# Introduction of Temperature/Wavelength Scan Program

## Introduction

CD spectrum and fluorescence spectrum are used in a complementary manner in the structural analysis of the proteins. The thermodynamic parameters of the protein obtained by the measurement with variable temperature provide the important knowledge for the thermal stability of the protein.

The Temperature/Wavelength Scan program for JASCO CD spectrometers allows to obtain the data of CD with the temperature change for the protein and DNA required to calculate the denaturation temperature (Tm), enthalpy change (ΔH), and entropy change (ΔS). In addition such program also enables temperature interval measurements of CD and fluorescence spectra.

The obtained data can be processed on the [Spectrum Analysis] and [Interval Analysis] program, which also enables to show the 3D representation. The secondary structure analysis and the calculation of thermodynamic parameters of the protein can be implemented by using optional [Thermal Denaturation Analysis] and [Protein SSE] program.

This report introduces the measurement of Lysozyme (0.03 mg/mL) using Temperature/Wavelength Scan program as an example.

**Key words:** CD spectra measurement, Fluorescence spectra measurement, Melting temperature, Proteins

**Experimental:** J-815 CD Spectrometer
CDF-426 Water-cooled Peltier thermostatted CD/Fluorescence measurement accessory
FMO-427 Emission monochromator

**Results:**

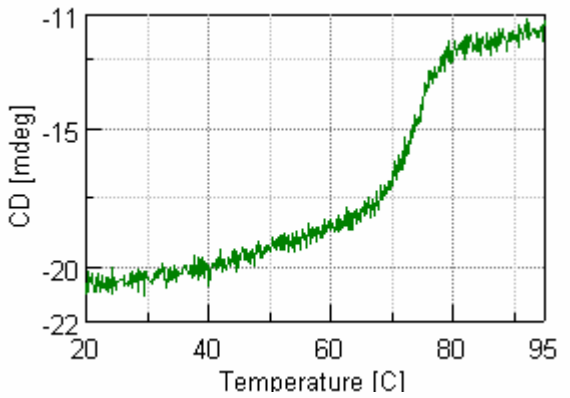


Fig. 1 Thermal denaturation curve

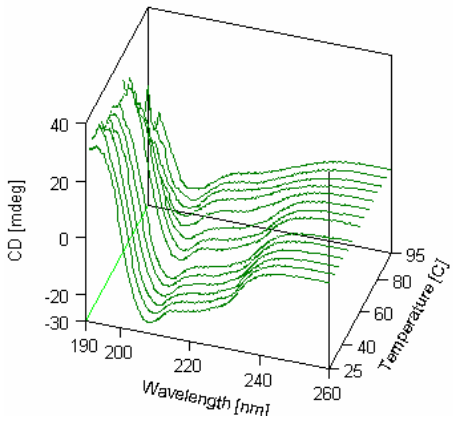


Fig. 2 CD Spectra with temperature interval

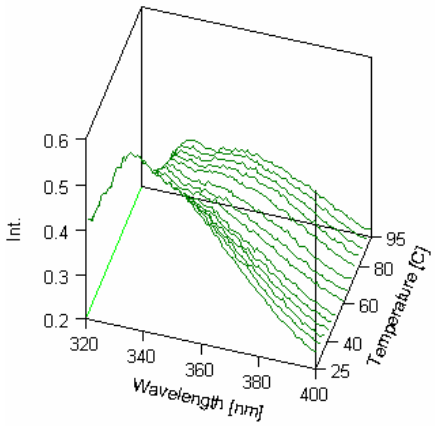


Fig. 3 Fluorescence spectra with temperature interval

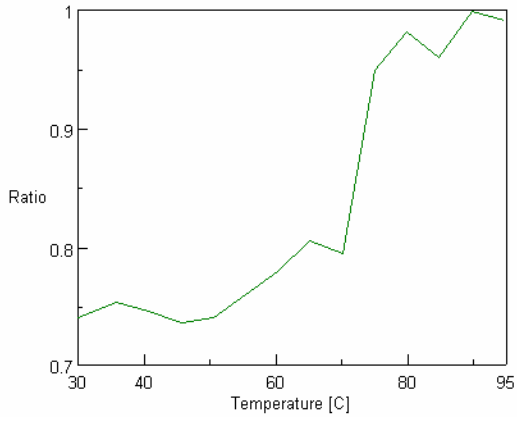


Fig. 4 Fluorescence intensity ratio of 357/338 nm



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