Abstract Submitted
for the OSF09 Meeting of
The American Physical Society

Pressure effects on the solvent denaturation of NADH[1] ERIK ALQUIST, LAUREN REGUEYRA, JOSHUA JASENSKY, M. JUNAID FAROOQI, PAUL URAYAMA, Miami University — Nicotinamide adenine dinucleotide (NADH) plays a central role in cellular metabolism as an electron donor via an NAD+/NADH redox reaction. NADH conformational state – whether it is folded or unfolded – has physiological significance because it takes on an unfolded conformation when bound to proteins. This study examines the effects of pressure on the solvent denaturation of NADH (20μM NADH in MOPS buffer solution, pH7.4). Using a quartz capillary-based high-pressure chamber, the folding/unfolding transition of NADH was examined through excited-state emission spectroscopy (337 nm excitation) at physiological pressures up to 50 MPa. By using a two-state solvent-denaturation model to determine thermodynamic parameters of solvent denaturation and by using an Arrhenius relationship, the change in volume for the folding-unfolding reaction is determined.

[1]Supported by an award from Research Corporation. LR and JJ were supported by Miami University's Undergraduate Summer Scholars program, and LR was supported by the CAS Dean's Scholars program.

Urayama Paul
Miami University

Date submitted: 25 Sep 2009 Electronic form version 1.4