

**Thermal denaturation analysis of protein**

MITSUHIRO MIYAZAWA

*National Institute of Sericultural and Entomological Science(NISES) 1-2, Ohwashi, Tsukuba City 305-8634, JAPAN*

Near infrared (NIR) spectroscopy is a powerful technique for non-destructive analysis that can be obtained in a wide range of environments. Recently, NIR measurements have been utilized as probe for quantitative analysis in agricultural, industrial, and medical sciences. In addition, it is also possible to make practical application on NIR for molecular structural analysis. In this work, Fourier transform near infrared (FT-NIR) measurements were carried out to utilize extensively in the relative amounts of different secondary structures were employed, such as lysozyme, concanavalin A, silk fibroin and so on.

Several broad NIR bands due to the protein absorption were observed between 4000 and 5000  $\text{cm}^{-1}$ . in order to obtain more structural information from these featureless bands, second derivative and Fourier-self-deconvolution procedures were performed. Significant band separation was observed near the feature at 4610  $\text{cm}^{-1}$ ,. Particularly the peak intensity at 4525  $\text{cm}^{-1}$  shows a characteristic change with thermal denaturation of fibroin. The structural information can be also obtained by mid-IR and CD spectral. Correlation of NIR spectra with protein structure is discussed.