

Comments from Past Attendees

"This is a great course: it's well organized, the instructors are top-notch, and the course material is very informative."

...Research Specialist

"This has been an excellent course. The instructors demonstrated a keen interest in the topics they presented. I could tell that they were presenting the information to help our understanding rather than just to complete a task."

...Associate Chemist

"It is refreshing to work with a group of professors and their students who seem to enjoy their work so much. I felt that they would consider the course a failure if I didn't learn from it. That kind of energy is rare in the courses I have attended in my professional career."

...Technical Assistant

"Good overall scope."

...Chemical Engineer

Course Site and Housing

Lecture sessions for the Adhesion Science Short Course will be held on the Virginia Tech campus in Blacksburg, Virginia. A block of sleeping rooms has been reserved at the Inn at Virginia Tech and Skelton Conference Center and will be held until April 16, 2012. When making your room reservation by phone at (540) 231-8000, please be sure to mention that you are an **Adhesion Science Short Course** participant. Special room rates are \$119 single occupancy/\$139 double occupancy plus tax.

The closest airport is located in Roanoke, Virginia, about an hour's ride from Blacksburg. A shuttle service and three major car rental agencies are available at the airport. For further information, please contact Tammy Jo Hiner by phone at (540) 231-6824 or by e-mail at thiner@vt.edu.

Course Instructors

Richey M. Davis

Associate Professor of Chemical Engineering

David A. Dillard

Professor of Engineering Science and Mechanics

John G. Dillard

Professor of Chemistry

Alan R. Esker

Associate Professor of Chemistry

Robert B. Moore

Processor of Chemistry

S. Richard Turner

Research Professor of Chemistry / Director of MII

Garth Wilkes

Professor (Emeritus) of Chemical Engineering



About MII

Macromolecules and Interfaces Institute at Virginia Tech is an interdisciplinary group committed to continuing the growth and advancing the stature of the existing macromolecular program at Virginia Tech. We foster a dynamic environment that enthusiastically promotes the recruitment and education of high-quality students; actively initiates and conducts timely research at both the basic and applied levels; and vigorously pursues continuing education and economic growth through outreach activities with industry and government agencies.

Over the years the macromolecular and interfacial science and technology focus has grown to include faculty from many departments and several colleges within Virginia Tech. The current polymer/adhesion faculty account for a substantial amount of research each year. Over the past 3 year period, MII faculty have been responsible for nearly \$17 million of actual research expenditures. Many of these projects are in cooperation with industry. For more information, contact Tammy Jo Hiner (Public Relations Coordinator) at:

Macromolecules and Interfaces Institute at Virginia Tech

103 SURGE Bldg.- 0201

Blacksburg, VA 24061

Phone: (540) 231-6824 Fax: (540) 231-3971

e-mail: thiner@vt.edu

web site: www.mii.vt.edu

Continuing Education Units

3.2 Continuing Education Units (CEU) will be awarded for participation in this course. This is based on 32 hours of instruction. The CEU is a nationally accepted uniform unit of measurement in qualified courses of continuing education.

Registration Form

Adhesion Science Short Course

May 14-18, 2012

To register online: <http://www.mii.vt.edu/Outreach/Technical.html>

Name _____

Title _____

Organization _____

Organization's FID No. _____

Address _____

City / State / Zip or Postal Code _____

Business Phone & Fax Number _____

E-mail Address _____

Registration Fee: \$1,700* (includes tuition, lecture/laboratory materials, and lunches Monday through Thursday and Thursday evening banquet)

Thursday's Banquet: (Choose one)

Beef Chicken Vegetarian Not Attending

Guest Banquet Fee: (\$50)

Guest Name: _____

Beef Chicken Vegetarian

Please indicate any medically necessary dietary needs for you or your guest attending the banquet: _____

Total Enclosed: \$ _____

Payment Method: Payment of registration fees is required prior to program attendance. Registration will be processed when payment is received.

Check enclosed payable to Treasurer, Virginia Tech
 Visa MasterCard Amex

Cardholder Name _____

Credit Card # _____

Exp. Date _____ Signature _____

Payment must be received prior to the course. Requests for refunds will be honored when received by 5:00pm Monday, May 7, 2012. However, another person may be substituted at any time for this program. A \$100 administrative recovery fee will be deducted for cancellations. In the unlikely event that this program is cancelled or postponed due to insufficient enrollments or unforeseen circumstances, the university will fully refund registration fees but cannot be held responsible for any other expenses, including cancellation or change fees assessed by airlines, hotels, travel agencies, or other organizations.

Mail to: Conference Registrar, Continuing and Professional Education, Virginia Tech, Mail Code 0272, 702 University City Blvd., Blacksburg, VA 24061; Phone: (540) 231-5182; Fax: (540) 231-3306 (for credit card registrations only).

*Because of the generous support by MII Industrial Affiliates, their employees are eligible for reduced course fee. Please contact Tammy Jo Hiner at (540) 231-6824 or by email at thiner@vt.edu.

Course Schedule

MONDAY	Short Course Overview Survey of Polymer and Adhesive Parameters Introduction to Chemistry of Adhesives I Introduction to Chemistry of Adhesives II Stresses in Bonded Joints Adsorption on Surfaces / Surface Energy Surfaces and Surface Preparation Fracture of Adhesive Bonds
TUESDAY	Basic Mechanical and Viscoelastic Response of Adhesives The Free Volume Model and DSC <u>Lab1a</u> : Peel Testing of Hydrogen Bond Containing PSAs <u>Lab1b</u> : In-situ FTIR Spectroscopy of Copolymer Reactivity Ratio Determination <u>Lab</u> : Surface Preparation / Bonding Adhesive Test Methods Introduction to Chemistry of Adhesives - III New Direction in Polymer Synthesis: Application to Adhesives
WEDNESDAY	Analysis of Surfaces <u>Lab</u> : Rheological Testing <u>Lab</u> : Adhesive Bond Testing Adhesive, Sealant and Waterborne Rheology I Adhesive, Sealant and Waterborne Rheology II
THURSDAY	Master Curves and Superposition PSA Performance and Testing <u>Lab</u> : Mechanical Properties <u>Lab</u> : Bonding-Failure Analysis Adhesive, Sealant and Waterborne Rheology III
FRIDAY	Applications of Surface Science to Adhesion Durability and Design Case Study Problem Solving

Virginia Tech does not discriminate against employees, students, or applicants on the basis of race, sex, disability, age, veteran status, national origin, religion, political affiliation, or sexual orientation. Anyone having questions concerning discrimination should contact the Equal Opportunity/Affirmative Action Office.

If you are a person with a disability and require any auxiliary aids, services, or other accommodations for this meeting, please discuss your accommodation needs with the Conference Registrar (540) 231-5182 or TDD 1 (800) 828-1120 at least two weeks prior to the course.

By taking this course you will...

- **Learn** how polymer parameters affect bonding and performance
- **Learn** how surface analysis can help understand failure modes
- **Understand** basic stress distributions in important bonded joint families
- **Learn** how to relate the formulation of waterborne adhesives to viscosity
- **Explore** types of adhesives and sealants for different applications
- **Learn** surface pretreatment techniques to improve mechanical properties and durability
- **Apply** fracture mechanics to bonded systems
- **Learn** fundamentals of bonding to wood, metal, and polymer substrates
- **Learn** to examine the temperature and rate response of bulk and bonded adhesives
- **Learn** how to select and interpret results from adhesive test methods
- **Learn** about the basic compositions and properties of waterborne adhesives

Non-Profit Org.
U.S. Postage
PAID
Blacksburg, VA
24060
Permit #28

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Blacksburg, VA 24061

A Macromolecules and Interfaces Institute

Short Course

Adhesion Science

A Hands-on, Lecture/Laboratory Short Course for Those Who Produce or Utilize Adhesives & Sealants

May 14-18, 2012
Blacksburg, VA



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