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Thermodynamics of Membrane Proteins: Kinetics DIPTI SHARMA, ATIN MANDEL, JOSE ARGUELLO, GERMANO IANNACCHIONE, Worcester Polytechnic Institute — An AC-Calorimetric study of membrane proteins was performed at various scan rates in order to probe the energetics and dynamics of the unfolding mechanism. Two thermophilic (Archaeoglobus Fulgidus: AfCopA and AfCopA+ATP) and one mesophilic (E. Coli: EcCopA) membrane proteins were studied at scan rates of 5 and 30 K/hr. Clear signatures of the protein unfolding were found whose character was dependent on the presence of ligands and scan rate. The slower scan rate data reveal a much broader temperature range of unfolding with evidence of a two stage unfolding process. Comparison between the two scan rates indicates that the kinetics of the first unfolding process is complex while the second primary feature represents the stability limit of that particular protein.

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