

Rohini Gupta, Ph.D.

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CURRENT POSITION	Process TD Engineer at Intel Corporation, USA	November 2, 2015–present
PROFESSIONAL EXPERIENCE	Sr. Engineer, Formulation Science at Dow Chemical Company, USA April 2015–October 2015 Leveraged expertise in colloidal and interfacial phenomena to model and develop specialty formulations for new business opportunities in collaboration with Oil & Gas and Packaging & Performance Plastics	
EDUCATION/ACADEMIC EXPERIENCE	University of Pennsylvania, USA Postdoctoral Fellowship Chemical and Biomolecular Engineering April 2013–March 2015 Advisers: Profs. Kathleen J. Stebe and Daeyeon Lee <ul style="list-style-type: none"> • Developed a mathematical model to validate the experimentally observed curvature-driven motion of droplets down the stalk of conical structure (inspired by cacti) in small Bond number regime • Pioneered the design of an apparatus to probe microscale wetting of cryogenic fluids condensing over the surface with controlled temperature from a steady flux of gas at controlled pressure; LabVIEW interface for time-lapsed image acquisition and MATLAB code for image processing and analysis Johns Hopkins University, USA Ph.D. Chemical and Biomolecular Engineering (GPA: 3.97/4) August 2007–May 2013 Adviser: Prof. Joelle Frechette <ul style="list-style-type: none"> • Initiated the ‘tree frog adhesion’ project and made significant contribution to the proposal for which Prof. Frechette was awarded the 2011 Office of Naval Research Young Investigator Grant (\$500K) • Analyzed the hydrodynamic interactions experienced by structured surfaces within a scaling analysis to establish a separation of length scales for the transition from the fluid being radially squeezed out of the nominal contact area to being squeezed out through the network of interconnected channels • Devised the electromechanics-based model for the relationship between contact angle hysteresis, electrowetting hysteresis and threshold potential for actuation in macroscale electrowetting-on-dielectric • Settled the debate about the underlying mechanism that drives electrowetting-on-dielectric: electromechanics versus electrocapillarity by performing the first ever “nanoscale electrowetting-on-dielectric” measurement using a nanoscale capillary condensate inside surface force apparatus (SFA) Malaviya National Institute of Technology Jaipur, INDIA B.Tech. Chemical Engineering (GPA: 9.23/10 Gold Medalist) August 2003–May 2007	
AWARDS AND HONORS	Spotlight Award Dow Chemical Company, USA 2015 for identifying the mechanism that governs the performance of surfactants in plastic pelletization The Penn Center for Innovation Fellowship University of Pennsylvania, USA 2014–15 for participation in an experiential education program in intellectual property (technology transfer) Langmuir Student Paper Award ACS Colloid and Surface Science Symposium 2012 for the proceeding titled “Role of draining channels in hydrodynamic interactions” Alan Gent Distinguished Student Paper Award Adhesion Society Annual Meeting 2011 for the presentation titled “Influence of contact angle hysteresis on electrowetting performance” Peebles Award for Graduate Student Research Adhesion Society Annual Meeting 2011 for the proceeding titled “Influence of contact angle hysteresis on electrowetting performance” Young Engineering Fellowship Indian Institute of Science, INDIA 2006 for “Single-phase synthesis of thiol-derivatised gold nanoparticles using modified Brust method”	
SKILLS	Industrial Practices: Six Sigma Green Belt Certification (in progress), Design of Experiments (DoE), Statistical Data Analysis and Modeling, High-throughput Synthesis & Characterization of Formulations Surface Engineering/Modification/Patterning: thin film deposition (directed self-assembly of monolayers, physical/chemical vapor deposition, spin-/dip-coating, layer-by-layer deposition, electroplating), microfabrication (photo-/soft-lithography, microcontact printing), nanoparticle synthesis, μ fluidics ThinFilm/Interface/Colloid Characterization: Surface Force Apparatus, Atomic Force Microscopy, Scanning Electron Microscopy, Tensiometry, Ellipsometry, Scanning White Light Interferometry, Auger Electron Spectroscopy, Fourier Transform Infrared Spectroscopy, Ultraviolet Visible Spectroscopy, Cyclic Voltammetry, Electrochemical Impedance Spectroscopy, Confocal Microscopy, Dynamic Light Scattering, Coulter/Acoustic Spectroscopy/Zetasizer: size, rheology, zeta potential & electrophoretic mobility Mathematical Modeling Softwares: JMP, MATLAB, Mathematica, COMSOL, C++ (Beginner)	

PEER REVIEWER
FOR JOURNALS

Soft Matter (RSC), Chemical Engineering Journal (Elsevier), Materials Express (American Scientific), and Korean Journal of Chemical Engineering (Springer)

PEER-REVIEWED
PUBLICATIONS
[GOOGLE SCHOLAR](#)
CITATIONS: 89

12. **Mechanism that governs the performance of surfactants in plastic pelletization**
Gupta, R.; Kuo, T. C. *Manuscript in preparation* to be submitted to *J. Colloid Interf. Sci.*
 11. **Elasto-capillary interactions between solid particles at thin smectic membranes**
Gharbi, M. A.; Lee, D.; Beller, D. A.; Kamien, R. D.; Sharifi-Mood, N.; Yang, S.; Gupta, R.; Stebe, K. J. *Manuscript in preparation* to be submitted to *Soft Matter*
 10. **Cacti and fog collection: equilibrium shape and directed motion of drops on a cone**
Gupta, R.; Lee, D.; Stebe, K. J. *Manuscript in preparation* to be submitted to *Langmuir*
 9. **Non-equilibrium wetting of cryogenic fluid condensate around defect sites**
Gupta, R.; Lee, D.; Stebe, K. J. *Manuscript in preparation* to be submitted to *Langmuir*
 8. **In situ interferometry of condensing and evaporating cryogenic fluids**
Gupta, R.; Lee, D.; Stebe, K. J. *Manuscript in preparation* to be submitted to *J. Colloid Interf. Sci.*
 7. **Scaling Hydrodynamic Boundary Conditions for Microstructured Surfaces in the Thin Channel Limit**
Pilkington, G.; Gupta, R.; Frechette, J. *Langmuir* **2016**, *32*, 2360–2368 (citations: 2)
 6. **Polymer nanocomposite films with extremely high nanoparticle loadings via capillary rise infiltration (CaRI)**
Huang, Y. R.; Jiang, Y.; Hor, J. L.; Gupta, R.; Zhang, L.; Stebe, K. J.; Feng, G.; Turner, K. T.; Lee, D. *Nanoscale* **2015**, *7*, 798–805 (citations: 4)
 5. **Interferometry of surfaces with well-defined topography in the surface force apparatus**
Gupta, R.; Frechette, J. *J. Colloid Interf. Sci.* **2013**, *412*, 82–88 (citations: 6)
 4. **Measurement and scaling of hydrodynamic interactions in the presence of draining channels**
Gupta, R.; Frechette, J. *Langmuir* **2012**, *28*, 14703–14712 (citations: 15)
 3. **Modulating contact angle hysteresis to direct fluid droplets along a homogeneous surface**
Luo, M.; Gupta, R.; Frechette, J. *ACS Appl. Mater. Interfaces* **2012**, *4*, 890–896 (citations: 19)
 2. **Impact of pinning of the triple contact line on electrowetting performance**
Gupta, R.; Sheth, D. M.; Boone, T. K.; Sevilla, A. B.; Frechette, J. *Langmuir* **2011**, *27*, 14923–14929 (citations: 21)
 1. **Invariance of the solid–liquid interfacial energy in electrowetting probed via capillary condensation**
Gupta, R.; Olivier, G. K.; Frechette, J. *Langmuir* **2010**, *26*, 11946–11950 (citations: 22)
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- CONFERENCE PRESENTATIONS AND PROCEEDINGS
7. **Role of interfacial asphaltene-resin films in the stability of water-in-bitumen emulsions**
Gupta, R.; Kuo, T. C. 87th *Society of Rheology Annual Meeting* **2015** (poster)
 6. **Wetting of cryogenic liquids: van der Waals interactions and film thickness**
Gupta, R.; Lee, D.; Stebe, K. J. 88th *ACS Colloid and Surface Science Symposium* **2014**
 5. **Role of draining channels in hydrodynamic interactions**
Gupta, R.; Frechette, J. 86th *ACS Colloid and Surface Science Symposium* **2012**
 4. **Influence of draining channels on hydrodynamic interactions**
Gupta, R.; Frechette, J. 85th *ACS Colloid and Surface Science Symposium* **2011**
 3. **Role of hydrodynamic drainage in adhesion to wet surfaces**
Gupta, R.; Frechette, J. 34th *Adhesion Society Annual Meeting* **2011** (poster)
 2. **Influence of contact angle hysteresis on electrowetting performance**
Gupta, R.; Boone, T. K.; Sheth, D. M.; Sevilla, A. B.; Frechette, J. 34th *Adhesion Society Annual Meeting* **2011**
 1. **Capillary condensation and nanoscale electrowetting**
Gupta, R.; Frechette, J. 13th *IACIS International Conference on Surface and Colloid Science* **2009**