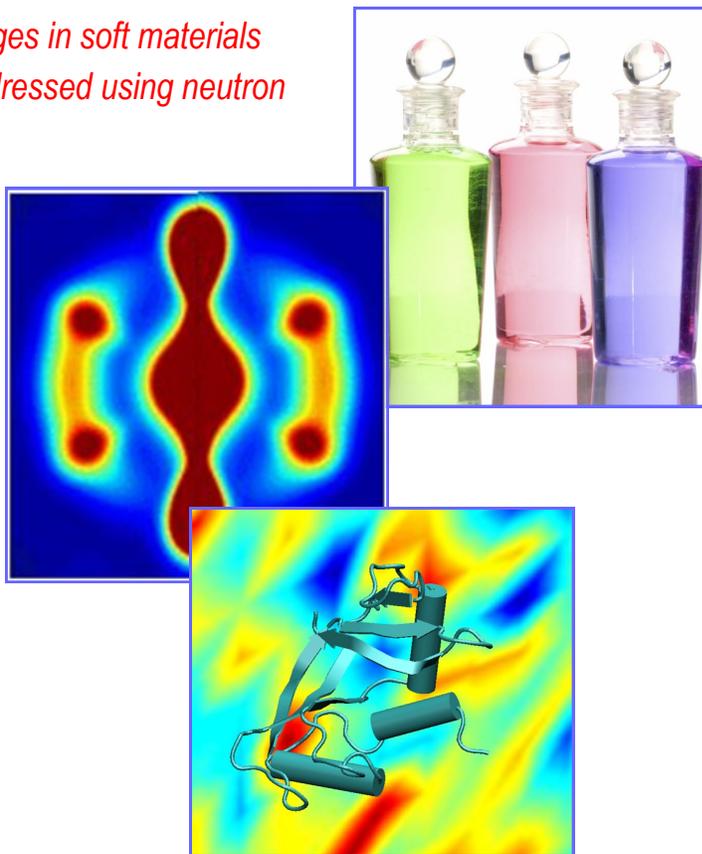


# 2011 NIST Workshop on Neutron Measurements to Advance the Manufacture of Soft Materials

*A workshop to identify challenges in soft materials  
manufacturing that can be addressed using neutron  
-based measurement science.*



June 2-3, 2011

Admin. Bldg. (101), Lecture Room B

Gaithersburg, MD, United States

**NIST**  
National Institute of  
Standards and Technology  
U.S. Department of Commerce

# Workshop Program

## Thursday, June 2 - Lecture Room B

### Welcome and Introductions

- 8:30 *Speaker Set-up -- Continental Breakfast Provided*
- 9:00 **Opening Remarks** — *Ronald Jones, Director, nSoft Consortium, Polymers Division, NIST*
- 9:10 **Welcome and Introduction to NIST** — *Richard Cavanagh, Deputy Director, Material Measurement Laboratory, NIST*
- 9:30 **NIST Office of Technology Partnerships** — *Paul Zielinski, Director, Technology Partnerships Office, NIST*

### Neutrons for Manufacturing

- 9:45 Understanding the Branched Structure of Polyethylene and Other Polymers using SANS — *Gregory Beaucage, Professor and Director of NanoPower Africa, Department of Chemical and Materials Engineering, University of Cincinnati*

————— *Coffee Break* —————

### Opportunities in Soft Materials I

- 10:30 Rheo-SANS Studies of Complex Fluids — *Norman Wagner, Professor and Chairperson, Department of Chemical Engineering, University of Delaware*
- 11:00 DuPont's Analytical Frontier: From Synchrotron X-rays to Cold Neutrons — *David Londono, Corporate Center for Analytical Sciences, DuPont*
- 11:30 Ultra-Small Angle Neutron Scattering of Binary Colloid Mixtures Under Flow for Architectural Coatings — *Alan Nakatani, The Dow Chemical Company*

————— *Lunch* —————

### Opportunities in Soft Materials II

- 1:00 Exploring New Opportunities for United Technologies with Neutrons — *Alex Norman, Physical Sciences, United Technologies Research Center*
- 1:30 Hierarchical Structure of Carbon Black in Elastomer Composites — *Richard Hall, Cabot Corporation*

————— *Coffee Break* —————

### Opportunities in Soft Materials III

- 2:30 Structure and Dynamics of Biological Systems — *Susan Krueger, Neutron Condensed Matter Science Group, NIST Center for Neutron Research, NIST*
- 3:00 Interfacial Rheology of Monoclonal Antibody Solutions: Using Neutrons to Understand Relevant Bio-Physics — *Jai Pathak, Formulations Group, MedImmune*
- 3:30 Protein Assembly, Surfaces, and Surfactants" - *Christopher Roberts, Associate Professor, Department of Chemical Engineering, University of Delaware*
- 4:00 **Summary and Discussion** — *Ronald Jones, Director, nSoft Consortium, Polymers Division, NIST*
- 4:30 **Tour of the NIST Center for Neutron Research** — *Dan Neumann, Leader, Neutron Condensed Matter Science Group*
- 7:00 **Dinner** (optional, not included in Registration) — Details provided at end of program

# Workshop Program

## Friday, June 3 - Lecture Room B

### **NIST Capabilities in Soft Materials and Neutrons I**

- 8:30 *Speaker Set-up -- Continental Breakfast Provided*
- 9:00 *Soft Materials at NIST — Eric Lin, Chief, Polymers Division, NIST*
- 9:30 *Overview of the NIST Center for Neutron Research — Dan Neumann, Leader, Neutron Condensed Matter Science Group, NIST Center for Neutron Research, NIST*

————— *Coffee Break* —————

### **NIST Capabilities in Soft Materials and Neutrons II**

- 10:30 *Membrane Dynamics Measured by Neutron Spin Echo — Michihiro Nagao, Instrument Scientist, Neutron Spin-Echo Spectrometer, NIST Center for Neutron Research*
- 11:00 *Seeing Water and Lithium with Neutrons — Daniel Hussey, Instrument Scientist, Neutron Imaging Facility, Ionizing Radiation Division, NIST*
- 11:30 *Capabilities in Sample Environment and Support Services at the NCNR — Juscelino Leao, Sample Environment Team, NIST Center for Neutron Research*

————— *Lunch* —————

### **Poster Session (Hall of Flags)**

- 1:00 *Posters from NCNR, NIST Polymers Division, University of Delaware, and others. Poster titles and list of participants on subsequent pages*

————— *Coffee Break* —————

- 2:30 **Participant Discussion of Measurement Needs (Lecture Room B)**
- 3:00 **Closing Remarks**

## Poster Titles and Presenters

### Friday, June 3 (Hall of Flags)

1. Gelation in a Model Nanoparticle System with Short-Range Interactions — *Aaron Eberle, NIST Center for Neutron Research*
2. Small Angle Neutron Scattering and Rheological Analysis of Therapeutic Monoclonal Antibodies at High Concentrations — *Eric Yearley, Department of Chemical Engineering, University of Delaware*
3. Solubilization Capacity of a Crosslinked Micellar Gel—*Steve Kline, NIST Center for Neutron Research*
4. Structure of PTEN Tumor Suppressor in Fluid Lipid Membranes — *Hirsh Nanda, NIST Center for Neutron Research*
5. Protein Structure in Solid State Environments -- *Sheila Khodadadi, NIST Center for Neutron Research*
6. Structure and Properties of Membranes for Clean Water — *Edwin Chan, Polymers Division, NIST*
7. Effect of Tethering on the Surface Dynamics of a Thin Polymer Melt Layer -- *Bulent Akgun, NIST Center for Neutron Research*
8. A high strain rate testing methodology for high performance fibers — *Jae Hyun Kim, Polymers Division, NIST*
9. Interfacial Structure, Dynamics, and Transport of Polyelectrolyte Membrane Materials for Fuel Cells — *Brandon Rowe, Polymers Division, NIST*
10. Enrichment of Metallic Armchair Nanotubes — *Xioamin Tu, Polymers Division, NIST*
11. Tabletop Method for Quantifying Protein Stability in Freeze-Dried Matrix through Beta Relaxation — *Marc Cicerone, Polymers Division*
12. Subdomain Structure of a Homopolymer-Block Copolymer Blend: A Small Angle Neutron Scattering Study — *Huagen Peng, Polymers Division, NIST*
13. Structural Study of Polymer-Fullerene Solutions for Organic Photovoltaics — *Margaret Sobkowicz, Polymers Division, NIST*
14. Finite Size Effects on Water Uptake and Interfacial Lamellar Structure in Nafion Thin Films — *Steven DeCaluwe*
15. Paul Butler, NIST Center for Neutron Research - ??
16. Kendra Erk, Polymers Division — Interfacial Rheology
17. Eddie McCarthy, Polymers Division — Sustainable Composites

18. Soft Materials at Georgetown University — Daniel Blair, University of Georgetown



Washingtonian Center  
211 Rio Boulevard  
Gaithersburg, MD 20878  
(301) 963-5003

Cost (not included in registration): \$23.99/person + tax and gratuity

**Please bring Cash!!**

## FOUR COURSE MENU

Includes salad, appetizer, entrée, dessert and non-alcoholic beverage.

### SALAD

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Choice of Caesar or Fresh Greens

### FRESH ANTIPASTI (ONE PER THREE GUESTS)

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**CALAMARI FRITTI** Crispy calamari served with fresh lemon and arrabiata sauce

**SPINACH ARTICHOKE DIP** Baby spinach and artichoke hearts baked with aged Italian cheeses. Served with focaccia bread

**MOZZARELLA ALLA CAPRESE** Vine-ripened tomatoes with fresh mozzarella, extra virgin olive oil, aged balsamic vinegar and fresh basil

**CRAB-STUFFED MUSHROOMS** Fresh mushrooms filled with lump crabmeat, shrimp and Italian seasonings

**TOMATO BRUSCHETTA** Ripe tomatoes, fresh basil, garlic and extra virgin olive oil with grilled focaccia bread

Select one from the following:

### HANDCRAFTED PASTA

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**PENNE RUSTICA** Succulent shrimp, roasted chicken and aged prosciutto with Parmesan cream sauce then baked until golden

**PASTA MILANO** Roasted chicken, sun-dried tomatoes, fresh mushrooms and imported farfalle pasta in a roasted garlic cream sauce

**SAUSAGE VESUVIO** Italian sausage sautéed with orecchiette pasta, arugula, roasted tomatoes, cannellini beans and extra virgin olive oil

**LASAGNA AL FORNO** Baked with authentic Bolognese meat sauce, ricotta and mozzarella cheese. Topped with tomato sauce and fresh basil

**FETTUCCHINE ALFREDO WITH ROASTED CHICKEN** Imported fettuccine pasta sautéed with cream, butter, Parmesan cheese and tender chicken

### CHICKEN

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**CHICKEN SCALOPPINE** Sautéed chicken with artichokes, mushrooms, aged prosciutto and lemon butter with capellini pasta

**CHICKEN PARMIGIANA** Parmesan-crust chicken breast baked with tomato sauce and mozzarella. Served with capellini pasta

**POLLO CAPRESE** Juicy chicken simply grilled with extra virgin olive oil and fresh lemon. Served with Capellini Pomodoro and fresh mozzarella

### SEAFOOD

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**SHRIMP PORTOFINO** Jumbo shrimp sautéed with fresh spinach, mushrooms and pine nuts in a lemon butter sauce with imported capellini pasta

**KING SALMON** King salmon filet simply seasoned with cracked black pepper and sea salt. Served with sun-dried tomato and spinach orzo

### DESSERTS

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**CHOCOLATE CAKE** Drizzled with homemade ganache and topped with praline

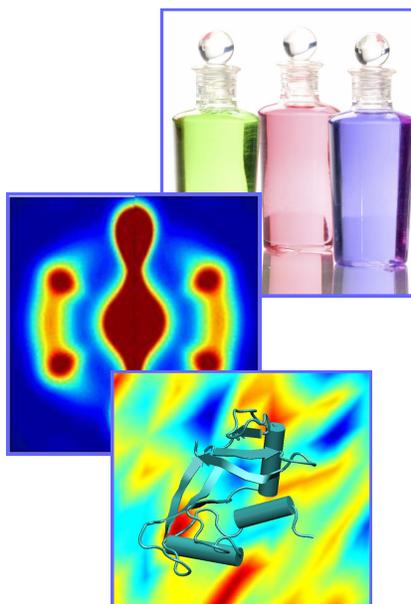
**TIRAMISU** Ladyfingers soaked in espresso, then layered between rich mascarpone cream

**SIMPLE LEMON POUND CAKE** Delicate slices of lemon pound cake garnished with fresh strawberries

# Poster Session

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June 3, 2011

Admin. Bldg. (101), Hallway of Flags

Contact: Ronald Jones, x4624, 224/B314

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