Lisa R. Murray

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Education

Purdue University — Fall 2012 – Present
PhD Candidate, Materials Engineering, Expected Graduation: August 2015
Research: Colloidal Suspension Rheology and Polymers for Processing Applications
Adviser: Dr. Kendra Erk

Iowa State University — Fall 2007 – Spring 2011
Bachelor of Science: Materials Engineering
Magna cum Laude, GPA: 3.72 / 4.0
Specialized in Electronics and Polymers
Minor: Latin

Awards

National Science Foundation Fellowship Recipient	2011 – Present
Marcus Aurelius Scholarship	2008, 2010
Iowa State College of Engineering Academic Scholarship	2007-2011
Iowa State Academic Competitiveness Excellence Scholarship	2007-2011
Girl Scout Gold Award	2006

Publications and Presentations

American Chemical Society National Meeting, San Francisco, August 2014, Oral Presentation: “Rheological study of Particle Jamming within model Cementitious Suspensions with Comb-Polymer Stabilizers”, Lisa Murray, Kendra Erk; Poster Presentation: “Rheology and Deposition Dynamics of Hairy Nanoparticle Suspensions for Processing of Polymer Nanocomposite Materials”, Kai Gao, Logan Kearney, Lisa Murray, Kendra Erk, John Howarter

L. Murray and K. Erk, “Jamming Rheology of Model Cementitious Suspensions Composed of Comb-Polymer Stabilized Magnesium Oxide Particles”, Journal of Applied Polymer Science, 2014, 40429, doi:10.1002/app.40429.

B. Elliott, K. Steckbeck, L. Murray, and K. Erk, "Rheological Investigation of the Shear Strength, Durability, and Recovery of Alginate Rafts Formed By Antacid Medication in Varying pH Environments," International Journal of Pharmaceutics, 457, 1, November 2013, p. 118-123.

American Chemical Society Conference, Indianapolis, Presented Poster: “Fluid Fracture in Comb-Polymer Stabilized Colloidal Suspensions under Shear”, Lisa Murray, Kendra Erk, September 2013

Research Experience: Academia

Rheology of Comb-polymer Stabilized MgO Colloidal Suspensions Fall 2012-Present

Graduate research project at Purdue University, created MgO suspensions with commercial comb-polymer additive, designed and conducted experiments to correlate structure-property relationships to flow behavior for cement applications, analyzed data in terms of macro and micro-scale particle-particle interactions and particle-polymer interactions, theorized particle microstructures and fluid fracture mechanisms, characterized polymer with FTIR, zeta potential, dynamic light scattering, supervised undergraduate student

Rheology of Lignin-based polymers as Cement Plasticizers Spring 2014-Present

Graduate Research Project at Purdue University, collaborated with Dr. Newell Washburn at Carnegie Mellon University, designed rheology experiments for lignopolymer in MgO suspensions, compared flow properties to industrial plasticizers, evaluated concentration effects on particle-polymer flow behavior, tested suspensions with couette and vane rheometry fixtures

Rheology of P&G Products Spring 2014-Present

Graduate research project at Purdue University, designed experiments to characterize liquid crystal surfactant paste and a detergent formulation for P&G Research and Development, guided processing analysis of surfactant paste, implemented pressure-driven flow experiments, collaborated with P&G scientists, analyzed shear-induced liquid crystalline phase transitions

Ultrasonic Speckle Velocimetry (USV) Rheology Summer 2014

Graduate Research Project at Purdue University and Ecole Normale Superieure (ENS) de Lyon, France, collaborated with Dr. Sebastian Manneville, received ultrasound rheology training at ENS de Lyon, designed and conducted USV rheology experiments for MgO suspensions, built USV Rheometer at Purdue University

Rheology of Polymer-grafted Silica Nanoparticles Fall 2013-Present

Graduate research project at Purdue University, performed dynamic light scattering measurements, applied polymer conformation theories to particle sizing, examined data for friction forces between polymer chains

Rheology of ABC Tri-block Polymer Micelles in Solution Fall 2013

Graduate research project at Purdue University, collaborated with Dr. Brian Boudouris (Chemical Engr., Purdue), conducted rheometry measurements on isoprene-polystryrene-vinyl pyridine triblock polymers, analyzed micelle rheology

Fabrication of Semiconducting Polymer Nanoparticles Fall 2011 – Spring 2012

Graduate research project at Johns Hopkins University, Created nanoparticles using flash nanoprecipitation mixing method, performed TEM, DLS, SLS, and fluoresce spectroscopy characterization techniques, gave presentations, composed report, took five classes in materials science, GPA: 3.43 / 4.0

Research Experience: Industry

Corporate Research Analytical Lab Intern, 3M, St. Paul, Minnesota Summer 2011

X-ray Tomography and TEM Tomography: streamlined TEM data for tomogram creation, trained scientists on tomogram creation, analyzed polymeric materials with the system, composed standard operating procedures, presented a poster, gave oral presentations

Corporate Research Analytical Lab Intern, 3M, St. Paul, Minnesota Summer 2010
X-ray Mico-CT Standards and Particle geometry Analysis**:** designed and tested density, structure, and resolution standards for x-ray tomography system, investigated star volume data output, created 3D models from micro-CT system, performed structure-property analyses, authored technical report, presented poster

Non-Destructive Evaluation Intern, ATK Space Systems, Promontory, Utah Summer 2009
Designed experiments for electron-emission surface oxide-detection system to eliminate testing error, evaluated data and formulated hypotheses, wrote test reports, presented poster

Activities and Honors Societies

Women in Engineering Graduate Mentor Program	
Graduate Women's Gathering Organizer	Fall 2013-Present
Book Club Leader	Fall 2013-Present
MSE Graduate Student Association: Safety Committee Member	Fall 2012-Present
Graduate Intervarsity: Reading Group Leader	Summer 2013
Graduate Christian Fellowship: Mentoring Program Organizer	Spring 2012
Study Abroad: Classical Studies in Greece	May 2011
Society of Women Engineers: Iowa State University	
President	2010
Vice President/President Elect	2009
Secretary	2008
Eta Sigma Phi Honors Society: Treasurer	2010
Member of the Dean's Budget Committee	Spring 2010
Tau Beta Pi Honors Society	2010
Phi Kappa Phi Honors Society	2011
Alpha Lambda Delta and Phi Eta Sigma Honors Societies	2008

Teaching Experience

Materials Properties Lab Class Teaching Assistant Fall 2013
School of Materials Engineering, Purdue University, Lead two lab sessions for three hours each per week, trained students on lab equipment, taught safety procedures, helped students with data collection and data analysis, held weekly office hours, graded lab reports