



# University of Connecticut Institute of Materials Science



## IMS Associates Program Newsletter

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### UConn Names Susan Herbst Its 15th President

From *UConn Today* by Michael Kirk. For the complete article visit <http://today.uconn.edu/?p=26827>



**Susan Herbst**  
President-designate,  
University of Connecticut  
*Photo by Peter Morenus*

The University of Connecticut Board of Trustees voted to appoint Susan Herbst as UConn's 15th president, following an intensive six-month search. Herbst is currently the executive vice chancellor and chief academic officer for The University System of Georgia. She will begin at UConn in July and will frequently be in Connecticut starting in January, to meet and work with President Austin and UConn's constituencies as part of the transition process. Herbst is the first woman to be selected as the University's president since the school's founding in 1881.

"Susan is exactly the kind of highly-qualified individual we set out to find when this process began in June," said Larry McHugh, chairman of the Board of Trustees, who led the search committee. "She has exceptional leadership abilities, vision, a strong academic background, and an in-depth understanding of public higher education. We have the utmost

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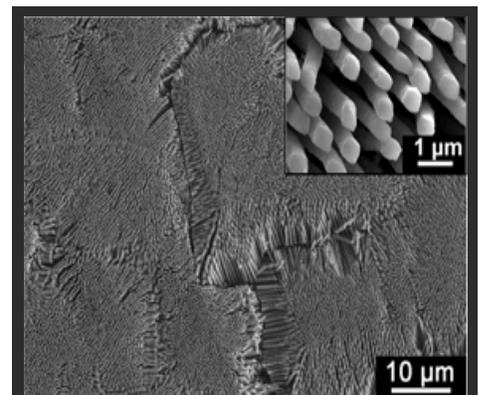
### Research That's Pure Gold

From *UConn Today* by Nan Cooper. For the complete article visit <http://today.uconn.edu/?p=22899>.

A team of UConn researchers, partnering with engineers from United Technologies Research Center of East Hartford, has modeled and developed new classes of alloy materials for use in electronic applications that will reduce reliance on costly gold and other precious metals.

Mark Aindow and S. Pamir Alpay, professors of materials science and engineering (and members of IMS, ed.), joined by Joseph Mantese, a UTRC Fellow, and graduate students Bilge Senturk and Yong Liu, have developed new classes of materials that behave much like gold and its counterparts when exposed to the oxidizing environments that degrade traditional base metals.

With the price of gold currently hovering around \$1,340 per ounce, manufacturers across the globe, including Connecticut's UTC, are scrambling for alternatives to the costly noble metals that are widely used in electronic applications, including gold, platinum, rhodium, palladium, and silver. What makes these metals attractive is their combination of excellent conductivity paired with resis-



A scanning electron microscope image from an etched section through one of the new alloys. The magnified image inset shows rods of copper 300 nm in diameter emerging from a copper-lanthanum matrix. Image provided by Mark Aindow

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## MURI Award To Develop Advanced Capacitors

From the School of Engineering *emagination*. For the complete article visit <http://news.engr.uconn.edu/muri-award-capacitors.php>



**Rampi Ramprasad**  
Associate Professor,  
Chemical, Materials &  
Biomolecular Engineering

Three UConn faculty members are collaborating on a major, multi-institutional project that recently received over \$7 million in funding from the U.S. Department of Defense's Multidisciplinary University Research Initiative (MURI). Ramamurthy Ramprasad of the Department of Chemical, Materials & Biomolecular Engineering (CMBE) and the Institute of Materials

Science (IMS) serves as principal investigator on the winning proposal, one of just 32 selected from 152 submissions. UConn is expected to receive \$3.6 million over the full five years of the project.

The objective of the team is to employ computational methods to develop new classes of polymeric films, featuring specific dielectric properties, for use in high energy density capacitors. Such capacitors are used in a wide variety of applications, including power electronics, pulse power equipment such as radar and lasers, hybrid electric vehicles and implantable medical devices. DOD is particularly interested in the development of reliable, energy dense capacitors as an enabling technology that will allow the military to move to electrified systems while dramatically down-scaling the size and weight of power electronic components.

Joining Dr. Ramprasad on the project are UConn colleagues Steven Boggs and Gregory Sotzing. Dr. Boggs is co-director on the project, director of the Electrical Insulation Re-



**Gregory Sotzing**  
Professor  
Chemistry

**Steven Boggs**  
Research Professor  
IMS

search Center, and a research professor affiliated with IMS and the departments of Physics and Electrical & Computer Engineering; Dr. Sotzing is director and a member of the IMS Polymer Program as well as a professor in the Department of Chemistry. The team also includes partners at Rensselaer Polytechnic Institute, Columbia University, Penn State University and the University of Akron.

DOD developed the MURI program, which targets multidisciplinary engineering/science projects, to accelerate both research progress and the transition of technology from the lab into applications.

## UConn Names Susan Herbst its 15th President

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confidence in her ability to lead and effectively work with all of the University's stakeholders, including students, faculty, staff, and alumni, as well as federal and state officials – including incoming Gov. Dannel Malloy."

There were more than 100 applications for the position. Herbst was one of three finalists considered by the 40-member search committee and the Board of Trustees. Both Gov.-Elect Malloy and outgoing Gov. Jodi Rell met with Herbst and strongly support her appointment.

In her current position with The University System of Georgia, Herbst, who will be 48 on Tuesday, leads 15 university presidents and oversees the academic missions for all 35 public universities in Georgia. She also works closely with the system's Board of Regents on all aspects of finance and higher education policy for the state. The system has more than 311,000 students, roughly 10,000 faculty members, and a budget of more than \$6 billion a year. She has been with the Georgia system since 2007.

In addition to those duties, Herbst continues to hold a faculty appointment as a professor of public policy at Georgia Tech. She is the author of many scholarly journal articles and books, including her most recent book about incivility in American politics, *Rude Democracy*, released in September.

Herbst was previously provost and executive vice president for academic affairs at SUNY-Albany from 2005 to 2007, and also served as acting president of the school for a year. She also served as the dean of the College of Liberal Arts at Temple University from 2003 to 2005.

Herbst joined Northwestern University as an assistant professor in 1989 and remained there until 2003. There, she rose to become chair of the political science department and associate dean for faculty affairs.

She received her BA in political science from Duke University in 1984 and her Ph.D. in communication theory and research from the University of Southern California Annenberg School for Communications in Los Angeles in 1989.

Philip Austin will continue to serve as the University's interim president until Herbst begins her tenure.

## Hemp Produces Viable Biodiesel, UConn Study Finds

From *UConn Today* by Christine Buckley. For the complete article visit <http://today.uconn.edu/?p=22384>



**Richard Parnas**  
Professor  
Chemical, Materials &  
Biomolecular Engineering

Of all the various uses for Cannabis plants, add another, “green” one to the mix. Researchers at UConn have found that the fiber crop Cannabis sativa, known as industrial hemp, has properties that make it viable and even attractive as a raw material, or feedstock, for producing biodiesel – sustainable diesel fuel made from renewable plant sources.

The plant’s ability to grow in infertile soils also reduces the need to grow it on primary croplands, which can then be reserved for growing food, says Richard Parnas, a professor of chemical, materials, and biomolecular engineering (*and member of IMS, ed.*) who led the study.

“For sustainable fuels, often it comes down to a question of food versus fuel,” says Parnas, noting that major current biodiesel plants include food crops such as soybeans, olives, peanuts, and rapeseed. “It’s equally important to make fuel from plants that are not food, but also won’t need the high-quality land.”

Industrial hemp is grown across the world, in many parts of Europe and Asia. Fiber from the plant’s stalk is strong, and until the development of synthetic fibers in the 1950s, it was a premier product used worldwide in making rope and clothing. Today, there are still parts of the world that rely on Cannabis stalks as a primary fiber, mainly because of its ability to grow “like a weed,” without requiring lots of water, fertilizers, or high-grade inputs to flourish. But the seeds, which house the plant’s natural oils, are often discarded. Parnas points out that this apparent waste product could be put to good use by turning it into fuel.

With his graduate student Si-Yu Li and colleagues James Stuart of the Department of Chemistry and Yi Li of the Department of Plant Sciences, Parnas used virgin hemp seed oil to create biodiesel using a standardized process called transesterification. The group then tested the fuel for a suite of characteristics in the Biofuels Testing Laboratory at UConn’s Center for Environmental Science and Engineering.

The hemp biodiesel showed a high efficiency of conversion – 97 percent of the hemp oil was converted to biodiesel – and it passed all the laboratory’s tests, even showing properties that suggest it could be used at lower temperatures than any biodiesel currently on the market.

Although growing hemp is not legal in the U.S., Parnas hopes that the team’s results will help to spur hemp biodiesel production in other parts of the world. UConn holds a patent on a biodiesel reactor system that could be customized to make biodiesel from a range of sustainable inputs, hemp included.

Parnas, Yi Li, and colleagues Steven Suib of the Department of Chemistry, Fred Carstensen of the Department of Economics, and Harrison Yang of the Department of Natural Resources and the Environment are preparing to build a pilot biodiesel production facility using a two-year, \$1.8 million grant from the Department of Energy. The reactor will be capable of producing up to 200,000 gallons of biodiesel per year, and while this production rate is small in comparison to commercial biodiesel reactors, the main use of the facility will be to test new ways to produce biodiesel, including catalysts and feedstocks. Ultimately, the team will perform economic analyses on commercializing their methods.

As for other industries that utilize Cannabis plants, Parnas makes a clear distinction between industrial hemp, which contains less than 1 percent psychoactive chemicals in its flowers, and some of its cousins, which contain up to 22 percent. “This stuff,” he points out, “won’t get you high.”

## Research That’s Pure Gold

(Continued from page 1)

tance to oxidation and corrosion. Finding less costly, but equally durable and effective, alternatives is an important goal. The team has investigated nickel, copper, and iron – inexpensive materials that may offer promise. Based on their research, they have laid out the theory and demonstrated experimentally the methodology for improving the electrical contact resistance of these base metals.

Says Aindow, “We used a combination of theoretical analysis to select the appropriate constituents, and materials engineering at the atomic level to create designer materials.”

The researchers synthesized various alloys, using inexpensive base metals. Their work has demonstrated an improvement in contact resistance of up to one million-fold over that for pure base metals, so that base metal contacts can now be prepared with contact properties near those of pure gold.



## Initiative Supports Unique Collaboration

From the School of Engineering *emagination*. For the complete article visit: <http://news.engr.uconn.edu/initiative-supports-unique-collaboration.php>.

A new program leverages the resources – and resourcefulness – of private enterprise, State agencies, and the University of Connecticut to jump-start new technologies while offering students an unmatched opportunity for hands-on learning. Earlier this year, KTI, Inc. of East Windsor, CT won a Small Business Innovation and Diversification Program (SBIDP) grant through Connecticut Innovations that planted the seed for a partnership with the UConn School of Engineering. The SBIDP awards small manufacturing businesses grants of \$5,000 to \$25,000 (to be matched dollar-for-dollar) to advance innovative new technologies or services that might otherwise be too economically risky for small firms to pursue.

KTI's SBIDP provided the impetus for the 25-employee, 44-year old business to recruit an engineering undergraduate from UConn to design, build and test a device that will automate processes currently carried out manually – revolutionizing the company's service capabilities. Under UConn's Innovation Scholar program, the School of Engineering provided matching funds to further propel the commercialization effort.

KTI provides electron beam welding (EB) job shop services, custom EB strip welding, machining and both prototype and production services to customers across the globe, ranging from defense and aerospace firms to manufacturers of turbine parts, biomedical parts and sensors. The company is known for its high quality standards as well as its commitment to innovation. KTI pioneered a continuous strip welding process, for example, that sets the business apart from competitors. Unsurprisingly, KTI's client list – unpublished for proprietary reasons – reads like a “who's who” of the nation's top-tier defense, aerospace and manufacturing companies.

Equipped with the SBIDP grant and the matching funds supplied by the School of Engineering, KTI recruited Innovation Scholar Alexander Froning, who was selected through a competitive process. Alex logs up to 15 hours per week researching state-of-the-art technological developments for KTI and working on a project aimed at automating the processes by which parts are moved under the electron beam by using computer controlled devices and beam manipulation, processes that take place within a vacuum welding chamber. According to Mr. Orr (KTI President, ed.), the project requires Alex to learn diverse skills such as computer numerical controls and robotics. Alex, who began working with

KTI in September, will help to manage the installation, fashion the prototype parts, test and troubleshoot the unit. Mr. Orr noted that KTI is pleased with Alex's performance and treats him “just like a regular employee.”

KTI decided to expand its support of UConn engineering students to include four seniors engaged in the two-semester senior design “capstone” experience. Mechanical Engineering seniors Lauren Anderson, Andrew Napoli, Graham Clark and Ryan Gauvin are working with KTI engineers to understand and develop functional solutions for two distinct metallurgical problems in the aircraft industry, in partnership with one of the nation's leading aerospace companies. The students are advised by UConn materials science professors (*and IMS members, ed.*) Hal Brody and Rainer Hebert along with KTI's Mr. Orr, and engineers Eric Welker, Rhody Triblets and Steve Wasseluk. The project brings together, for the first time, the resources and expertise of a large prime contractor, a small business and UConn students and faculty with the shared aim of solving real and significant manufacturing challenges.



**Harold Brody**  
Distinguished Professor  
Chemical, Materials and Biological  
Engineering

Peering into his crystal ball, Mr. Orr said “We are looking into free-form fabrication (FFF), also called additive manufacturing, and processes such as EB wire feed, and laser sintering and cladding. These processes will be the industry standards in the coming years, and they'll revolutionize manufacturing.” It's a sure bet that KTI will be at the technological forefront

helping to transform the materials joining industry; not only is KTI investing in these novel technologies, it's also a member of the F42 Council, an international committee charged with establishing the industry standards on freeform fabrication.

For more information regarding Capstone Projects please contact Professor Harold Brody ([harold.brody@uconn.edu](mailto:harold.brody@uconn.edu)).

## New Instrumentation

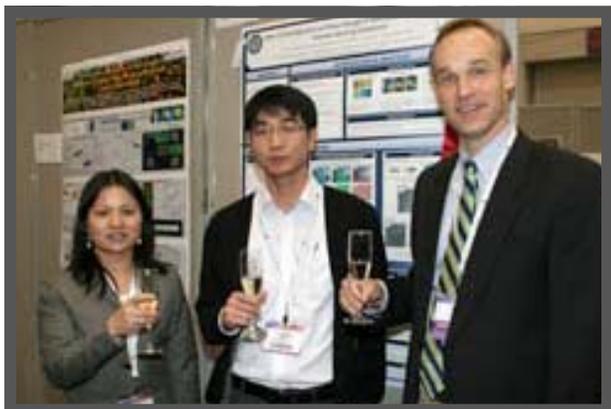
Through the direction of Leon Shaw, professor in CMBE and member of IMS, as principal investigator, the University of Connecticut Major Research Equipment Committee will fund the purchase of a Solid-State NMR 400 MHz WB Spectrometer to be housed within IMS. Installation is anticipated to be in the May of 2011 time frame. The acquisition of this instrument will enable researchers to access a broader range of modern NMR techniques in the solid state at a high field strength of 9.4 Tesla. The new instrument will provide a plethora of unique functionalities that are not available currently at UConn, and impact immediately and immensely many on-going and future research programs involving a large number of researchers at UConn.

The unique capabilities include (i) the diffusion probe that will make it possible to access diffusion processes, (ii) the third channel associated with triple resonance MAS probe that will allow REDOR type of heteronuclear experiments involving  $^1\text{H}$  or  $^{19}\text{F}$  and other nuclei, (iii) the temperature capability up to  $300^\circ\text{C}$  at high speed MAS, (iv) solid-state Fluorine ( $^{19}\text{F}$ )NMR that offers the opportunity to study fluorine-based membranes for energy applications, and (v) the higher speed electronics that makes it possible to average the homonuclear  $^1\text{H}$ - $^1\text{H}$  dipolar couplings of protons in many hydrogen storage materials, proton-exchange membranes, and catalysts. The unique capabilities of this new instrument, in addition to its capabilities of many routine experiments, will strengthen current collaborative projects, foster new collaborations, enrich our interdisciplinary research profile, and enhance significantly the UConn's competitiveness in garnering external funding.

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## Suk-kyun Ahn Wins Best Poster Award at 2010 MRS Fall Meeting

Suk-kyun Ahn, PhD student in the Polymer Program (Advisor: Rajeswari Kasi), received the 2010 Best Poster Award at the MRS Fall Meeting for his work "Effect of Interdigitation on Phase Changes in Side-chain Liquid Crystalline Polymers Bearing Cholesterol."



Congratulations to Suk-kyun for this incredible honor!

## Materials Advantage Chapter of Excellence

Congratulations to the University of Connecticut Materials Advantage student chapter on being named a 2010 Chapter of Excellence. For more information visit <http://materialadvantage.org/student-chapters/chapters-ofexcellence/> and <http://materialadvantage.org/wp-content/uploads/2010/11/ucma-annual-report-2009-2010.pdf>.

## IMS Distinguished Lecture

On Tuesday, November 9th 2010, Dr. Phaedron Avouris, IBM Fellow and Manager of Nanometer Scale Science and Technology at IBM presented "Graphene Electronics and Optoelectronics"

### Presentation Abstract:

"Graphene is a two-dimensional, zero-gap semiconductor with linear electron dispersion and rather unique electrical, optical and thermal properties. There is currently strong interest in taking advantage of these properties for technological applications. In my talk I will review the structure and properties of graphene and explore its applications in electronics and optoelectronics."

"I will first discuss the electronic structure, transport and scattering mechanisms in mono- and few-layer graphenes. Because of its zero band-gap, the current in nonolayer graphene cannot be effectively switched off as in conventional transistors; therefore, applications in logic electronics are not currently envisioned. However, the tunability of the current by the field and the exceptionally fast carrier transport in graphene make it very promising for high-frequency analog devices. I will discuss the fabrication and operation of such RF devices up to  $\sim 200$  GHz, along with corresponding device physics issues, such as the role of the metal contacts, gate insulators, doping and power dissipation. Our efforts to open up a gap in graphene by applying a strong perpendicular electric field in graphene bi-layers would also be discussed."

"Finally, I will focus on the optical absorption and photoconductivity of graphene and demonstrate ultrafast graphene-based photodetectors and optical data stream detection using these detectors."



## Sustainable Energy Focus of \$2.5M DOE Support

From the School of Engineering *emagination*. For the complete article visit <http://news.engr.uconn.edu/sustainable-energy-focus-of-2-5m-doe-support.php>

Equipped with a \$2.5 million grant from the U.S. Department of Energy (DOE), last spring the Center for Clean Energy Engineering unveiled an innovative model for seeding advanced energy research at UConn, pairing academic with industry partners in order to spark long-term science-to-systems relationships that yield a diverse portfolio of green energy technologies.

In 2008, an interdisciplinary engineering team submitted a proposal to Congress for funds to support the development and implementation of clean and efficient power generation systems for stationary and mobile applications. The DOE funds arrived in mid-2010, and Dr. Prabhakar Singh, C2E2 Director and the UTC Chair Professor of Fuel Cell Technology, was named principal investigator overseeing the project. In an effort to ensure a dynamic mix of new ideas and enhance the impact of the DOE investment monies, C2E2 issued an internal RFP inviting faculty to submit proposals – with industry partners – in one of four general areas: energy conversion systems, energy storage, fuels and fuel processing, or power management.

The competition stipulated that UConn researchers partner with industrial collaborators or government laboratories, and also secure a match of financial and in-kind support from partners, underscoring the project's real-world focus and assuring long-term support after the initial year of seed funding concluded.

Dr. Singh explained that this approach is intended to accelerate the translation of foundational energy research from the laboratory into commercially viable applications. "One of our aims is to develop a new structure for advancing sustainable energy research, in which private-sector companies and researchers collaborate to propel the science into the business realm. 'Sustainability' refers not only to the emerging clean, renewable energy technologies, but also to the enduring nature of our relationships with commercial industry," remarked Dr. Singh.

The proposals were reviewed on the basis of scientific and technical merit, potential impact to society, and role in advancing C2E2's mission. Ten subprojects were selected for first-year funding, with up to \$100,000 awarded to each team:

- ◆ Optimization of FCC Selectivity through Detailed Modeling of Catalyst Evaluation – partners W.R. Grace and Dr. George Bollas (CMBE)
- ◆ Stannate-based Semiconductor Nanocomposites for Solar Energy Utilization – partners United Technologies Research Center (East Hartford, CT) and Dr. Pu-Xian Gao (CMBE *and member of IMS, ed.*)
- ◆ Waste Heat Recovery and Utilization using the Osmotic Heat Engine – partners Oasys Water (Osmotic Application Systems of Cambridge, MA) and Dr. Jeff McCutcheon (CMBE)
- ◆ Biogas Clean Up – partners nzymSys (East Hartford, CT) and Dr. Ashish Mhadeshwar (CMBE)
- ◆ Waste to Energy: Biogas Cleanup (Desulfurization) for Energy Generation – partners FuelCell Energy (Danbury, CT) and Dr. Steve Suib (Chemistry)
- ◆ Fuel Reforming Catalysts for Efficient Energy Usage – partners Advanced Power Systems International (APSI, Inc., Lakeville, CT) and Dr. Steve Suib (Chemistry)
- ◆ Matrix Stability Understanding Investigation – partners FuelCell Energy (Danbury, CT) and Dr. Prabhakar Singh (CMBE)
- ◆ Modeling of Resin Flow in the Manufacture of PAFC GDLs – partners UTC Power (South Windsor, CT) and Dr. Rajeswari "Raji" Kasi (Chemistry *and member of IMS, ed.*)
- ◆ Rapidly Quenched YSZ as Enhanced Electrolyte for SOFC – partners NanoCell (Mansfield, CT) and Dr. Radenka Maric (CMBE)
- ◆ Fuel Cell Electrode Microstructure: Nanoscale Stability and Efficiency – partners UTC Power (South Windsor, CT) and Dr. Bryan Huey (CMBE *and member of IMS, ed.*)

The Center plans to issue a second competitive solicitation in early 2011 and to award funds to additional faculty/industry teams in coming months.

C2E2 serves as a nucleus for research, education, training and systems engineering in areas related to advanced energy conversion technologies, fuels and fuel processing, energy storage, power management and smart grid technologies, and conservation of natural resources with a focus on water.

## Spring Semester Starts

Fall semester classes start January 18, 2011. Some courses that may be of interest include the following:

MSE 5305	Phase Transformation in Solids	P. Alpay
MSE 5309	Transport Phenomena	G. Rosetti
MSE 5322	Materials Characterization	D. Snow
CHEG 5352	Polymer Properties	R. Parnas
CHEG 5367	Polymer Rheology	M. Shaw
CHEM 5384	Polymer Characterization II	A. Asandei
CHEM 5394-1	Responsive Polymers	R. Kasi
CHEM 5394-2	Nanomaterials	F. Papadimitrakopoulos
CHEM 5341	Advanced Organic Chemistry	D. Adamson
CHEM 5345	Organic Structure Determination	G. Sotzing

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## Mid-Length Projects (MLP) Program

The Institute of Materials Science (IMS) announces the continuation of a program that addresses seed research/development projects of an intermediate length. This program is designed to encourage university/industry collaboration on projects that are too extensive for the existing Associates Program yet smaller than typical university research projects. Typical student/post-doc supporting research projects at IMS (and most of UConn and other institutions) last for some number of years. Industry often has exploratory projects of intermediate length between these extremes, projects that may require several months to a year of full time effort. Through the Mid-Length Projects (MLP) Program IMS will assist industry in matching the available resources of IMS to those required for the project of interest.

For more information or to discuss specific projects please contact Ed Kurz (860-486-4186, [ekurz@mail.ims.uconn.edu](mailto:ekurz@mail.ims.uconn.edu)) or Harris Marcus (860-486-4623, [hmarcus@mail.ims.uconn.edu](mailto:hmarcus@mail.ims.uconn.edu))

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## Employment Web Page

The Institute of Materials Science has a web page to help match students with potential employers. The IMS Employment Center can be accessed from the IMS home page: <http://www.ims.uconn.edu/> and clicking on Outreach. The initial job page has brief information concerning each position and a link for more details.

Please forward any open position announcements you wish to post to Rhonda Ward ([Rhonda.Ward@ims.uconn.edu](mailto:Rhonda.Ward@ims.uconn.edu)).

We have several positions on the website now, with your help we can continue to build this database of information, which benefits both students and employers.

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## Department Seminars

Spring seminar schedules have not been finalized at the time of this writing. Seminar schedules will be available near the beginning of the semester and can be found on the department web sites (<http://www.ims.uconn.edu/polymer>) and (<http://www.engr.uconn.edu/cmbe/>). This information will be updated as additional seminars are added. Abstracts of seminars are usually available about a week in advance. We can also put you in touch with the faculty member sponsoring the seminar to learn more about the specific seminar of interest. We suggest you call before attending to be sure the seminar has not been canceled due to illness or weather.

## IMS Associates Program

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Visit Us on the Web

[http://www.ims.uconn.edu/  
associate/associates](http://www.ims.uconn.edu/associate/associates)

## Toxic and Bio-Contaminated Samples

On a small number of occasions, member companies have sent us toxic samples for examination. IMS is not set up to handle such materials. We operate in a very open environment with multiple users and shared laboratory facilities. We cannot accept toxic materials that present biological hazards or similar materials such as drugs that require very specialized handling. If we do receive such a sample, we must return them (and may need your assistance to do so as shipping these materials can be time-consuming and expensive). We cannot dispose of these types of materials at UConn when they are created by an external source.

## Sample Preparation

In many projects that the Associates Program deals with, such as adhesion and coatings, surface analysis techniques are extremely important. The techniques used for such analysis, particularly GC/MS, Auger electron spectroscopy (AES) and x-ray photoelectron spectroscopy (XPS) are extremely sensitive to small amounts of material on the surface. It is important to make efforts not to contaminate these surfaces during sample preparation, collection and shipment. Shipment in common plastic bags should be avoided!

Common plastic bags typically contain significant amounts of additives used to prevent the plastics from adhering to themselves and other materials. These additives will migrate to the sample during shipment and at best make interpretation difficult and sometimes impossible. It is much better to ship such samples in common kitchen aluminum foil (not industrial aluminum foil which is often coated with an oil or other release agent). Samples can also be shipped in glass containers with aluminum foil over the opening under the cap.

Alternatively special polyester bags that do not contain such additives can be purchased. One source of such bags is the Kapak Corporation (now Ampac) Typical price is about \$200 per thousand depending on the exact size. Be sure to specify noncontaminating/non-plasticized material.

## IMS and the Associates Program Welcome New Administrative Assistant

IMS and the Associates Program welcomed new administrative assistant, Rhonda Ward, in November 2010. Rhonda brings extensive administrative support experience to the position and also a variety of technical skills including web and graphic design.

In September, former administrative assistant Shari Masinda accepted a new position in the IMS Accounting office, moving just down the hall. Although Associates Program company coordinators will no longer see her name connected with the Associates Program, she is still involved behind the scenes at the department level.