

YING WANG

University of North Carolina Wilmington
Department of Chemistry and Biochemistry

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EDUCATION

- 09/1999-07/2003 **B.S.** in Chemistry, Tsinghua University, Beijing, China
Thesis: Identification and classification of Chinese herbal medicines using FT-IR and clustering analysis
- 09/2004-12/2008 **Ph.D.** in Physical Chemistry, Texas Christian University, Fort Worth, TX
Thesis: Protein condensation in crowded aqueous solutions
- 01/2009-12/2012 **Postdoc.** in Prof. George B. Benedek's lab, Center for Material Science and Engineering and Department of Physics, MIT
- 06/2014 **Teaching Certificate Program**, Teaching & Learning Laboratory, MIT, Cambridge, MA

EXPERIENCE

- 08/2015-present **Assistant Professor**, Department of Chemistry and Biochemistry, UNCW
- 01/2013-08/2015 **Hoffmann-La Roche Postdoctoral Research Fellow**, working at MIT
- 01/2013-08/2015 **Research Associate**, Prof. George B. Benedek's lab, Center for Material Science and Engineering and Department of Physics, MIT
- 06/2009-05/2013 **Direct Supervisor for Undergraduate Students** in MIT's Undergraduate Research Opportunities Program (UROP), Department of Physics, MIT
- 01/2005-06/2006 **Teaching Assistant** of Physical Chemistry Lab, Dept. of Chemistry, TCU

CONFERENCE AND INVITED TALKS

- “Observation of LLPS in Protein Solutions: Serendipitous or Ubiquitous?”, invited, *American Physical Society (APS) March Meeting*, Boston, MA, March 07, 2019.
- “Prediction of Protein Solubility for Biologics Development: From Basics to Practice”, invited, *CHI Annual Meeting Biotherapeutics Analytical Summit*, Baltimore, MD, USA, March 13, 2018.
- “Small or Big? That Is The Question: Behavior of Lipopeptides in Aqueous Solutions”, invited, *American Association of Pharmaceutical Scientists (AAPS) Annual Meeting*, San Diego, CA, USA, Nov. 14, 2017.
- “Phase Transitions in Protein Solutions: Protein-Protein Interaction and Protein Colloidal Stability”, invited, session chair, *Protein Discovery Summit: Protein-Protein Interaction Conference*, Boston, MA, USA, Dec. 7, 2016.
- “Probing Inter-Protein Interactions by PEG-Induced Liquid-Liquid Phase Separation”, invited, *Protein Discovery Summit: Protein-Protein Interaction Conference*, Boston, MA, USA, Oct. 23, 2015.

“PEG-induced Liquid-Liquid Phase Separation in Protein Solutions”, invited, *PEGS: the essential protein engineering summit*, Boston, MA, USA, May 04, 2015.

“Phase Transitions in Antibody Solutions: From Pharmaceuticals to Human Disease”, contributed, *American Chemical Society National Meeting*, San Francisco, CA, USA, August 10, 2014.

“Phase Transitions in Antibody Solutions: From Pharmaceuticals to Human Disease”, contributed, *American Physics Society Annual Meeting*, Denver, CO, USA, March 04, 2014.

“Protein Condensation in Concentrated Antibody Solutions: Connection with Human Disease”, Young Investigator Talk, *The 27th Annual Symposium of The Protein Society*, Boston, MA, USA, July 20–23, 2013.

“Phase Transitions in Antibody Solutions: From Pharmaceuticals to Human Disease”, invited, Physics Colloquium, Yeshiva University, New York, NY, USA, Sept. 11, 2012.

HONORS AND AWARDS

01/2013 Hoffmann-La Roche Postdoctoral Research Fellowship

PROFESSIONAL MEMBERSHIPS:

American Chemical Society; American Physical Society; the Protein Society

PROFESSIONAL SERVICE

Reviewer for *Nature Communication*, *Journal of Physical Chemistry*, *Langmuir*, *Molecular Pharmaceutics*

THESIS ADVISOR

Honor students (2): Rachel Cancel, Tyler Evangelous

Master student (5): Jacob Rowe, Mindy Rodriguez, Matti J. Scannell, Colin A. Hardy,
Kylie H. Morin

PUBLICATIONS

1. **Wang, Y.***, Latypov, R. F. “Quantitative Evaluation of Protein Solubility in Aqueous Solutions by PEG-Induced Liquid-Liquid Phase Separation”, *Protein Self-Assembly: Methods and Protocols, Methods in Molecular Biology*, vol. 2039 , **2019**, 39-49.
2. Rowe, J. B.; Flynn, R. P.; Wooten, Harrison R.; Noufer, Hailey A.; Cancel, R. A.; Subramony, J. A.; Zhang, J.; Pechenov, S.; **Wang, Y.***. “Submicron Aggregation of Chemically Denatured Monoclonal Antibody”, *Molecular Pharmaceutics*, **2018**, *15(10)*, 4710-4721.

3. Rowe, J. B.; Cancel, R. A.; Evangelous, T. D.; Flynn, R. P.; Pechenov, S.; Subramony, J. A.; Zhang, J.; **Wang, Y.***. “Meta-stability gap in the phase diagram of monoclonal IgG antibody”, *Biophysical Journal*, **2017**, *113*, 1750-1756.
4. **Wang, Y.**; Lomakin, A.; Kanai, S.; Alex, R.; Benedek, G. B. “Liquid–Liquid Phase Separation in Oligomeric Peptide Solutions”, *Langmuir*, **2017**, *33*(31), 7715-7721.
5. Sun, G.; **Wang, Y.**; Lomakin, A.; Benedek, G. B.; Stanley, H. E.; Xu, L.; Buldyrev, S. V. “The Phase Behavior Study of Human Antibody Solution using Multi-Scale Modeling”, *the Journal of Chemical Physics*, **2016**, *145*, 194901.
6. Thompson, R; Latypov, R. F.; **Wang, Y.**; Lomakin, A.; Meyer, J.; Vunnum, S.; Benedek, G. B. “Evaluation of Effects of pH and Ionic Strength on Colloidal Stability of IgG Solutions by PEG-Induced Liquid-Liquid Phase Separation", *the Journal of Chemical Physics*, **2016**, *145*, 185101.
7. **Wang, Y.**; Lomakin, A.; Kanai, S.; Alex, R.; Belli, S.; Donzelli, M.; Benedek, G. B. "The molecular basis for the prolonged blood circulation of lipidated incretin peptides: peptide oligomerization or binding to serum albumin?", *Journal of Controlled Release*, **2016**, *241*, 25-33.
8. Kreuzberger, Mark A.; Tejada, Emmanuel; **Wang, Ying**; Almeida, Paulo F. “GUVs melt like LUVs: the large heat capacity of MLVs is not due to large size or small curvature”, *Biophysical Journal*, **2015**, *108*, 2619-2622.
9. **Wang, Ying**; Lomakin, Aleksey; Kanai, Sonoko; Alex, Rainer.; Benedek, George B. “Transformation of oligomers of lipidated peptide induced by change in pH”, *Molecular Pharmaceutics*, **2015**, *12*(2), 411-419.
10. **Wang, Ying**; Latypov, Ramil F.; Lomakin, Aleksey; Meyer, Julie A.; Kerwin, Bruce A.; Vunnum, Suresh; Benedek, George B. “Quantitative evaluation of colloidal stability of antibody solutions using PEG-induced liquid-liquid phase separation”, *Molecular Pharmaceutics*, **2014**, *11*(5), 1391-1402.
11. **Wang, Ying**; Lomakin, Aleksey; Latypov, Ramil F.; Laubach, Jacob P.; Hideshima, Teru; Richardson, Paul G.; Munshi, Nikhil C.; Anderson, Kenneth C.; Benedek, George B. “Phase transitions in human IgG solutions”, *J. Chem. Phys.*, **2013**, *139*, 121904(1-9).
12. **Wang, Ying**; Lomakin, Aleksey; Hideshima, Teru; Laubach, Jacob P.; Ogun, Olutayo; Richardson, Paul G.; Munshi, Nikhil C.; Anderson, Kenneth C.; Benedek, George B. “Pathological crystallization of human immunoglobulins”, *Proc. Natl. Acad. Sci. USA*, **2012**, *109*, 13359–13361.

13. **Wang, Ying**; Lomakin, Aleksey; Latypov, Ramil F.; Benedek, George B. “Phase separation in solutions of monoclonal antibodies and the effect of human serum albumin”, *Proc. Natl. Acad. Sci. USA*, **2011**, *108*: 16606-16611.
14. **Wang, Ying**; Lomakin, Aleksey; McManus, Jenifer J.; Ogun, Olutayo; Benedek, George B. “Phase behavior of mixtures of human lens proteins gamma D and beta B1”, *Proc. Natl. Acad. Sci. USA*, **2010**, *107*, 13282-13287.
15. Annunziata, Onofrio; Payne, Andrew; **Wang, Ying**. “Solubility of lysozyme in the presence of aqueous chloride salts: common-ion effect and its role on solubility and crystal thermodynamics”, *J. Am. Chem. Soc.*, **2008**, *130*, 13347-13352.
16. **Wang, Ying**; Annunziata, Onofrio. “Liquid-liquid phase transition of protein aqueous solutions isothermally induced by protein crosslinking”, *Langmuir*, **2008**, *24*, 2799-2807.
17. **Wang, Ying**; Annunziata, Onofrio. “Comparison between protein-PEG interactions and the effect of PEG on protein-protein interactions using the liquid-liquid phase transition”, *J. Phys. Chem. B*. **2007**, *111*, 1222-1230.

RESEARCH GRANTS

- NC Biotech Flash Grant, 2020, \$20,000
- UNCW COI Translational Research Awards, 2020, \$15,000
- UNCW Spring Undergraduate Research and Creativity Awards 2020, \$5,000
- NIIMBL workforce development, 2019, \$10,000
- UNCW Spring Undergraduate Research and Creativity Awards 2019, \$5,000
- A Study on Thermodynamics and Kinetics of Phase Transitions in mAbX Solutions, MedImmune LLC, 2016 – 2017, \$140,000
- NIIMBL workforce development, 2018 \$10,000
- UNCW CAS Research Initiative Awards, 2018, \$3,500
- CMS Pilot Projects, 2018, \$15,000
- UNCW SURCA’s Sustainability 2.0 award, 2018, \$2,500
- UNCW Spring Undergraduate Research and Creativity Awards 2018, \$5,000
- Charles L. Cahill grant for faculty scholarship, 2017, \$5,000
- UNCW Summer Undergraduate Research and Creativity Awards 2017, \$5,000
- UNCW ETEAL’s Sustainability 2.0 award, 2017, \$2,500
- UNCW Summer Undergraduate Research and Creativity Awards 2016, \$5,000