Realization of Common Platform Technology, Facilities, and Equipment that creates Innovative Knowledge and Products

Development of Multi-Dimensional Infrared Circular Dichroism Spectroscopy

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Summary :

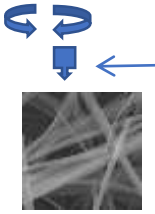
Proteins are required to be folded in a correct way in order to exhibit biological activity. The incorrect folding results in the lowering of activity and sometimes causes serious effects on living systems such as the formation of undesired protein aggregates (amyloids) in Alzheimer's decease. Recently an extensive attention has been paid to the DL conversion of amino acid residues as a possible cause. It is event more difficult to perform it in protein aggregates without decomposing them into individual amino acids.

In this project, we develop the "Multi-Dimensional Infrared Circular Dichroism (Microscopic 2D-VCD)" to determine the absolute configuration of an amino acid residue within the peptide chain with high sensitivity.

It is also aimed to develop an algorism to analyze a huge amount of VCD information to investigate the presence of D-amino acid residues.

Microscopic 2D-VCD

Laser : infrared circular dichroism



D-amino acid detection

VCD analysis algorism