicting odor and flavor suitability in wines

Biomedical: nucleic acids and proteins