Vidya Venkataramani

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SUMMARY

Enthusiastic and motivated researcher seeks challenging, multi-disciplinary and result-oriented position in research and development and/or process engineering. Expertise in developing computational tools for solving Newtonian, complex fluid and interfacial flows. Strengths include thorough, structured research and problem-solving skills with an emphasis on quantitative analysis. Self-starter, enjoys teamwork and possesses proven leadership, interpersonal and presentation skills.

EDUCATION

Doctor of Science (D.Sc./Ph.D.), Chemical Engineering — **GPA: 3.86/4.0** — **Aug, 2007**
Washington University in Saint Louis — St. Louis, MO

Master of Science (M.S.), Chemical Engineering — **GPA: 3.86/4.0** — **Dec, 2005**
Washington University in Saint Louis — St. Louis, MO

Bachelor of Technology (B.Tech.), Chemical Engineering — **GPA: 7.91/10.0** — **Jul, 2001**
Indian Institute of Technology, Madras — Chennai, India

Relevant coursework – Transport Phenomena, Mathematical Methods in Chemical Engineering, Transport Effects in Chemical Reactors, Molecular Thermodynamics and Kinetics

RESEARCH EXPERIENCE

Postdoctoral Fellow, Johns Hopkins University, Baltimore — **Sep 2007 – present**

- Studied the dynamics of drop breakup in surfactant laden fluids by investigating the role of kinetic and diffusive transport processes at the interface
- Used finite difference methods to numerically study the flow along with Lagrangian front-tracking for the interface and ghost cell immersed boundary method for calculating interfacial quantities

Graduate Research Assistant, Washington University in Saint Louis — **Sep 2001 – Aug 2007**

Thesis Dissertation Title – Configuration-based Coarse-grained Models for Macromolecular Dynamics

- Developed a model based on a new approach for predicting macroscopic properties of polymer solutions via stochastic simulations. Drastically reduced the time and computational requirement by two orders of magnitude
- Identified the coarse-graining limit for predictions of bead-spring models to approach those of bead-rod models. Achieved over seven-fold reduction in computational time while obtaining accurate predictions for macroscopic stresses

Academic projects

- Reasoned the formation of shear-induced structures in micellar solutions by investigating the tumbling dynamics of dilute wormlike solutions via Brownian Dynamics simulation
- Formulated guidelines for selecting stable operating regimes in industrial processes by identifying critical parameters that govern the interfacial stability of superposed non-Newtonian fluids in a channel via linear stability analysis using spectral collocation methods
- Studied the effect of wall slip on the flow of a non-Newtonian fluid in a microchannel via simulation using FEMLAB
- Extensively presented research findings to university audience and research field experts at conferences

Undergraduate Research Assistant, Indian Institute of Technology, Chennai — **Jan 2001 – May 2001**

- Studied the shape and velocity of Taylor bubbles in tubes via simulation using CFX

LEADERSHIP AND TEAMWORK EXPERIENCE

- **Instructor**, Washington University in Saint Louis (Sep 2006 – Dec 2006) – Prepared and conducted lectures, assignments and exams for a class of 40 undergraduate students for Transport Phenomena (Junior level) course
- **Mentor**, Washington University in Saint Louis (May 2006 – Aug 2006) – Mentored an undergraduate student to formulate problem statement, develop solution methodologies and apply tools to study complex fluid flow phenomena
- **Teaching Assistant**, Washington University in Saint Louis (Sep 2001 – May 2006) – Graded assignments, organized help sessions, delivered lectures and proctored examinations for 7 undergraduate courses
- **General Secretary**, *Umang*, Washington University in Saint Louis (Nov 2003 – Apr 2005) – Elected to lead a 100-member organization that promotes Indian cultural awareness. Worked with a team of 6 leaders to enable collaborative participation with other on-campus organizations that led to an increase in the attendance for the annual cultural show by 50%
- **National Social Service (NSS) coordinator**, IIT Madras (Sep 1998 – Sep 2000) – Collaborated with three coordinators and managed 25 volunteers to organize evening education classes for underprivileged children

PUBLICATIONS

- **V. Venkataramani**, R. Sureshkumar and B. Khomami, *Reduced-order modeling of macromolecular solutions using a configuration-based approach, Journal of Rheology*, In Review (2008)
- **V. Venkataramani**, R. Sureshkumar and B. Khomami, *A computationally efficient approach for Hi-fidelity Fine Graining from Bead-spring models to Bead-Rod models*, Journal of Non-Newtonian Fluid Mechanics, 149(2008) 20-27.

PRESENTATIONS

- *A configuration-based reduced-order model for dilute macromolecular* solutions, Invited Speaker, Complex Fluids Research Seminar, University of Michigan, 2008, Ann Arbor, MI
- A *Computationally Efficient Reduced-Order Model for Macromolecular Solutions*, Annual American Institute for Chemical Engineers (AIChE) Conference 2007, Salt Lake City, UT
- *Reduced Order Modeling of Macromolecular Solutions using a Configuration Based Approach*, Graduate Seminar, Washington University, 2005, Saint Louis, MO
- *A Configuration-based coarse-graining approach for Macromolecular Solutions*, 3rd prize, Graduate Research Symposium, Washington University, 2005, Saint Louis, MO
- *Reduced Order Modeling of viscoelastic flows – a Configuration-based Model*, Annual Society of Rheology Conference 2005, Lubbock, TX
- *Accurate Numerical Simulation with Essential Reduced-Order Microstructure Models*, Finalist at Poster competition, Annual Society of Rheology Conference, 2003, Pittsburg, PA

SKILLS

Programming Languages	Fortran, C, Parallel programming, C++
Utility Software	MS Excel, MS Powerpoint, MS Word, Latex
Scientific Software	MATLAB, Mathematica, FEMLAB, CFX, FLUENT, GAMBIT, Rasmol, Autodock
Operating Systems	Linux, Windows 9x/NT/XP
Languages	English (Fluent), Hindi (Fluent), Tamil (Conversational), Arabic (Read and write)

HONORS AND AWARDS

- **James M. McKelvey Fellowship**, Washington University, 2005
- **Outstanding Teaching Assistant Award**, Washington University, 2005
- **3rd Prize**, Annual Graduate Research Symposium, Washington University, 2005
- **Finalist**, Annual Society of Rheology conference poster competition, 2003
- **Graduate Fellowship**, Washington University (2001-2002)

ACTIVITIES AND INTERESTS

- Member, Society of Rheology and Society of Women Engineers
- Learnt Indian Classical music (vocal and violin) and dance for over 10 years and have given over 20 invited performances
- Enjoy swimming and playing squash