Dr. Greg Morrison

Curriculum Vitae

Education and Employment:

- **Harvard University** **October 2008 - present**
  - Postdoctoral Researcher, School of Engineering and Applied Sciences
  - Advisor: Prof. L. Mahadevan

- **University of Maryland at College Park** **August 2002 – October 2008**
  - Ph. D. – Physics
  - Overall GPA 3.69 / 4
  - Dissertation: Polymer Concepts in Biophysics
    Advisor: Prof. D. Thirumalai

- **University of Texas At Austin** **August 1997 – May 2002**
  - B.S. – Physics
  - B.S. – Mathematics
  - Overall GPA of 3.6 / 4

Research and Teaching Experience:

- Postdoctoral Researcher with Prof. L. Mahadevan, Harvard University **October 2008 - present**
- Research Assistant for Prof. D. Thirumalai, U. Maryland **June 2003 – October 2008**
- Lab Instructor for Physics 121 (Physics for Medical Students), U. Maryland **January 2003 – June 2003**
- Lab Instructor for Physics 262 (Intro to Mechanics), U. Maryland **August 2002 – December 2002**
- Grader for Numerical Analysis and Number Theory, U. Texas **December 2001 – June 2002**

Publications:

1. Thirumalai, D., E. P. O'Brien, **G. Morrison**, and C. Hyeon. Theoretical Perspectives on Protein Folding. Accepted by *Ann. Rev. Biophys. (June 2010)*

2. Hyeon, C., **G. Morrison**, D. L. Pincus, and D. Thirumalai. Refolding Dynamics of Stretched Biopolymers Upon Force Quench. *Proc. Natl. Acad. Sci.* **106** *20288-20293 (2009)*

3. Hashimoto, M., J. Feng, R. York, A. Ellerbee, **G. Morrison**, S. Thomas, L. Mahadevan, and G. Whitesides. Infochemistry: Encoding Information as Optical Pulses using Droplets in a Microfluidic Device. *J. Amer. Chem. Soc.* **131** *12420-12429 (2009)*

4. **Morrison, G.** and D. Thirumalai. Semiflexible Chains in Confined Spaces. *Phys. Rev. E***79** 011924 (2009)

5. O'Brien, E. P., **G. Morrison**, B. Brooks, and D. Thirumalai. How Accurate are Polymer Models in the Analysis of Förster Resonance Energy Transfer Experiments on Proteins? *J. Chem. Phys.* **130** 124903 (2009).
   -E. O. and G. M. contributed equally.

6. Barsegiov, V., **G. Morrison**, and D. Thirumalai. Role of Internal Chain Dynamics on the Rupture Kinetics of Adhesive Contacts. *Phys. Rev. Lett.* **100** 248102 (2008).

7. Hyeon, C., **G. Morrison**, and D. Thirumalai. Force Dependent Hopping Rates of RNA Hairpins can be Estimated from Accurate Measurement of the Folding Landscapes. *Proc. Natl. Acad. Sci.* **105** 9604 (2008)
   -C. H. and G. M. contributed equally.

8. Toan, N. M., **G. Morrison**, C. Hyeon, and D. Thirumalai. Kinetics of Loop Formation in Polymer Chains. *J. Phys. Chem. B***112** 3094 (2008).

9. **Morrison, G.**, Hyeon, C., Toan, N. M., Ha, B-Y., and Thirumalai, D. Stretching Homopolymers. *Macromol.* **40** 7343 (2007)

10. **Morrison, G.**, and Thirumalai, D. The Shape of a Flexible Polymer in a Cylindrical Pore. *J. Chem. Phys.* **122**, 194907 (2005).

Manuscripts in Preparation:

- **Morrison, G.** and L. Mahadevan. Similarity in Networks using Generalized Erdös Numbers.
- **Morrison, G.**, S. Thomas, C. Lafratta, J. Guo, M.A. Palicios, C. Kim, G. Whitesides, and L. Mahadevan. Self-Correcting Infofuses: Developing and Error-Correcting Code Based on the Chemistry of a Burning Fuse.
- **Morrison, G.**, S. Tang, G. Whitesides, and L. Mahadevan. Periodicity and Relaxation in a single-input, single output microudic loop.
- Hyeon, C., **G. Morrison**, and D. Thirumalai. Meaning of the Transition State Extracted from Single Molecule Force Experiments.
- **Morrison, G.**, C. Hyeon, V. Barsegov, and D. Thirumalai. The Effects of Mechanical Force on Intramolecular Contacts: an Exactly Solvable Model.

Scientific Productivity Measures:

- Number of publications: 10
- Number of times cited: 42
  [as of March 2010]
- *h*-index: 4
  [see J.E. Hirsch, *Proc. Natl. Acad. Sci* **102** 16569 (2005)]
- Erdös Number: 4
  [see R. de Castro and J.W. Grossman, *Math. Intel.* **21** 51 (1999)]

Presentations:

- **Harvard University Mahadevan Group**
  - Generalized Erdös Numbers: Measuring Closeness in Networks **2010**
  - A High-Rate Coding Scheme for Analog Communication Channels **2009**
  - The Fundamental of Shannon's Coding Theorem **2008**

- **DARPA Infochemistry Meeting**
  - Efficient Error Correction of the Infofuse: High Rates Using a Larger Alphabet **2009**

- **New England Complex Fluids Workshop (Soundbyte)**
  - Periodicity and Relaxation in a Microfluidic Loop **2009**

- **Mid-Atlantic Soft Matter Workshop (Invited Talk)**
  - The Effect of Handles on the Equilibrium and Kinetic Properties of RNA Hairpins **2008**

- **University of Maryland Biophysics Group:**
  - The Scaling Behavior of a Self-Avoiding Chain Under Tension **2006**
  - What Do We Know About Viral Encapsulation?: Experiments and Loading Models. **2005**
  - Confinement of Wormlike Chains: A Mean Field Approach. **2004**
  - The Effect of Cylindrical Confinement on a Self-Avoiding Chain. **2003**

Programming Experience:

Extensive experience with C/C++ and Mathematica
Moderate experience with Objective-C and Matlab
Familiarity with Fortran77 and Fortran90