Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

The heat released in single catalytic events locally enhances enzyme diffusion KONSTANTINOS TSEKOURAS, Indiana University - Purdue University Indianapolis, CLEMENT RIEDEL, CHRISTIAN WILSON, KAMBIZ HAMADANI, California Institute for Quantitative Biosciences, SUSAN MARQUSEE, University of California in Berkeley, STEVE PRESSE, Indiana University - Purdue University Indianapolis, CARLOS BUSTAMANTE, University of California in Berkeley — Recent experiments have shown that some enzymes catalyzing highly exothermic reactions exhibit increased diffusion with rising substrate concentration. We present a stochastic theory linking increased enzyme diffusion to reaction rate, discuss other possible origins for diffusion coefficient increases and finally provide a mechanistic interpretation showing how the heat released by the reaction perturbs the enzyme.

Konstantinos Tsekouras
Indiana University - Purdue University Indianapolis

Date submitted: 14 Nov 2013 Electronic form version 1.4