

EHSSAN NAZOCKDAST

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Education

Ph.D., Chemical Engineering

City College of New York, City University of New York (September 2007- December 2012)

Thesis title: "Smoluchowski theory for concentrated colloidal dispersions far from equilibrium"

Advisor: Jeffrey F. Morris

M.Sc., Polymer Engineering (summa cum laude)

Amirkabir University of Technology (September 2004-May 2007)

Tehran, Iran

Thesis title: "Linear and nonlinear rheology of polymer/clay nanocomposites"

Advisor: Hossein Nazockdast

B.Sc., Polymer Engineering (summa cum laude)

Amirkabir University of Technology (September 1999-May 2004)

Tehran, Iran

Research and Professional Experiences

Assistant Professor of Applied Physical Sciences at UNC Chapel Hill

Starting July 2017

Flatiron Research Fellow

June 2016-Present

Simons Foundation, Center for Computational Biology.

New York, NY

- An Integrated simulational and experimental study of the mitotic spindle positioning and chromosome segregation in cell division.
- Further development of our computational platform for simulating cellular structures towards an open-source toolbox with GUI for general users in Biology, Physics and Engineering.

Postdoctoral Research Associate

June 2013-June 2016

New York University, Courant Institute, Applied Math Lab.

New York, NY

Advisor: Michael J. Shelley

- Developing a high-performance platform for dynamic simulation of fibrous suspensions in Stokesian fluids with application to cellular mechanics.
- Studying the dynamics of mitotic spindle positioning in cell division using theory and simulation.
- An integrated theoretical and experimental study of the mechanics of mitotic spindle utilizing a three-dimensional reconstructions of spindle structure by electron tomography.

Doctoral Research Assistant

September 2007-May 2013

City College of New York, Levich Institute

New York, NY

Advisor: Jeffrey F. Morris

- First-principles theories for structure and rheology of colloidal dispersion far from equilibrium.

- Active microrheology of colloidal suspensions: dynamic simulation and microscopic theories.
- Utilizing discrete-particle simulations to study the structure and dynamics of Brownian suspensions.

Graduate Research Assistant

September 2004 – May 2007

Amirkabir University, Dept. of Polymer Eng.

Tehran, Iran

Advisor: Hossein Nazockdast

- Rheological characterization of polymer/clay nanocomposites.
- Constitutive modeling of the rheology of polymer/clay nanocomposites.

Awards & Honors

- Recipient of Andreas Acrivos Fellowship awarded to the most distinguished first year PhD student in the department.
- Winner of the poster competition (Fluid Mechanics) in AIChE 2012 annual meeting.
- Winner of the poster competition (Fluid Mechanics) in AIChE 2010 annual meeting.
- Recipient of NSF CCNY-Chicago PREM fellowship (September 2010-May 2012)
- Recipient of Society of Rheology travel grant (October 2011).

Publications

1. H.-Y. Wu, E. Nazockdast, M. J. Shelley, and D. Needleman, Forces positioning the mitotic spindle: Theories, and now experiments. *BioEssays*, 1600212. doi:[10.1002/bies.201600212](https://doi.org/10.1002/bies.201600212) (2016).
2. E. Nazockdast, A. Rahimian, D. Needleman, M. J. Shelley, A fast platform for simulating semi-flexible fiber suspensions applied to cell mechanics, *Journal of Computational Physics*, **329**, 173-209 (2017).
3. E. Nazockdast, A. Rahimian, D. Needleman, M. J. Shelley, Cytoplasmic flows as signatures for the mechanics of mitotic positioning, *in revision for publication in Molecular Biology of the Cell*, [arXiv:1511.02508 \[physics.bio-ph\]](https://arxiv.org/abs/1511.02508).
4. S. Redemann, J. Baumgart, N. Lindow, E. Nazockdast, S. Futhauer, A. Kratz, D. J. Needleman, M. Shelley, S. Prohaska, and T. Muller-Reichert, C. elegans chromosomes connect to centrosomes by anchoring into the spindle network, *in revision for publication in Nature Communications*, doi: <https://doi.org/10.1101/060855>.
5. E. Nazockdast, J. F. Morris, and Active microrheology of colloidal suspensions: simulation and microstructural theory, *J. Rheol.*, **60**, 733 (2016).
6. T. Hosseini-Sianaki, H. Nazockdast, B. Salehnia and E. Nazockdast, Microphase separation and hard domain assembly in thermoplastic polyurethane/multiwalled carbon nanotube. nanocomposites, *Polym. Eng. Sci.*, **55**, 2163-2173 (2015).
7. E. Nazockdast, J. F. Morris, Pair dynamics and microstructure in sheared colloidal dispersion: simulation and Smoluchowski theory, *Phys. Fluids*, **25**, 601 (2013).
8. E. Nazockdast, J. F. Morris, Microstructural theory and the rheology of concentrated colloidal suspensions, *J. Fluid Mech.*, **713**, 420-452 (2012).
9. E. Nazockdast, J. F. Morris, Effect of repulsive interactions on microstructure and rheology of concentrated colloidal dispersions, *Soft Matter*, **8**, 4223-4234 (2012).
10. E. Nazockdast, H. Nazockdast, Rheological modeling of polymer/layered silicate nanocomposites, *Appl. Rheol.*, **21**, 24434-24444 (2011).
11. E. Nazockdast, H. Nazockdast, F. Goharpey, Linear and nonlinear melt-state viscoelastic properties of polypropylene/organoclay nanocomposites, *Polym. Eng. Sci.*, **48**, 1230-1249 (2008).

12. H. Haddadi, E. Nazockdast, B. Ghalei, "Chemorheological characterization of thermosetting Polyurethane formulations containing different chain extender contents," *Polym Eng. Sci.*, **48**, 2446–2453 (2008).

Teaching Experience

Teaching Assistant, Plastic Engineering: Amirkabir University, Tehran (Fall 2005)

Teaching Assistant, Unit Operation Lab: Department of Chemical Eng. CCNY (Spring 2007)

Selected Talks

American Physical Society, Division of Fluid Dynamics annual meeting, November 2016.

SIAM Conference on Nonlinear Waves and Coherent Structures, August 2016.

SIAM Annual Meeting, July 2016.

SIAM conference on Mathematical Aspects of Material Science, May 2016.

University of Reno at Nevada, Chemical Engineering Seminars, April 2016.

UNC Chapel Hill, Applied Mathematics Seminars, March 2016.

UW Madison, Chemical Engineering Seminars, March 2016.

American Physical Society, Division of Fluid Dynamics annual meeting, November 2015.

Society of Engineering Sciences, October 2015.

Applied Math Lab, Courant Institute, Feb 2015.

American Society of Cellular Biology, Dec 2014.

American Physical Society, Division of Fluid Dynamics annual meeting, November 2014.

American Physical Society, Division of Fluid Dynamics annual meeting, November 2013.

American Physical Society, Division of Fluid Dynamics annual meeting, November 2011.

AICHE annual meeting, October 2011.

Society of Rheology annual meeting, October 2011.

Gordon Research conference on soft matter, August 2011 (poster)

CCNY-Chicago PREM seminar series March 2011.

AICHE annual meeting, October 2010.

Society of Rheology annual meeting, October 2010.

Society of Rheology annual meeting, October 2009.

Professional Affiliations

American Physical Society (APS)

American Institute of Chemical Engineers (AIChE)

Society of Rheology (SOR)

Society of Industrial and Applied Mathematics (SIAM)

Biophysical Society

American Society of Cellular Biology (ASCB)

The society of Engineering Science (SES)