

Mithun Kumar Mitra

Email : mithun@polysci.umass.edu
Phone : +1-(413)-577-2242 (Office)
 +1-(413)-695-6615 (Home)
Fax : +1-(413)-545-0082
web : <http://www.people.umass.edu/mithun>

Polymer Science and Engineering
University of Massachusetts
120 Governors Drive
Amherst, MA 01002

Education and Professional Experience

University of Massachusetts, Amherst, MA

Postdoctoral Fellow

2008-Present

Research Advisor : Murugappan Muthukumar

- Developed a theory of nucleation rate when two first order phase transitions, a spinodal decomposition and nucleation are coupled together.
- Developed a theory for the late stage kinetics of a first order phase transition in the presence of a free energy barrier.
- Developed a hierarchical modeling scheme to study the self-assembly of proteins.
- Studied the effects of self-regularization of charge on the equilibrium properties of polyelectrolyte systems.

Institute of Mathematical Sciences, Chennai, India

Ph.D. in Physics

2004-2008

Research Advisor : Gautam I. Menon

Rajesh Ravindran

Thesis : Statistical Mechanics of Pressurized Two-dimensional polymer rings

- Demonstrated the existence of a novel phase transition in two-dimensional self-avoiding polymer rings.
- Studied the effects of semiflexibility on the collapsed to inflated transition in polymer rings.
- Developed analytic formulas for the asymptotic behavior of the area and perimeter of inflated lattice polygons.

Institute of Mathematical Sciences, Chennai, India

M.Sc. in Physics (Concentration : Theoretical Physics)

2002-2004

Research Advisor : Gautam I. Menon

Thesis : A Microscopic Model for Microtubules

Jadavpur University, Kolkata, India

B.Sc. in Physics

1999-2002

Graduated with First Class Honours with 82% (3rd in class)

Publications

- Jing Hua, Mithun K. Mitra, M. Muthukumar
Theory of gel volume transitions with self-regularization of charge
(To be submitted to *J. Chem. Phys.*)
- Mithun K. Mitra, Gautam I. Menon, R. Rajesh
Thermodynamic Behaviour of Two-dimensional Vesicles Revisited
(To be submitted to *Europhys. Lett.*)
- Christine Horejs, Mithun K. Mitra, Dietmar Pum, Uwe B. Sleytr, M. Muthukumar
Monte Carlo study of the molecular mechanisms of S-Layer protein self-assembly
(Submitted to *J. Chem. Phys.*)
- Mithun K. Mitra, M. Muthukumar
Long-time growth kinetics of a first order phase transition in the presence of a boundary layer
(Submitted to *J. Chem. Phys.*)
- Mithun K. Mitra, Gautam I. Menon, R. Rajesh
Asymptotic behaviour of convex and column-convex lattice polygons with fixed area and varying perimeter
J. Stat. Mech. **2010**, P07029 (2010) [arXiv:1003.2908]
- Mithun K. Mitra, M. Muthukumar
Theory of spinodal decomposition assisted crystallization in binary mixtures
J. Chem. Phys. **132**, 184908 (2010)
- Mithun K. Mitra, Gautam I. Menon, R. Rajesh
Asymptotic Behavior of Inflated Lattice Polygons
J. Stat. Phys. **131**, 393 (2008) [arXiv:0710.1509]
- Mithun K. Mitra, Gautam I. Menon, R. Rajesh
Phase Transitions in Pressurised Semiflexible Polymer Rings
Physical Review E **77**, 041802 (2008) [arXiv:0708.3318]

Awards and Honors

- Senior Research Fellowship, Dept. of Atomic Energy, Govt. of India 2004-2008
- Junior Research Fellowship, Dept. of Atomic Energy, Govt. of India 2002-2004
- Ranked 6th in All India Joint Entrance Screening Test 2002
- National Scholarship, Govt. of India 2002

Teaching Experience

Teaching Assistant: Advanced Condensed Matter Physics	Jan-Apr, 2005
Instructor : Prof. Gautam I. Menon	
Teaching Assistant: Classical Mechanics	Aug-Dec, 2004
Instructor : Prof. M.V.N. Murthy	

Schools/Conferences/Workshops Attended

- **NSF MRSEC Meeting**, Umass, Amherst, October 2010
- **APS March Meeting**, Portland, Oregon, March 2010
- **33rd Mahabaleshwar Seminar on Modern Biology: Motors, Tracks and Traffic**, TIFR, Mumbai, January, 2008
- **The Interface of Life** : An International school on Biomembrane Physics, IIT Chennai, January 2008
- **School on Understanding Molecular Simulations**, Center for Computational Materials Science (CCMS), JNCASR, Bangalore, January 2007
- **Statphys – Kolkata Conference**, SINP, Kolkata, January 2007
- **Workshop on Modeling Infectious Diseases**, IMSc, Chennai, September 2006
- **Summer School on Topics in Biomaterials**, International Center for Materials Research (ICMR), University of California, Santa Barbara, August 2005
- **International Workshop on Quantum Annealing and Other Optimization Methods**, SINP, Kolkata, March 2005
- **School on Parallel Computing and Applications**, IMSc, Chennai, January 2005
- **Workshop on Hydrodynamics**, National Board of Higher Mathematics, IISc, Bangalore, December 2004
- **Statphys 22 : IUPAP International Conference on Statistical Physics**, IISc, Bangalore, July 2004
- **Summer School in Physics**, IACS, Kolkata, May 2000

Contributed Presentations

- Presented a poster on “*Thermodynamic stability and elastodynamics of polyelectrolyte gels*”, NSF-MRSEC-UMass, October 2010
- Presented a talk on “*Anomalous behavior in crystallization kinetics*”, IACS, Kolkata, August 2010
- Presented a talk on “*Theory of spinodal decomposition assisted polymer crystallization in a binary polyolefin mixture*”, APS March Meeting, March, 2010
- Presented a talk on “*Spinodal decomposition assisted polymer crystallization in a binary mixture*”, IIT Chennai, February 2010

Curriculum Vitae of Mithun K. Mitra

- Presented a talk on “*Spinodal decomposition assisted polymer crystallization in a binary mixture*”, SNBNCBS Kolkata, February 2010
- Presented a talk on “*Spinodal decomposition assisted polymer crystallization in a binary mixture*”, SINP Kolkata, February 2010
- Presented a talk on “*Spinodal decomposition assisted polymer crystallization in a binary mixture*”, IISER Pune, February 2010
- Presented a talk on “*Semiflexible pressurized polymer rings*”, 33rd Mahabaleshwar Seminar on Modern Biology, January 2008
- Presented a poster on “*Two-dimensional pressurized polymer rings*”, School on Understanding Molecular Simulations, JNCASR, January 2007
- Presented a poster on “*Two-dimensional pressurized polymer rings*”, Statphys – Kolkata Conference, January 2007

Professional Memberships

- American Physical Society (APS)
 - Division of Biological Physics (DBP)
 - Division of Polymer Physics (DPOLY)

References

Dr. Murugappan Muthukumar

Wilmer D. Barrett Professor,
Polymer Science and Engineering,
University of Massachusetts
Amherst, MA - 01002, USA.
Ph. : +1-413-577-1212
Fax : +1-413-545-0082
Email : muthu@polysci.umass.edu

Dr. Gautam I. Menon

Professor,
The Institute of Mathematical Sciences,
C.I.T. Campus, Tharamani
Chennai - 600113, India.
Ph. : +91-44-22543266
Fax : +91-44-22541586
Email : menon@imsc.res.in

Dr. Rajesh Ravindran

Reader,
The Institute of Mathematical Sciences,
C.I.T. Campus, Tharamani
Chennai - 600113, India.
Ph. : +91-44-22543255
Fax : +91-44-22541586
Email : rrajesh@imsc.res.in

Dr. Buddhapriya Chakrabarti

Lecturer,
Department of Mathematical Sciences,
Durham University
Durham DH1 3HP, UK.
Ph. : +44-191-3342000
Email : buddhapriya.chakrabarti@durham.ac.uk

Dr. Sitabhra Sinha

Professor,
The Institute of Mathematical Sciences,
C.I.T. Campus, Tharamani
Chennai - 600113, India.
Ph. : +91-44-22543301
Fax : +91-44-22541586
Email : sitabhra@imsc.res.in