

Ning Wu

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Education

Ph. D. in chemical engineering, Princeton University Sep. 2008
M. Eng. in chemical engineering, National University of Singapore Dec. 2001
B. Eng. in chemical engineering (1st Class Honors), National University of Singapore Dec. 1999

Research Experience

Postdoctoral Associate, Harvard University Sep. 2008 – present
with Prof. Joanna Aizenberg

- Pattern formation in evaporation induced assembly of colloids, polymers, and biomimetic polymer bristles
- Guided assembly of colloids on patterned substrates

Research Assistant, Princeton University Jan. 2004 – Aug. 2008
with Prof. William B. Russel

- Integrated self-assembly with photolithography to fabricate a variety of ordered and intriguing thin film polymeric patterns without using a replicating mask.
- Performed theoretical modeling and numerical simulations to describe the nonlinear dynamics of thin polymer film pattern formation induced by an electric field.

Research Officer, Institute of Materials Research and Engineering, Jan. 2002 - Sep. 2003
Institute of Bioengineering and Nanotechnology (Singapore)

- Constructed comprehensive mathematical models on controlled drug release via an erodible polymeric matrix, which agreed with experimental results very well.
- Designed and performed in-vitro experiments on the release of caffeine from polyethylene oxide tablets. (in collaboration with the Defense Science and Technology Agency of Singapore)

Research Assistant, National University of Singapore Jan. 2001 - Dec. 2002

- Developed multidensity integral equation theory to study the structural and thermodynamic properties of a series of primitive models of surfactant-like chains and diblock co-polymers.

Selected Awards and Honours

2008 Student Travel Grant, awarded by the Society of Rheology.
2007-2008 Porter Ogden Jacobus Honorific Fellowship. “The highest honorific fellowship to a graduate student who has displayed the highest scholarly excellence”, awarded by Princeton University.
2007 Chair’s fund and selected (4 out of 50) for a short oral presentation as a graduate student, awarded by “Physics & Chemistry of Microfluidics” Gordon Research Conference.
2007 Best Poster Award, Princeton Research Symposium (1 out of 19 contestants).
2006 Kristine M. Layn Award for “outstanding achievement in research by the third year of enrollment”, awarded by the Department of Chemical Engineering, Princeton University.

2006	<u>Dean's travel fund</u> , awarded by Graduate School, Princeton University.
2006	<u>Schowalter Travel Fund</u> , awarded by the Department of Chemical Engineering, Princeton University.
1996-1999	<u>Undergraduate Excellence Fellowship</u> , awarded by the Ministry of Education of Singapore.

List of Publications

- **Ning Wu**, Michail E. Kavousanakis, and William B. Russel, "Coarsening in the Electrohydrodynamic Patterning of Thin Polymer Films", Phys. Rev. E. (2009), under review
- **Ning Wu** and Yee C. Chiew, "Multidensity integral equation theory for short diblock hard sphere-sticky hard sphere chains", J. Chem. Phys. (2009), under review
- **Ning Wu** and William. B. Russel, Nano Today 4, 180-192 (2009). **invited review**
- William. B. Russel, **Ning Wu**, and Weining Man, "A generalized Hertzian model for the deformation and cracking of colloidal packings saturated with liquid", Langmuir 24, 1721-1730 (2008)
- **Ning Wu**, Leonard. F. Pease, and William. B. Russel, "Toward large-scale alignment of electrohydrodynamic patterning of Thin Polymer Films", Adv. Funct. Mater. 16, 1992-1999 (2006), **featured on the cover of the issue.**
- **Ning Wu**, William. B. Russel, "Electrohydrodynamic instability of dielectric bilayers: kinetics and thermodynamics", Ind. Eng. Chem. Res. 45, 5455-5465 (2006)
- **Ning Wu**, Leonard. F. Pease, and W. B. Russel, "Electric-field induced thin polymer film patterns: weakly nonlinear and fully nonlinear evolution", Langmuir 21, 12290-12302 (2005)
- **Ning Wu**, William. B. Russel, "Dynamics of the formation of polymeric microstructures induced by electrohydrodynamic instability", Appl. Phys. Lett. 86, Art. 241912 (2005)
- **Ning Wu**, LS Wang, DCW Tan, and Yiyan Yang, "Mathematical modeling and in vitro study of controlled drug release via a highly swellable and dissoluble polymer matrix: polyethylene oxide with high molecular weights", J. Control. Release. 102, 569-581 (2005)
- **Ning Wu**, S. S. Feng and Yee. C. Chiew, "Integral equation theories for monodisperse and polydisperse sticky hard sphere chain fluid: thermodynamic and structural properties in the polymer Percus-Yevick and ideal chain approximations", J. Chem. Phys. 118, 10794-10807 (2003)
- **Ning Wu**, S. S. Feng and Yee. C. Chiew, "Thermodynamic and structural properties of a sticky hard-sphere heteronuclear dimer fluid", J. Chem. Phys. 117, 4462-4472 (2002)
- **Ning Wu** and Yee. C. Chiew, "Multidensity integral equation theory for a sticky hard sphere-hard sphere heteronuclear dimer fluid: Thermodynamic and structural properties", J. Chem. Phys. 115, 6641-6652 (2001)

Teaching Experience

- Introduction to Matlab, one-hour lecture to Princeton University community, 2005-2007.
- Teaching assistant, "Mathematics in Engineering I", Princeton University, 2006.
- Teaching assistant, "Chemical Engineering Core Lab", Princeton University, 2005.
- Teaching assistant, "Chemical Engineering Thermodynamics", National University of Singapore, 2001-2002.
- Teaching assistant, "Unit Operations", National University of Singapore, 2001.

References available upon request