

Establishment of a CD-Spectrometer Facility

Circular dichroism is the difference in the absorption of left-handed circularly polarized light (L-CPL) and right-handed circularly polarized light (R-CPL) and occurs when a molecule contains one or more chiral chromophores (light-absorbing groups). A circular dichroism signal can be positive or negative, depending on whether L-CPL is absorbed to a greater extent than R-CPL (CD signal positive) or to a lesser extent (CD signal negative).

Circular dichroism = $\Delta A(\lambda) = A(\lambda)_{\text{LCPL}} - A(\lambda)_{\text{RCPL}}$, where λ is the wavelength.

Circular dichroism (CD) spectroscopy is a spectroscopic technique where the CD of molecules is measured in the visible and ultra-violet region of the electro-magnetic spectrum. CD spectroscopy is used extensively to study chiral molecules of all types and sizes, but it is in the study of large biological molecules where it finds its most important applications. A primary use is in analyzing the secondary structure or conformation of macromolecules, particularly proteins, and because secondary structure is sensitive to its environment, e.g. temperature or pH, circular dichroism can be used to observe how secondary structure changes with environmental conditions or on interaction with other molecules. Structural, kinetic and thermodynamic information about macromolecules can be derived from circular dichroism spectroscopy.

Under the CARE budget (2009-2010), a JASCO CD POLARIMETER- MODEL J-815(150-S) was purchased.

This instrument has the following features

- CD spectra measurement with wavelength
- Time course CD signal measurement
- **Facility of variable temperature(-10°C to 110°C) by PTC-423S/15 Peltier effect**
- **Quartz cells with path length 10mm, 5mm, 2mm, 1mm, 0.2mm, 0.1mm**
- Measurement wavelength range 163 nm to 900nm.
- Stray Light less than 0.0003 % (200nm).
- Wavelength repeatability $\pm 0.05\text{nm}$ (163 to 250 nm) and $\pm 0.1\text{nm}$ (250 to 500nm), and $\pm 0.2\text{nm}$ (500 to 900nm).



The location of the instrument and contact information is given below.
Core lab no. **CL107E**

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