Biographical Sketch: Ashutosh Agrawal

Department of Mechanical Engineering
University of Houston
4800 Calhoun Rd, Houston, TX 77204–4006 Email: aagrawa4@central.uh.edu

---

EDUCATION

Bachelor of Technology, Civil Engineering August 2001
Indian Institute of Technology Bombay

Master of Science, Civil and Environmental Engineering August 2003
Rice University

Doctor of Philosophy, Civil and Environmental Engineering May 2009
University of California, Berkeley

PROFESSIONAL EXPERIENCE

Assistant Professor August 2011 – present
Department of Mechanical Engineering
University of Houston, Houston, TX

Research Associate June 2010 - May 2011
Department of Applied Physics
Caltech, Pasadena, CA

Research Assistant Professor March 2009 - May 2010
Department of Mechanical Engineering
University of Houston, Houston, TX

Summer Intern June 2008 - August 2008
Merck Research Laboratories (MRL), North Wales, PA

PUBLICATIONS AND BOOK CHAPTER

1. Ursell, T., Agrawal, A., and Phillips, R., Membrane tension in a pipette with glass-bilayer adhesion, *Biophysical Journal*, Accepted (2011) .

2. Agrawal, A., Mechanics of membrane-membrane adhesion, *Mathematics and Mechanics of Solids*, doi: 10.1177/1081286511401364 (2011).

3. Agrawal, A., Steigmann, D. J., A model for surface diffusion of trans-membrane proteins on lipid bilayers, *Zeitschrift für Angewandte Mathematick und Physik*, 62, 549-563 (2011).

4. Agrawal, A., Steigmann, D. J., Mechanics of cellular membranes, Chapter in *Computational Modeling in Biomechanics*, Eds. De, S., Guilak, F., Mofrad, M.R.K., Springer (2010).

5. Agrawal, A., Steigmann, D. J., Modeling protein-mediated morphology in biomembranes, *Biomechanics and Modeling in Mechanobiology*, 8, 371-379 (2009).

6. Agrawal, A., Steigmann, D. J., Boundary-value problems in the theory of fluid films with curvature elasticity, *Continuum Mechanics and Thermodynamics*, 21, 57-82 (2009).

7. Agrawal, A., Steigmann, D. J., Coexistent fluid-phase equilibria in biomembranes with bending elasticity, *Journal of Elasticity*, 93, 63-80 (2008).

8. Li, S., Liu X., Agrawal, A., and To, A. C., Perfectly matched multiscale simulations for discrete systems: Extension to multiple dimensions, *Physical Review B*, 74, 045418 (2006).

SYNERGISTIC ACTIVITIES

1. Developing a new multidisciplinary graduate course on "*Mechanics of Rods and Surfaces*" (Fall 2011).

2. Reviewer for Journal of Applied Mechanics.

GRADUATE STUDENTS

- Nikhil Walani

PRESENTATIONS

- *Cellular interfaces - Bending the rules*, Department of Mechanical and Aerospace Engineering, UCLA, Los Angeles (April 2011), **Invited talk**.

- *Adhesion of cellular membranes to rigid and flexible surfaces*, ASME International Mechanical Engineering Congress & Exposition, Vancouver, Canada (November 2010).

- *Interaction of cellular membranes with rigid and flexible surfaces*, 16th US National Congress of Theoretical and Applied Mechanics, University Park, PA (June 2010).

- *Protein mediated morphology and adhesion in cellular membranes*, ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology, Houston, TX (February 2010), **Invited talk**.

- *Mechanics of cellular membranes*, 10th US National Congress on Computational Mechanics, Columbus, OH (July 2009).

- *Mechanics of biomembranes*, Indian Institute of Technology Roorkee, India (February 2009), **Invited talk**.

- *Mechanics of biomembranes*, Indian Institute of Technology Kanpur, India (February 2009), **Invited talk**.

- *Modeling biomembranes as fluid surfaces*, University of Houston, TX (October 2008), **Invited talk**.

- *Modeling biomembranes with bending elasticity*, Meeting of the Society for Natural Philosophy, University of Pittsburgh, PA (September 2008).

- *Modeling biomembranes as fluid surfaces*, Carnegie Mellon University, Pittsburgh, PA (September 2008), **Invited talk**.
- *Mathematical modeling of cell membrane morphology during electroporation and transfection*, Merck Research Laboratories, North Wales, PA (August 2008).
- *Modeling biomembranes*, Merck Research Laboratories, North Wales, PA (June 2008).
- *Biomembranes - coexistent fluid-phases and protein-mediated morphology*, 7th AIMS International Conference on Dynamical Systems, Differential Equations and Applications, Arlington, TX (May 2008, jointly with Professor D. J. Steigmann).