



Demonstrating the detection and measurement of dissolved organic carbon in water using a new UV miniaturised Fourier Transform Spectrometer

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We have developed a portable self-contained Fourier Transform Spectrometer working in the UV-VIS spectral region (250nm to 700nm) and configured to measure DOC concentrations in water in real time. We present details of the instrument's components, optical configuration, how it works, and signal output.

Our new method eliminates the use of a fibre and the problems associated with it such as the higher absorption in the UV spectral region and optical coupling loss from the dip probe mirror. We use a free space approach by moving the flash lamp source away from the spectrometer and allowing for a cuvette or a flow cell be placed in the beam optical path. The optical absorption interaction occurs over a path length of 10mm and different path lengths can be used by changing the cell. This improved the instrument's performance and accounted for the higher absorption in the deep UV from water containing higher concentrations of DOC.

We present the instrument's measurement capabilities and performance for diluted water samples containing a variety of DOC concentrations. Measurements were also made of different liquids having well known absorption peak profiles in the UV spectral region to demonstrate the instrument's performance capability.