

**Minjoung Kyoung, Ph.D.****University of Maryland, Baltimore County**

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E-mail: [mjkyoung@umbc.edu](mailto:mjkyoung@umbc.edu)Website: <http://kyounglab.umbc.edu/>**EDUCATION AND RESEARCH EXPERIENCES**

- 2014 – current      **Assistant Professor, University of Maryland, Baltimore County**
- 2012 – 2014      **Assistant Research Scientist, University of Maryland, Baltimore County**  
Research interest: Investigating metabolic complexes in living cells using biochemical and biophysical techniques
- 2008 – 2012      **Postdoctoral Research Associate, Stanford University**  
Research interest: Investigating neurotransmission using single molecule/vesicle technique  
*Co-advisors: Profs. Axel T. Brunger* (in Stanford University) and **Steven Chu** (in UC Berkeley).
- 2002 – 2008      **Ph.D. Chemistry, The Pennsylvania State University**  
*Thesis: Molecular dynamics of biomembrane as probed by multifaceted biophotonics*  
*Advisor: Prof. Erin D. Sheets*, Department of Chemistry
- 2000      **M.S., Molecular Science, Ewha Womans University, Seoul, Korea**  
*Thesis: Z-scan studies on metal nanoparticles embedded in dielectric thin film*  
*Advisor: Prof. Minyung Lee*, Department of Molecular Science
- 1998      **B.A., Chemistry, Ewha Womans University, Seoul, Korea**

**PUBLICATIONS**

16. **M. Kyoung**, S. Russell, C. Kohnhorst, N. Esemoto, S. An “Dynamic architecture of the purinosome involved in human de novo purine biosynthesis” *Biochemistry*; **2015**; 54, 870–880.
15. J. Diao, J. Burré, S. Vivona, D.J. Cipriano, M. Sharma, **M. Kyoung**, T. C. Südhof, A. T. Brunger “ $\alpha$ -Synuclein Induces Synaptic Vesicle Clustering Via Binding To Phospholipids And Synaptobrevin-2/VAMP2” *eLife*; **2013**; 2, e00592
14. J. Diao, M. Zhao, Y. Zhang, **M. Kyoung**, A. T. Brunger “Studying protein-reconstituted proteoliposome fusion with content indicators in vitro” *BioEssays*; **2013**; 35, 658-665.
13. **M. Kyoung**, Y. Zhang, J. Diao, S. Chu, A. T. Brunger “Studying calcium-triggered vesicle fusion in a single vesicle-vesicle content and lipid-mixing system” *Nature Protocols*; **2013**; 8, 1-16.
12. J. Diao, P. Grob, D. J. Cipriano, **M. Kyoung**, Y. hang, S. Shah, A. Nguyen, M. Padolina, A. Srivastava, M. Vrljic, A. Shah, E. Nogales, S. Chu, A. T. Brunger “Synaptic proteins promote calcium-triggered fusion from point contract to full fusion” *eLife*; **2012**; 1, e00109.
11. F. Verrier, S. An, A. M. Ferrie, H. Sun, **M. Kyoung**, H. Deng, Y. Fang, S. J. Benkovic, “GPCR signaling regulates the assembly of a multienzyme complex for purine biosynthesis” *Nature chemical biology*, **2011**; 7, 909-915.

10. **M. Kyoung**, A. Srivastava, Y. Zhang, M. Vrljic, P. Grob, E. Nogales, S. Chu, A. T. Brunger “Ca<sup>2+</sup>-triggered single vesicle content mixing: fast fusion kinetics reveals mechanistic insights into neurotransmitter release” *Proc Natl Acad Sci U S A.* **2011**; 108 (29): E304-13.
9. S. An, Y. Deng, J. W. Tomsho, **M. Kyoung**, and S. J. Benkovic “Microtubule-assisted mechanism for functional metabolic macromolecular complex formation” *Proc Natl Acad Sci U S A.*, **2010**, 285, 12871-12876.
8. S. An, **M. Kyoung**, J. J. Allen, K. M. Shokat, S. J. Benkovic “Dynamic regulation of a metabolic multi-enzyme complex by protein kinase CK2” *Journal of Biological Chemistry*, **2010**, 285, 11093-11099.
7. **M. Kyoung**, E. D. Sheets “Vesicle diffusion close to a membrane: intermembrane interactions measured with fluorescence correlation spectroscopy” *Biophysical Journal*, **2008**, 95, 5789-5797.
6. K. Vats, **M. Kyoung**, E. D. Sheets “Characterizing the chemical complexity of patterned biomimetic membranes” *Biochimica et Biophysica Acta*, **2008**, 1778, 2461-2468.
5. **M. Kyoung**, K. Karunwi, E. D. Sheets “A versatile multi-mode microscope to probe and manipulate nanoparticles and biomolecules” *Journal of Microscopy*, **2007**, 225, 137-146.
4. **M. Kyoung**, E. D. Sheets, “Manipulating and probing the spatio-temporal dynamics of nanoparticles near surfaces” *Proceedings of SPIE*, **2006**, 6326, 63262L.
3. **M. Kyoung**, S. Y. Kim, H. Y. Seok, I. S. Park, M. Lee, “Probing the caspase-3 active site by fluorescence lifetime measurements” *Biochimica et Biophysica Acta*, **2002**, 29, 74-79.
2. **M. Kyoung**, M. Lee, “Z-scan studies on the third-order optical nonlinearity of Au nanoparticles embedded in TiO<sub>2</sub>.” *Bulletin of the Korean Chemical Society*, **2002**, 21, 26-28.
1. **M. Kyoung**, M. Lee, “Nonlinear absorption and refractive index measurements of silver nanorods by the Z-scan technique.” *Optics Communications*, **1999**, 171, 145-148.

## INVITED TALKS

- “Inside insight to synaptic neurotransmission: single particle at a time” Protein Meet-Up Symposium, Baltimore, MD, January 14, 2015
- “Inside insight to synaptic neurotransmission: single particle at a time” Department of Biology, University of Maryland, Baltimore County, Baltimore, MD, November 12, 2014
- “Ca<sup>2+</sup>-triggered single vesicle content mixing: fast fusion kinetics reveals mechanistic insights into neurotransmitter release” Department of Physics, KAIST, Daejeon, Korea, April 11, 2011
- “Ca<sup>2+</sup>-triggered single vesicle content mixing: fast fusion kinetics reveals mechanistic insights into neurotransmitter release” International Membrane Biophysics Conference, POSTECH, Pohang, Korea, April 7-8, 2011
- “Molecular dynamics of biomembrane as probed by multifaceted biophotonics” Institute of Quantitative Biosciences, University of California Berkeley, Berkeley, CA, May 17, 2007
- “Molecular dynamics of biomembrane as probed by multifaceted biophotonics” Department of Chemistry, Cornell University, Ithaca, NY. March 20, 2007
- “Molecular dynamics of biomembrane as probed by multifaceted biophotonics” Department of Pharmacology, University of North Carolina, Chapel Hill, NC. February 20, 2007
- “Molecular dynamics of biomembrane as probed by multifaceted biophotonics” Department of Physics, Emory University, Atlanta, GA. February 6, 2007
- “Vesicle diffusion close to a membrane: intermembrane interactions measured with fluorescence correlation spectroscopy.” Lion lectures, Pennsylvania State University, University park, PA. October 19, 2006

## PRESENTATIONS

- M. Kyoung**, Sarah J Russell, Nopondo N Esemoto, Songon An “Assembly Mechanism of a Transient Metabolic Complex, the Purinosome, in Living Cells” The Gordon Research Conference: Enzymes, Coenzymes and Metabolic Pathways, July 14-19, 2013, Waterville Valley, NH.

**M. Kyoung**, S. J. Russell, N. N. Esemoto, S. An “Assembly Mechanism of a Transient Metabolic Complex, the Purinosome” Cancer and Metabolism, June 24-25, 2013, Amsterdam, Netherlands

**M. Kyoung**, A. Srivastava, Y. Zhang, M. Vrljic, P. Grob, E. Nogales, S. Chu, A. T. Brunger “Ca<sup>2+</sup>-triggered single vesicle content mixing: fast fusion kinetics reveals mechanistic insights into neurotransmitter release” Annual Biophysical Society Meeting, March 5-9, 2011, Baltimore, MD.

**M. Kyoung**, A. Srivastava, Y. Zhang, M. Vrljic, P. Grob, E. Nogales, S. Chu, A. T. Brunger “Kinetic control of SNARE-dependent fusion by accessory factors and calcium” Single Molecule Biophysics Conference, January 9-15, 2011, Aspen, CO.

**M. Kyoung**, S. Ankita, Y. Zhang, M. Vrljic, P. Grob, E. Nogales, S. Chu, A. T. Brunger, “Reconstitution of Ca<sup>2+</sup> triggered synaptic vesicle fusion” Howard Hughes Medical Institute Meeting, January 24-27, 2010, Maryland, MD.

E. D. Sheets, **M. Kyoung**, “Vesicle interactions with target membranes: a model for pre-exocytosis and post-endocytosis” 82nd ACS Colloid & Surface Science Symposium, June 15-18, 2008, Raleigh NC

**M. Kyoung**, E. D. Sheets, “TIR-FCS/optical trapping for investigating lipid vesicle and nanoparticle dynamics near surfaces” The 51<sup>st</sup> Annual Biophysical Society Meeting, March, 3-7, 2007, Baltimore, MD.

**M. Kyoung**, E. D. Sheets, “Manipulating and probing the spatio-temporal dynamics of nanoparticles near surfaces” Optics and Photonics (SPIE), August, 12-17, 2006, San Diego, CA

**M. Kyoung**, D. J. Eves, A. G. Ewing, E. D. Sheets, “Using fluorescence correlation spectroscopy (FCS) dimensional analysis of lipid nanotubes” The 50<sup>th</sup> Annual Biophysical Society Meeting, February, 17-22, 2006, Salt Lake City, UT.

K. Vats, **M. Kyoung**, E. D. Sheets, “Micropatterned domains in supported lipid bilayers and their molecular dynamics” The 50<sup>th</sup> Annual Biophysical Society Meeting, February, 17-22, 2006, Salt Lake City, UT.

K. Vats, **M. Kyoung**, E. D. Sheets, “Patterning complexity into supported planar bilayers” The 49<sup>th</sup> Annual Biophysical Society Meeting, February, 12-16, 2005, Long Beach, CA.

E. D. Sheets, **M. Kyoung**, K. Vats, A. M. Davey, KM Stewart, H Lazarus, “Probing biomembrane heterogeneity using patterning with high spatio-temporal resolution” 44<sup>th</sup> Annual Meeting of the American Society for Cell Biology, December, 4-8, 2004, Washington, DC.

**M. Kyoung**, J. Kim, M. Lee, “Energy transfer processes in Au:dye conjugates” The 84<sup>th</sup> annual meeting of Korean Chemical Society, October, 1999, Seoul

**M. Kyoung**, M. Lee, “Nonlinear optical properties of silver nanorods” The 82<sup>nd</sup> annual meeting of Korean Chemical Society, October, 1998, Seoul

**M. Kyoung**, S. Kim, L. Chae, M. Lee, “Two-photon absorption and nonlinear refractive index measurement by femtosecond Z-scan” The 81<sup>st</sup> annual meeting of Korean Chemical Society, April, 1998, Seoul

## HONORS & AWARDS

4/2007	The First place winner, 2007 Graduate Exhibition Award, The Pennsylvania State University
9/2006	Dan H. Waugh Teaching Award Honorable Mention, The Pennsylvania State University
7/2006	Dalalian Fellowship Award, Department of Chemistry, The Pennsylvania State University
6/2006	The Newport and Spectra-Physics Research Excellence Travel Award (SPIE)
11/2005	Graduate Student Travel Award, Department of Chemistry, The Pennsylvania State University
5/2004	Analytical & Quantitative Light Microscopy, Marine Biological Laboratory, Woods Hole, MA
2003	Outstanding Student Honor Society, The Pennsylvania State University
2002	Roberts Fellowship, Department of Chemistry, The Pennsylvania State University

## PROFESSIONAL EXPERIENCES

1/2015	<b>Review panelist</b> , 2015 NSF Graduate Research Fellowship Program (GRFP), Maryland
8/2014-current	<b>Associate Member of the Graduate School</b> , UMBC
1/2010	<b>Session Chair</b> , Howard Hughes Medical Institute Meeting, Maryland

6/2007-12/2007      **Research Assistant**, Department of Chemistry, The Pennsylvania State University

**PROFESSIONAL MEMBERSHIPS**

2003-current	Biophysical Society
2004-2005	The International Society for Optical Engineering (SPIE)
2012-current	American Association for Cancer Research