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Syracuse Biomaterials Institute  
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**EMPLOYMENT**

**Assistant Professor** **08/18/2008-present**  
Physics Department  
Syracuse University, Syracuse, NY, USA

**Postdoctoral Researcher** **08/01/2003-07/31/2008**  
Department of Chemistry  
University of California, Berkeley, CA, USA  
Supervisor: Prof. Jay T. Groves

**Graduate Research Assistant** **08/01/2002-06/30/2003**  
Institute for Experimental Physics I  
University of Leipzig, Germany  
Supervisor: Prof. Dr. Josef A. Käs  
Work was conducted at the University of Texas at Austin under  
co-supervision of Prof. Dr. Harry L. Swinney

**Graduate Research Assistant** **01/11/1999-07/31/2002**  
University of Texas, Austin, TX, USA  
Center of Nonlinear Dynamics  
Supervisor: Josef A Käs

**EDUCATION**

**Ph.D. Physics**, Center for Nonlinear Dynamics **01/11/1999-05/17/2003**  
University of Texas, Austin, TX, USA  
Dissertation Title: "Motion of Nano-Objects in Langmuir Monolayers"  
Thesis Advisors: Prof. Josef A. Käs, Prof. Harry L. Swinney

**Diploma in Physics** (German M.S. equivalent) **09/20/1992-11/30/1998**  
University of Regensburg, Germany

Thesis Title: “Brownian and Anomalous Diffusion of Individual Amphiphilic Molecules in Langmuir Monolayers”

Thesis Advisor: Prof. Josef A. Käs

### **RESEARCH INTERESTS**

Quantitative understanding of the dynamic interplay between spatio-temporal organization of biological interfaces and biochemical signaling using advanced biophotonic techniques.

### **TEACHING EXPERIENCE**

Major Concepts of Physics II for Non Majors (PHY 102)	<b>Spring 2010</b>
Experimental Physics 1 & 2 (PHY 344/462)	<b>Fall 2009 &amp; 2010</b>
Lab Section of Major Concepts of Physics II for Non Majors (PHY 102)	<b>Spring 2009</b>
Physics Journal Workshop (PHY 250)	<b>Spring 2009</b>
Substitute Lectures in Undergraduate and Graduate Level Courses	<b>2004-2008</b>
Teaching Assistant for Physics for Engineering Students	<b>2001</b>

### **FUNDING**

Chancellor’s Leadership Project, SU	<b>2009</b>
“Transformative Alliance on Cellular Engineering (TrACE)”, Co-PI	
NSF CAREER, “Non-Equilibrium Physics of Biological Interfaces”, PI	<b>2010-2015</b>

### **PROFESSIONAL SERVICE**

<b>Reviewer for:</b>	
Langmuir	<b>2004-present</b>
Journal of Colloid and Interface Science	<b>2007-present</b>
Journal of Structural Biology	<b>2009-present</b>
Biophysical Journal	<b>2009-present</b>
European Journal for Chemical Physics and Physical Chemistry	<b>2009-present</b>
Small	<b>2010-present</b>
Co-organization of the conference on “Assembly and Self-Assembly at the Interface of Biology, Chemistry and Physics” in Il’Ciocco, Italy	<b>2001</b>

### **PROFESSIONAL ASSOCIATIONS AND MEMBERSHIPS**

<b>Biomaterials Institute</b>	<b>2008-present</b>
Syracuse University, Syracuse, NY USA	
<b>SB3: Structural Biology, Biochemistry and Biophysics Program</b>	<b>2009-present</b>
Syracuse University, SUNY Upstate Medical School, SUNY College of Environmental Science and Forestry, Syracuse, NY USA	

<b>Biophysical Society</b>	<b>1999-present</b>
<b>American Physical Society</b>	<b>2002-present</b>
<b>American Chemical Society</b>	<b>2005-present</b>
<b>New York Academy of Science</b>	<b>2008-present</b>
<b>American Association for the Advancement of Science</b>	<b>2009-present</b>

### **PRESENTATIONS AND TALKS**

- Forstner, M. B.**, "Biological Membranes: from Single Molecules to Cells", *Invited Lecture*, Fall Meeting of the New York State Section of The American Association of Physics Teachers, Syracuse, **2009**
- Forstner, M. B.**, "Membrane Structure of T Cells", *Talk*, Molecular Medicine Seminar Series, Cornell University School of Veterinary Medicine, **2009**
- Forstner, M. B.**, Lillemeier, B.F., Davis, M. M. & Groves, J. T., "Activation Dependent Organization of T Cell Membranes", *Talk*, American Physical Society March Meeting, Pittsburgh, PA, **2009**
- Forstner, M. B.**, Lillemeier, B.F., Davis, M. M. & Groves, J. T., "Activation Dependent Organization of T Cell Membranes", *Talk*, 7th New York Complex Matter Workshop, Cornell University, NY, **2008**
- Forstner, M. B.**, Lillemeier, B.F., Davis, M. M. & Groves, J. T., "Different Lipid Anchors Recruit Proteins into Distinct Membrane Domains: A FCCS Study on Activated T-Cells.", *Talk*, 234<sup>th</sup> American Chemical Society National Meeting, New Orleans, LA, **2008**
- Forstner, M. B.**, Lillemeier, B.F., Davis, M. M. & Groves, J. T., "Different Lipid Anchors Recruit Proteins into Distinct Membrane Domains: A FCCS Study on Activated T-Cells.", *Talk*, 47<sup>th</sup> Annual Meeting of the American Biophysical Society, Long Beach, CA, **2008**
- Forstner, M. B.** & Groves, J. T., "Membrane Spatial Organization and Cellular Signal Transduction.", *Talk*, Conference on Biological Membranes and Membrane Proteins: Challenges for Theory and Experiment, City Park, UT, **2007**
- Forstner, M. B.**, Yee, C. K., Parikh, A. N. & Groves, J. T., "Lipid Lateral Mobility and Membrane Phase Structure Modulation by Protein Binding.", *Poster*, 232<sup>nd</sup> American Chemical Society National Meeting, San Francisco, CA, **2006**
- Forstner, M. B.**, Yee, C. K., Parikh, A. N. & Groves, J. T., "Sparse Protein Binding Alters Long-Range Lipid Mobility via Modulation of Phase Transition Behavior in Membranes.", *Talk*, 45<sup>th</sup> Annual Meeting of the American Biophysical Society, Salt Lake City, UT, **2006**
- Forstner, M. B.**, Martin, D. S., Navar, A. M. & Käs, J. A., "Simultaneous Single-Particle Tracking and Visualization of Domain Structure on Lipid Monolayers.", *Oral Presentation*, American Physical Society March Meeting, Austin, TX, **2003**
- Forstner, M. B.**, Martin, D. S. & Käs, J. A., "Single Lipid Diffusion in Spatially Inhomogeneous Monolayers.", *Talk*, US-Japan Workshop, Complexity Science, Austin, TX, **2002**

- Forstner, M. B.**, Martin, D. S. & Käs, J. A., “Single Lipid Diffusion in Spatially Inhomogeneous Monolayers.”, *Talk*, 46<sup>th</sup> Annual Meeting of the American Biophysical Society, San Francisco, CA, **2002**
- Forstner, M. B.**, Martin, D. S. & Käs, J. A., “Anomalous Diffusion in a Single Lipid System? Minimal Requisites for Subdiffusion in Lipid Membranes.”, *Poster*, Conference on Assembly and Self-Assembly at the Interface of Biology, Chemistry and Physics, Il Ciocco, Italy, **2001**
- Forstner M. B.**, Martin D. S. & Käs J. A., “Anomalous Diffusion in a Single Lipid System? Minimal Requisites for Subdiffusion in Lipid Membranes.”, *Talk*, 45<sup>th</sup> Annual Meeting of the American Biophysical Society, Boston, MA, **2001**
- Forstner, M. B.**, Martin, D. S. & Käs, J. A., “Anomalous Diffusion in a Single Lipid System? Minimal Requisites for Subdiffusion in Lipid Membranes.”, *Poster*, 40<sup>th</sup> Annual Meeting of American Society for Cell Biology, San Francisco, CA, **2000**
- Forstner, M. B.**, Martin, D. S. & Käs, J. A., “Anomalous Diffusion in a Single Lipid System? Minimal Requisites for Subdiffusion in Lipid Membranes.”, *Talk*, 44<sup>th</sup> Annual Meeting of the American Biophysical Society, New Orleans, LA, **2000**
- Forstner, M. B.**, Martin, D. S. & Käs, J. A., “Single Particle Tracking and the Observation of Anomalous Diffusion on Lipid Monolayers.”, *Talk*, 43<sup>rd</sup> Annual Meeting of the American Biophysical Society, Baltimore, MD, **1999**

## PUBLICATIONS

- Rozovsky, S.; **Forstner, M. B.**; Sondermann, H.; Groves, J. T., "Single Molecule Kinetics of ENTH Binding to Lipid Membranes." *in preparation*
- Forstner, M. B.**; Lillemeier, B. F.; Davis, M. M.; Groves, J. T., "Different Acylation Motifs Direct Multiple Orthogonal Co-Localization of Lipid-Anchored Proteins in Live Cell Membranes." *in preparation*
- Lillemeier, B. F.; Moertelmaier, M. A.; **Forstner, M. B.**; Huppa, J. B.; Groves, J. T. & Davis, M. M., "TCR and Lat are Expressed on Separate Protein Islands on T Cell Membranes and Concatenate during Activation" *Nature Immunology*, **2010**, 11(1), 90 - 96. (Published online December 19<sup>th</sup> 2009.)
- Rabuka, D.; **Forstner, M. B.**; Groves, J. T. & Bertozzi, C. R., “Non-Covalent Cell Surface Engineering: Incorporation of Bioactive Synthetic Glycopolymers into Cellular Membranes.” *Journal of the American Chemical Society*, **2008**, 130, (18), 5947-5953.
- Forstner, M. B.**; Martin, D.; Ruckerl, F.; Käs, J. A. & Selle, C., “Attractive Membrane Domains Control Lateral Diffusion.” *Physical Review E*, **2008**, 77, 051906.
- Groves, J. T.; Parthasarathy, R. & **Forstner, M. B.**, “Fluorescence Imaging of Membrane Dynamics.” *Annual Review of Biomedical Engineering*, **2008**, 10, 311-338.
- Paulick, M. G.; **Forstner, M. B.**; Groves, J. T. & Bertozzi, C. R., “A Chemical Approach to Unraveling the Biological Function of the Glycosylphosphatidylinositol Anchor.”

Proceedings of the National Academy of Sciences of the United States of America, **2007**, 129, (37), 11543-11550.

Paulick, M. G.; Wise, A. R.; **Forstner, M. B.**; Groves, J. T. & Bertozzi, C. R., “Synthetic Analogues of Glycosylphosphatidylinositol-Anchored Proteins and their Behavior in Supported Lipid Bilayers.” *Journal of the American Chemical Society*, **2007**, 129, (37), 11543-11550.

**Forstner, M. B.**; Yee, C. K.; Parikh, A. N. & Groves, J. T., “Lipid Lateral Mobility and Membrane Phase Structure Modulation by Protein Binding.” *Journal of the American Chemical Society*, **2006**, 128, (47), 15221-15227.

Selle, C.; Ruckerl, F.; Martin, D. S.; **Forstner, M. B.** & Käs, J. A., “Measurement of Diffusion in Langmuir Monolayers by Single-Particle Tracking.” *Physical Chemistry Chemical Physics* **2004**, 6, (24), 5535-5542.

**Forstner, M. B.**; Martin, D. S.; Navar, A. M. & Kas, J. A., “Simultaneous Single-Particle Tracking and Visualization of Domain Structure on Lipid Monolayers.” *Langmuir* **2003**, 19, (12), 4876-4879.

Martin, D. S.; **Forstner, M. B.** & Kas, J. A., “Apparent Subdiffusion Inherent to Single Particle Tracking.” *Biophysical Journal* **2002**, 83, (4), 2109-2117.

**Forstner, M. B.**; Kas, J. A. & Martin, D., “Single Lipid Diffusion in Langmuir Monolayers.” *Langmuir* **2001**, 17, (3), 567-570.

### **SCIENTISTS MENTORED**

#### **Postdoctoral Researchers**

Dr. Lauren O’Neil                      2009-2010                      now: *Visiting Professor, Nazareth College*

#### **Graduate Students**

Adolphe Kadazi Badiambile   2009- present  
 Eleni Knife Degaga              2009- present  
 Ian McCabe                        2009- present  
 David Harbage                    2010- present  
 Kathleen Kelly                    2010- present

#### **Undergraduate Students**

Pauline Hua                        2009-2010                      now: *Downstate Medical School*  
 ChaoJie Zhen                    2010-present  
 Shane Dunn                       2010-present  
 Sundus Mian                      2010-present  
 Tianiy Zhou                        2010-present  
 David Kopel                        2010-present

### **References Available Upon Request**