New Accessories for Enhancing Function of FT/IR-4000, 6000 Series

VFT-4000 Vibrational Circular Dichroism (VCD) attachment

Example of system configuration:
VFT-4000 with the FT/IR-6300 FT-IR spectrometer

The VFT-4000 is a VCD attachment for the FT/IR-4000/6000 FT-IR spectrometer developed for measuring vibrational circular dichroism in the infrared region. The VFT-4000 allows to obtain very useful information for optical activity of carbohydrates which do not have any absorption in UV-Vis region and tertiary structure identification of molecules. Since the CD signals in the infrared region are one or more order magnitude lower than ECD signals in the UV-Vis region, the VCD spectrometer needs high sensitivity and high stability. The VFT-4000 enables highly stable and sensitive measurement by Lock-in detection by DSP with sophisticated algorism optimized to VCD and the thermal control of the PEM.
The VFT-4000 can be easily installed into the FT/IR-4000/6000 in the field without any complicated adjustments.

● Wide band coverage

The FVS-6000 can cover a wide spectral range from 3200 ~ 850 cm^{-1} as standard. Optional detectors and filters can extend the range to 4000 ~ 750 cm^{-1}, enabling the measurement of OH and NH bands. Detectors can be easily exchanged with no manual alignment, and optical filters can be switched by PC-controlled 6-position filter wheel.

● VCD auto alignment

Auto alignment function optimizes VCD optics to reduce linear anisotropy artifacts. No manual alignment is required when detector and optical filter are exchanged.

● Narrow band mode

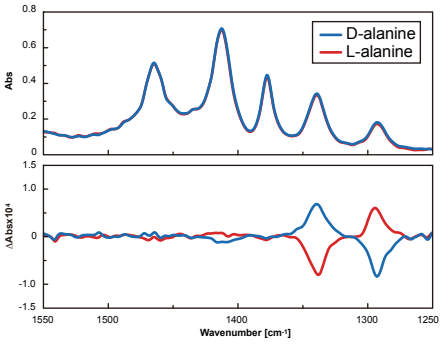
The narrow band mode allows measurements of small peaks at targeted absorption bands with high sensitivity by using optional band filters.

● Purge capability

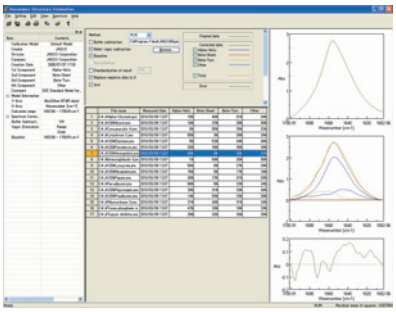
The optics, sample chamber and detector housing are all purgeable to obtain an environment free high-precision data.

Both VCD and IR measurements in one system

The FT/IR-4000/6000 combined with the VFT-4000 allows you to perform both FT-IR and VCD measurements on one system. In FT-IR measurement mode, information for protein secondary structure analysis can be obtained, while in the VCD measurement mode, very useful information of optical activities and tertiary structure identification of molecules can be obtained. This system can be applied widely for the field of structural analysis of various optical active substances.



VCD and IR spectra of amino acid



Secondary structure estimation of hemoglobin by IR measurement

Specifications

Measurement range	Standard: 3200 - 850 cm^{-1} Option: 4000 - 750 cm^{-1}
Resolution	Depending on FT-IR model
Noise level Measurement condition	about 1 x 10^{-5} ΔAbs (4 cm^{-1}, 20 min accumulation)
Detector	Standard: MCT-V (3200 - 850 cm^{-1}) Option: MCT-C (1000 - 750 cm^{-1}) InSb (4000 - 2000 cm^{-1})
Lock-in detection	DSP
Optical filter	Standard: 3200 - 2000 cm^{-1}, 2000 - 850 cm^{-1} Option: 4000 - 2700 cm^{-1}, 1000 - 750 cm^{-1}, 1850 - 1550 cm^{-1} 6-position automatic switching (Standard)