

Abstract Submitted
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Infrared Spectroscopy Measurements of Protein Dynamics and Mechanism CURTIS W. MEUSE, JOSEPH B. HUBBARD, National Institute of Standards and Technology — Infrared spectroscopy has long been used to deduce the concentration and secondary structures of proteins in a variety of static and time resolved applications. Our focus is on developing new infrared methods to compare the structure, dynamics and function of nearly identical protein samples, in different environments, to apply to the problem of identifying bio-similar protein therapeutics. We have developed an order parameter describing protein conformation variations around the average molecular values. By comparing our order parameter and amide hydrogen/deuterium exchange methods, we explore the relationship between protein stability and the dynamics of the protein conformational distribution. Examples include lysozyme and albumin in solution, cytochrome *c* interacting with lipid membranes of varying net-negative surface charge density, fibrinogen on different polymer surfaces and bacteriorhodopsin during its photocycle.

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