

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Probing short-lived protein ligand interactions with single-molecule force spectroscopy OZGUR SAHIN, Columbia University, MINGDONG DONG, Interdisciplinary Nanoscience Center, iNano, Aarhus, Denmark — Hydrogen bonding plays an important role in stabilizing biomolecular complexes. Although life time of individual bonds can be extremely short, cooperativity among many interactions increase the overall life time of the complex. To probe short-lived individual interactions, we have employed a recently developed atomic force microscopy technique that can carry out single-molecule force spectroscopy experiments on the microsecond timescale. Our loading-rate dependent measurements provide experimental evidence for an additional energy barrier in the biotin-streptavidin complex. The width of this barrier, estimated from the measurements, is both close to theoretical predictions based on steered molecular dynamics simulations and to the characteristic width of individual hydrogen bonds. We will present our experimental methodology and analysis of the results on biotin-streptavidin complex.

Ozgur Sahin
Columbia University

Date submitted: 11 Nov 2011

Electronic form version 1.4