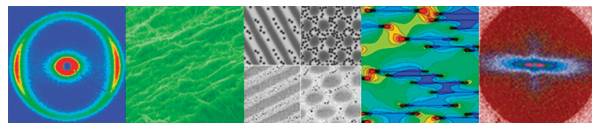


The Division of Polymer Physics of the American Physical Society was formed in 1944 as the Division of High Polymer Physics, at a time when an acute wartime need for synthetic rubber research drew physicists into the field of polymers. (The anachronistic "High" was removed from the name in 1999.) From the outset, DPOLY has provided a focus for applied and cross-disciplinary physics within the Society, drawing its membership from physics, chemistry, engineering, materials science, biophysics and applied mathematics, from the US and around the world. DPOLY pioneered within APS the offering of short courses (1976), poster sessions (1976), and a divisional award, the John H. Dillon Medal, specifically directed to outstanding scientists early in their career (1984). The Frank J. Padden Award, given by the division beginning in 1995, recognizes outstanding graduate student research.

Since 1952 DPOLY has held its annual meeting in conjunction with the March General Meeting of the Society and in recent years a total of 500-600 invited and contributed papers have been presented annually at sessions of the Division. A meeting of DPOLY typically includes joint symposia with the APS Divisions of Biological, Computational, and Materials Physics, the Forum on Industrial and Applied Physics, Topical Group on Statistical and Nonlinear Physics.

The Division of Polymer Physics today constitutes the world's premier forum for presentation of scientific research in polymer physics, even as The American Physical Society Polymer Physics Prize has become the premier polymer physics award. Now well into its second half-century of service to the scientific community, DPOLY pursues innovative and creative ways to make that service more effective.

The DPOLY Short Courses are offered as an educational service to division members and to the technical community to introduce important topics in polymer physics to a broader audience.



## Course Information

Physics of Polymer Nanocomposites  
American Physical Society  
2009 March Meeting

David L. Lawrence Convention Center  
Pittsburgh, PA

14-15 March, 2009

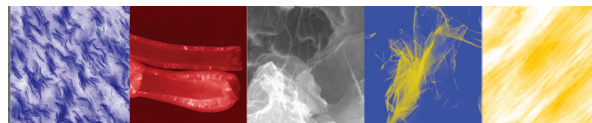
### Fees:

- \$100 for student/post-docs
- \$150 APS member
- \$250 non-member of APS

For more information about DPOLY membership and course:

<http://www.aps.org/meetings/march/registration/>

Division of Polymer Physics  
American Physical Society



# Physics of Polymer Nanocomposites

American Physical Society  
Pittsburgh, PA  
14-15 March, 2008

Division of Polymer Physics  
American Physical Society

**Sponsor:** Division of Polymer Physics  
American Physical Society  
<http://units.aps.org/units/dpoly/>

# Objective

The objective of this course is to provide background on the critical issues, ranging from synthesis, fabrication, processing, and characterization that underlie the establishment of scientifically (not only observationally) grounded structure-property relationships. Additionally, the course will ensure the student has an appreciation of parallel fields of investigations with high relevance to polymer nanocomposites. Elucidating the numerous competing factors and phenomena that manifest in the equilibrium and dynamic character of nanoparticle-polymer systems are paramount to enabling prediction of physical phenomena and thus the ability to advance these materials to technologically relevant applications.

## 14 March, 2009

- 1:00 Course Overview**
- 1:15 I. Polymer Nanocomposites (NCP)**  
- Jeff Gilman, National Institutes of Standards and Technology  
What are Polymer Nanocomposites
- 2:00 II. Fabrication Approaches**  
- Prof A.R. Barron, Dept. of Chemistry Rice University  
Overview of Inorganic Nanoparticle Synthesis and Properties
- 3:00 Break**
- 3:15** - Prof. T.A. Seery, Dept. of Chemistry University of Connecticut  
Overview of NCP Fabrication
- 4:15** - Speaker is TBD  
Manipulation of Interfacial Region via Polymer Chemistry
- 5:00 Homework Problem Description**
- 5:30 Dinner** (on own)

## 15 March, 2009

- 9:00 III. Quantification Challenge**  
- Prof. J.M. Torkelson, Dept. of Materials Science Engineering, Northwestern University  
Dynamics at the Nanoparticle Interface and Within the Interfacial Region: Challenges for Interface Science
- 9:50** - Dr. R.A. Vaia, Nanostructured & Biological Materials Branch, Air Force Research Laboratory  
Morphology and Topology Quantification
- 10:40 Break**
- 11:00 IV. Constitutive Relationships and Physical Properties**  
- Prof. K.I. Winey, Materials Science & Engineering University of Pennsylvania  
Mechanical, Electrical & Thermal Properties
- 12:00 Lunch** (on own)
- 1:15 V. Phase Behavior and Dynamics of Polymer-Nanoparticle Blends**  
- Valery Ginzburg, Dow Chemical  
Equilibrium Behavior and Impact on Mesoscopic Order and Interfaces
- 2:15** - R. Krishnamoorti, Dept. of Chemical & Biological Engineering Univer. of Houston  
Rheology
- 3:00 Break**
- 3:15 VI. Breakout Sessions and Problem Discussion**
- 4:45 Finish**

