

One-drop CD spectra measurement in using of Micro Sampling Disc

Introduction

CD spectroscopy is one of indispensable measurement method for protein structure analysis as same as NMR or X-ray crystallography. And small volume or low concentration sample measurement is common request in this market recently. Jasco has developed new technology and application to meet such small-volume or low-concentration sample measurement condition finally.

In this note, we like to show several measurement results by One-drop CD spectra measurements in using of Micro sampling disk (MSD).

Keywords: One-drop measurement, Protein, Circular Dichroism



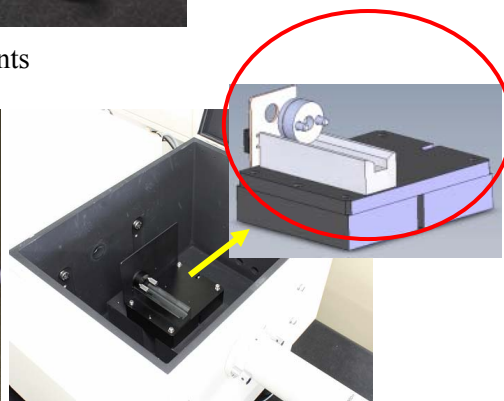
Fig. 1 MSD components



1. Add the sample to the MSD



2. Clamp the MSD



3. Place the MSD in the sample chamber

Fig. 2 How to use the MSD

Advantages

1. One-drop CD measurement
10 μ L (1 mm path length), 2 μ L (0.2 mm path length)
2. Easy handling
Hydrophobic treatment keeps samples centered
3. Variable path length
Spacers are attached for 1 or 0.2 mm path length
4. Artifact free
Windows allow for artifact-free measurements
5. Alignment free
JASCO CD spectrometers use a parallel light beam
6. Highly reproducible baseline

Results

The following are comparisons between the MSD and a conventional cell. CD spectra that show secondary structures (between 260 nm and 190 nm) can be measured completely in less than 3 minutes using the MSD.

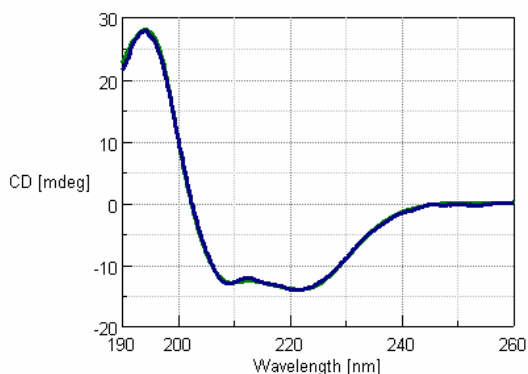


Fig. 3 Hemoglobin

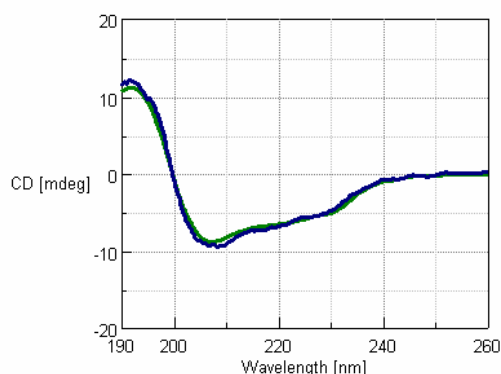


Fig. 4 Lysozyme

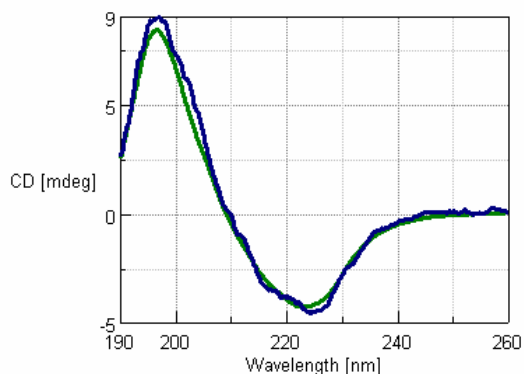


Fig. 5 Concanavalin A

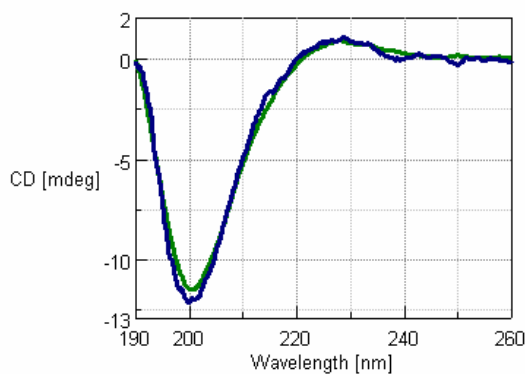


Fig. 6 Trypsin Inhibitor

MSD: —

Conventional cell: —

Measurement parameters

Path length: 1 mm

Bandwidth: 1 nm

Scan speed: 100 nm/min

No of scans: 4 times (MSD), 1 time (Conventional cell)

Measurement time: 2.8 min (MSD), 42sec (Conventional cell)

Sample concentration: 0.1 mg/mL

Data interval: 0.1 nm

Response: 2 sec