Suib New Director of IMS

On July 1, 2013, Dr Steven L. Suib became the new director of the Institute of Materials Science as Dr. Harris Marcus stepped down following 18 years of service. Dr. Suib is an outstanding scientist and teacher, and we are confident that he will lead IMS as it plays an important role in the success of Next Generation CT and the Tech Park.

Dr. Suib is a Board of Trustees Distinguished Professor of Chemistry and received the CT Medal of Science for his work in catalysis, semiconductors and ceramic composites. He received a B. S. degree in chemistry and geology at the State University College of New York at Fredonia. His graduate and post-doctoral training was completed at the University of Illinois at Champaign Urbana. In 1980, Steve joined UConn’s faculty in the Department of Chemistry and served as the head of the department for 10 years. He is a Fellow of the American Chemical Society and the American Institute of Chemists.

We also want to thank Dr. Harris Marcus who strengthened IMS during his tenure as Director of IMS. His dedication and service to the University are greatly appreciated. Dr. Marcus will remain on the faculty in the Materials Science & Engineering Department. Dr. Marcus joined UConn from the University of Texas at Austin in 1995 and led IMS with distinc-

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Legislature Approves Transformational $1.5B Investment In UConn

By Stephanie Reitz, UConn Today, for the complete article see: http://today.uconn.edu/blog/2013/06/connecticut-legislature-approves-transformational-1-5-billion-investment-in-states-flagship-university/

The Next Generation Connecticut initiative has received final legislative approval from the General Assembly, positioning UConn to ascend the ranks of the world’s elite research universities as its intellectual capital is put to work energizing the state’s innovation-based economy.

The $1.5 billion construction component is an investment in building new scientific laboratories, purchasing advanced equipment, constructing new classrooms, and adding housing. The state will also invest $137 million in operating funds to hire hundreds of new faculty, and to expand the student body in STEM fields (science, technology, engineering and math).

UConn President Susan Herbst says it is unquestionably one of the largest single investments made by a state in its flagship university, and its effect on UConn will be “nothing short of transformational.”
More Than 100 Companies, Business Groups Endorsing Next Generation Connecticut

By Stephanie Reitz, for the complete article see: http://today.uconn.edu/blog/2013/04/more-than-100-companies-business-groups-endorsing-next-generation-connecticut/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+uconn-today%28UConn+Today%29

More than 100 corporations, trade and labor groups, local businesses, and other entities concerned with strengthening Connecticut’s economic development and job creation efforts have signed on to endorse the Next Generation Connecticut proposal.

Connecticut Gov. Dannel P. Malloy, University of Connecticut President Susan Herbst, legislative leaders, and representatives from several of the supporting businesses and organizations revealed the full list at an event at the State Capitol on Thursday, April 11, 2013.

They range from Fortune 500 companies to chambers of commerce, labor and trade organizations, research groups, local and regional businesses, and other entities. The list continues to grow, with new corporate supporters stepping forward on a steady basis to endorse the initiative.

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Eight UConn Professors Inducted into Connecticut Academy of Science and Engineering

By Christine Buckley, Nan R. Cooper and Carolyn Pennington; For the complete article see: http://today.uconn.edu/blog/2013/05/eight-uconn-professors-inducted-into-connecticut-academy-of-science-and-engineering/?utm_source=DailyDigest

Eight University of Connecticut professors were inducted into the Connecticut Academy of Science and Engineering at an awards ceremony on May 22 at Quinnipiac University in Hamden. The Academy recognizes Connecticut’s leading experts in sciences, engineering, and technology.

Of the 33 new members this year, eight were from UConn, including three from the College of Liberal Arts and Sciences, three from the School of Engineering, and two from the Health Center.

The inductees include:

Mei Wei, professor of materials science & engineering (and member of IMS, Ed.) and the newly appointed associate dean for research & graduate education for the School of Engineering. Wei

(Continued on page 3)
Eight UConn Professors Inducted into Connecticut Academy of Science and Engineering

(Continued from page 2)

has established a world-renowned research program in the areas of biomaterials and tissue engineering. She has collaborated extensively with researchers at the UConn Health Center on groundbreaking bone regeneration and scaffolding studies. Wei’s honors include the 2007 Connecticut Women of Innovation’s Academic Innovation and Leadership Award in recognition of her contributions in the field of biomaterials.

Wilson Chiu, professor of mechanical engineering in the School of Engineering (and member of IMS, Ed.) who is recognized for his pioneering work in heat and mass transfer, including his development of new approaches to understanding micro- and nano-structure induced transport phenomena in energy, photonics, and semiconductor materials. Chiu’s honors include the Rutgers University School of Engineering Medal of Excellence Award for Distinguished Young Alumni, the ASME Bergles-Rohsenow Young Investigator Award in Heat Transfer, the U.S. Army Research Office Young Investigator Award, a National Science Foundation CAREER Award, and the Office of Naval Research Young Investigator Award. He is an associate editor of the ASME Journal of Heat Transfer and the International Journal of Thermal Sciences.

Other inductees include:
Thomas Barber has served as a professor-in-residence in mechanical engineering in the School of Engineering since 2000.

Robin Cote, professor of physics in the College of Liberal Arts and Sciences and his research group study the theory behind atomic, molecular, and optical physics in a variety of systems, and are particularly interested in ultracold atomic and molecular gases

New Faculty Members Join IMS

Luyi Sun joins the Chemical & Biomolecular Engineering Department, and has an appointment in the Polymer Program of the Institute of Materials Science. Dr. Sun, who joins UConn under the Eminent Faculty Initiative, received his PhD at the University of Alabama in 2004 and brings expertise in multi-functional nanostructured materials; polymeric materials and new polymer processing development; layered compounds; green science and engineering; hydrates and porous materials for energy storage. He was an assistant professor of chemistry at Texas State University (2009-13) and was a post-doctoral fellow at both Texas A&M and the University of Alabama.

In 2014 Kelly Burke will join the Chemical & Biomolecular Engineering Department, and has an appointment in the Polymer Program of the Institute of Materials Science. Dr. Burke, who joins UConn under the Eminent Faculty Initiative, earned her PhD at Case Western Reserve University in 2010 and brings expertise in protein modification strategies, tissue engineering, structure-property relationships of liquid crystals, and biocompatible multi-functional polymeric materials. Dr. Burke was a post-doctoral associate at Tufts University (2010-13), where she received an NIH National Research Service Award Fellowship.
Menka Jain Featured in International Innovation

The work of Menka Jain, Assistant Professor of Physics and member of IMS, and her group was recently featured in the July 2013 issue of International Innovation (Research Media, UK, pp 102-104) ISSN2051-8528. For the complete article see: http://www.international-innovation-northamerica.com/magazines/NA14/index.html. Registration is necessary.

Researchers in the Advanced Functional Materials Research Group at the University of Connecticut are working on a project to enhance the magnetoelectric properties of nanocomposite to achieve the multifunctionality required for devices of the future.

Increasing demand for miniaturized and smart microelectronic devices, with high efficiency and low energy consumption, has prompted exploration of the possibilities of a wide range of composite materials in order to derive multifunction properties. A prerequisite is that these materials are formed in extremely thin films and therefore require nanoscale manufacturing techniques.

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Huey Organizes Symposium

For the complete article see: http://news.engr.uconn.edu/faculty-notes-3.php

In January, Associate Professor Bryan Huey (Materials Science & Engineering and Member of IMS, Ed.) co-organized the Electronic Materials and Applications conference, an annual meeting sponsored by the American Ceramic Society. Attendance rose by more than 50% over last year’s conference, thanks to a re-invigorated program that included symposia on data storage, dielectrics, sensors and actuators, photovoltaics, thermoelectrics, superconductors, energy harvesting, nanoscale devices, and other subjects. Fellow Materials Science & Engineering faculty members Pamir Alpay, Ramji Ramprasad, Puxian Gao, Serge Nakhmanson, and George Rossetti participated, as well as Advisory Board member Joe Mantese (UTRC), and several students. Dr. Rossetti will co-organize the conference next year with Dr. Huey, confirming UConn’s very active leadership in the discipline.

Dr. Huey was also elected secretary for the Basic Science Division of the American Ceramic Society, a position that will rise to division chair in 2015-16. The division is committed to the development of ceramic sciences underlying present and future ceramic applications. With more than 1,000 members, BSD represents 20% of the overall academic and industrial membership within the society.
Dr. Anson Ma Receives NSF Career Award

For the complete article see: http://news.engr.uconn.edu/dr-anson-ma-receives-career-award.php

Assistant Professor Anson Ma (Chemical & Biomolecular Engineering) has received a National Science Foundation Early Career Development (CAREER) award, which will support his research involving the use of carbon nanotubes to stabilize emulsions. The $400,000, five-year grant is the 26th CAREER Award among current UConn engineering faculty.

Emulsions result when two or more immiscible liquids are agitated together. Think of oil and water, which combine only when the mixture is vigorously shaken. Normally, such emulsions are unstable and the two liquids separate into two distinct layers when left undisturbed. To enable stable dispersion, stabilizers or emulsifying agents are added. Dishwashing liquid, for example, is a commonly-used emulsifying agent in our daily lives.

Dr. Ma’s work will examine whether the shape of stabilizer particles can increase the stability of the emulsions. He hypothesizes that compared to spherical particles, rod-shaped particles will permit a greater number of particle-to-particle contacts, forming stronger protective layers around liquid droplets and thus preventing the droplets from merging together. In particular, Dr. Ma and his team are interested in exploring the use of carbon nanotubes (CNTs), which have a rod-like shape and a high aspect ratio (ratio of length to diameter). CNTs have been well researched and documented in the scientific literature. They can also be chemically modified to “program” their behavior at the interface, according to Dr. Ma.

The research will take place in several interdependent phases, with the first centering on model development. Dr. Ma will collaborate with a French research team led by Prof. Francisco Chinesta (EADS chair professor at Ecole Centrale de Nantes) in developing a model that aptly correlates the microstructure with the flow behavior of CNTs at a liquid-liquid or air-liquid interface. Meanwhile, Dr. Ma and his graduate students (Sahil Vora,Yang Guo, and Huseini Patanwala) will carry out experimental studies to reveal how the two liquids actually respond to the introduction of the CNTs.

Dr. Ma intends to integrate undergraduate and graduate students, middle and high school teachers, and visiting high school students, at all levels of the project. He also intends to use this program as an educational platform for outreach to high school students in underserved communities. In particular, he envisions a series of hands-on demonstrations, including the use of culinary foams and emulsions (e.g., cappuccino foam, ice cream mix) as food-based themes that illustrate basic scientific concepts while conveying the fun of engineering.

In 2012, the Dr. Ma and his team hosted 10 undergraduates, one high school student, and one high school teacher, who worked on various projects ranging from the rheology of nanotube-stabilized emulsions to the science of ice cream making (in collaboration with the UConn Dairy Bar). A Mentor Connection participant, DiOnte Moore, who participated in the ice cream project, recently decided to attend UConn.

Alumni News

For the complete article see: http://news.engr.uconn.edu/alumni-news-6.php

Jacquelynn Garofano (Ph.D. Materials Science & Engineering, ’10), a Senior Engineer and Research Scientist in the Physical Sciences/Measurement Science Group at United Technologies Research Center, was chosen by Connecticut Magazine (http://www.connecticutmag.com/Connecticut-Magazine/January-2013/40-Under-40-Class-of-2013/) as one of the state’s top “40 Under 40” young professionals. Jackie appeared in the March 2013 issue of the print and online magazine. In 2010, Jackie received the CTC’s Women of Innovation Collegian Innovation and Leadership Award.
Jain - Multiferroic NSF Grant

Menka Jain, a faculty member in the department of Physics and the Institute of Materials Science, has recently received a grant from the National Science Foundation. This project explores the fundamental understanding of the structure and distortions of single-phase doped/undoped rare-earth manganites and finding new avenues to control their physical properties. The materials of interest are the magneto-electric multiferroic rare-earth manganites in which ferroelectricity is induced when at some magnetic transition of the material. During the course of the project, insights will be gained into the scientific parameters affecting the structural distortions, bond angles, magnetic, ferroelectric, and magnetoelectric properties. The investigation anticipates the rational design of magnetoelectric multiferroics with enhanced electric polarization and/or critical temperatures, which potentially impacts the advancement of magnetoelectric based devices in consumer electronics, health care, and military systems. The funding will allow her to expand upon her ongoing work in functional and multifunctional nanomaterials for various device applications.

In addition to the grant, Dr. Jain also organized a symposium M titled “Solution Synthesis of Inorganic Materials-Films, Nanoparticles, and Nanocomposites” in the Materials Research Society Spring meeting in April 2013 year. The symposium brought together many distinguished solution synthesis experts from around the world from different universities, national labs, and industries. Dr. Jain is also organizing Symposium on “Solar Fuels” in the Materials Challenges in Alternative & Renewable Energy meeting, February 2014.

Pratt & Whitney Additive Manufacturing Innovation Center Opens At UConn

By Colin Poitras & Angelina Reyes. For the complete article see: http://today.uconn.edu/blog/2013/04/pratt-whitney-additive-manufacturing-innovation-center-opens-at-uconn/

On April 5, 2013 the University of Connecticut and Pratt & Whitney celebrated the opening of a new Pratt & Whitney Additive Manufacturing Innovation Center at UConn, one of the most advanced additive manufacturing laboratories in the nation.

The Pratt & Whitney Additive Manufacturing Innovation Center, a collaboration between UConn and Pratt & Whitney, will be used to further additive manufacturing research and development and is the first additive manufacturing facility in the Northeast to work with metals rather than plastics. The center also will be used to train a new generation of engineers and designers in the latest advancements in manufacturing technology.

For more information please contact Prof. Mike Accorsi, Senior Associate Dean for Research (MICHAEL.ACCORSI@uconn.edu).
Four UConn Students Selected as National Science Foundation Fellows

By Christine Buckley, For the complete article see: http://today.uconn.edu/blog/2013/04/four-uconn-students-selected-as-national-science-foundation-fellows/

Four UConn students have been awarded 2013 Graduate Research Fellowships by the National Science Foundation. The fellowships support graduate students in science, technology, engineering, and mathematics (STEM) disciplines who are pursuing research-based master’s and doctoral degrees at accredited U.S. institutions. About 2,000 awards were given nationwide in 2013.

Three of the students receiving fellowships are currently undergraduates: Emily Funk (CLAS ’13), Anna Green (CLAS ’13), and Tyler Reese (CLAS ’13). Second-year graduate student Jennifer Bento of the Institute of Materials Science was also honored.

Jennifer Bento’s graduate work involves research in the Polymer Program with associate professor Douglas Adamson. Her proposed research integrates polymer chemistry and engineering to develop a novel type of membrane that will remove salt from saltwater, in a process called desalination. These methods could help to address growing clean water needs around the world.

She says she hopes the fellowship will help her stand out when applying for positions after graduate school: “I hope it will set me apart from other graduate students who will be applying for post-docs and jobs. Dealing with courses, research, and writing for a fellowship all at the same time was a lot, but it was definitely worth it.”

New Appointments In Engineering

For the complete article see: http://news.engr.uconn.edu/new-appointments-in-engineering-2.php

Interim Dean Kazem Kazerounian announced three new appointments in the School of Engineering in response to one pending retirement and the formation of two new departments.

With the Board of Trustees’ approval in December of the establishment of two new stand-alone departments – Chemical & Biomolecular Engineering (CBE) and Materials Science & Engineering (MSE) – formal internal searches were conducted to identify Department Heads for the two new units. Dean Kazerounian announced the new heads will be professor S. Pamir Alpay as Head of the MSE Department and professor Doug Cooper as Head of the new CBE Department.

Dr. Alpay joined UConn in 2001 and has established an impressive record of accomplishment during his 12 years at UConn. He holds a joint appointment with the Department
Department Seminars: Fall 2013

All Fall seminar schedules have not been finalized at the time of this writing. Final 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/seminars.html and http://www.mse. engr.uconn.edu/seminars). This information will be updated as additional seminars and information 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.

Here are the preliminary schedules for the Polymer Program fall seminar series and the CMBE.

POLYMER SEMINAR SERIES

September 13  
Materials Morphogenesis  
Prof. Seth Fraden, Brandeis University

September 20  
Self-Assembly: Evolution from Surfactants, Block Co-Polymers, Biomolecular Conjugates to Nanoparticles"  
Dr. Ramanathan Nagarajan, U.S. Army Natick Soldier Research, Development & Engineering Center

September 27  
Interfacial Curvature Effects in Polypeptide-based Block Copolymer Assemblies  
Prof. Daniel Savin, University of Southern Mississippi

October 11  
Radiation Shielding Materials and the Space Environment  
Dr. Laurence D. Thomsen, NASA Langley Research Center

November 1  
Targeted Polymeric Nanoparticles: From Discovery to Clinical Trials  
Dr. Omid Farokhzad, Harvard Medical School & Brigham and Women’s Hospital

November 15  
How the Properties of Cells Derive from Polymeric Nature of the Proteins in Their Proteomes  
Prof. Kenneth A. Dill, SUNY Stony Brook

November 22  
Stressing Lipid Membranes: Effects of Polymers on Membrane Structural Integrity  
Prof. Ka Yee Lee, University of Chicago

Additional seminars may be added. Please visit www.ims.uconn.edu/polymer for details.

All Polymer Program seminars are held on Fridays at 1:30 PM in IMS Room 20, unless noted otherwise. Coffee will be served at 1:00 PM outside the seminar room. For more information, please contact YH Chudy at ychudy@ims.uconn.edu (860-486-3582) or visit www.ims.uconn.edu/polymer.
MSE SEMINAR SERIES

MSE Fall 2013 Seminar Series

September 13  
TBD
Naresh Thadhani, Professor & Associate Chair, School of Materials Science and Engineering, Georgia Institute of Technology

September 20  
TBD
Dr. Dave Furrer, Senior Fellow Discipline Lead Materials and Process Engineering, Pratt & Whitney

September 27  
Informatics for Materials Genomics
Krishna Rajan, Wilkinson Professor of Interdisciplinary Engineering Dept. of Materials Science and Engineering & Bioinformatics and Computational Biology Program, Iowa State University

October 11  
TBD
Jacob Jones, Associate Professor Department of Materials Science & Engineering, North Carolina State University

October 25  
Drug & Gene Delivery
Fan Yuan, Professor Department of Biomedical Engineering, Duke University

November 8  
Physics Based Modeling of Laser Sintering Process
Dr. Vijay Jagdale, Senior Engineer, United Technologies Research Center

November 15  
NOx Catalysis from the Bottom Up
Stathis Meletis, Professor & Chairperson, Material Science & Engineering, University of Texas Arlington

MSE Fall 2013 Distinguished Lectureship

October 4  
Ultra-Thin Functional Films
Charles Ahn, Professor of Mechanical Engineering & Materials Science, Applied Physics & Physics
Yale University

All MSE seminars are held on Fridays at 11AM in IMS Room 20, unless noted otherwise. Coffee will be served before the seminar outside the seminar room. For more information, please contact Cathy McCrackan (cmccrackan@ims.uconn.edu) or visit http://www.mse.engr.uconn.edu/seminars.
Pilania Receives MSE Outstanding Graduate Student Award

By Heike Brueckner. For the complete article see: http://news.engr.uconn.edu/news-from-materials-science-engineering.php

Ghanshyam Pilania was presented the 2012 Materials Science & Engineering (MSE) Department’s Outstanding Graduate Student Award for his excellent research work and outstanding academic record.

Now a postdoctoral research fellow at UConn, Dr. Pilania joined Professor R. Ramprasad’s group in the fall of 2007 after earning his bachelor’s degree in Metallurgical and Materials Engineering at the Indian Institute of Technology, Roorkee (India). At UConn, Dr. Pilania’s research focused on designing and understanding the microscopic properties of advanced materials by means of quantum mechanical computations. Among the technological challenges he addressed were the catalytic mechanisms for industrially important reactions, the design of high energy density capacitor dielectric materials, shape control of nanostructures, and polarization control within nano-ferroelectric materials. Dr. Pilania’s doctoral work resulted in 11 scholarly papers published in leading journals, notably the Journal of Materials Science, Nano Letters, The Journal of Physical Chemistry, Physical Review B, and Surface Science. He received his Ph.D. in May 2012.

“Dr. Ghanshyam Pilania’s doctoral work has led to the discovery of new polarization ordering in ferroelectric complex oxide nanostructures, and to new computational methodologies to quantitatively predict the atomic-level surface structures of complex oxides,” says Professor Ramprasad, adding, “The former has...”
New Instrumentation: Small Angle X-ray Scattering (SAXS) for Global Nano-structural Characterization

Two common methodologies to characterize nano-structures are microscopy and scattering. The former provides images of local structure while the latter yield average global structural information over the entire scattering volume. Moreover, many in-situ measurements (temperature, tensile, shear flow...) are accessible in the case of scattering. An NSF-MRI (major research instrument) proposal for the acquisition of a state-of-the-art Small Angle X-ray Scattering (SAXS) instrument led by Mu-Ping Nieh (CBE), Douglas Adamson (Chem) and James Cole (MCB) has been granted to UCONN (installed at IMS). The SAXS instrument was purchased from Bruker Inc. and was installed in July, 2013.

The SAXS instrument (Nanostar) is a two-pinhole, rotating anode system, which produces highly intense X-ray beam, and has Bruker’s most advanced detector (Vantec 2000). The minimum attainable q is around 0.005 Å⁻¹, corresponding to 100 nm. The instrument has versatile sample environments, including temperature controlled (from -10 to 120 °C), flow cell, in-situ rheometer and in-situ tensile meter. It can also perform wide angle X-ray scattering, grazing-incident SAXS and X-ray reflectometry measurements.

SAXS can be applied to a variety of systems including metal alloys, colloids, fibers, polymer melts or solutions, aggregates, nanoparticles, liquid crystals and composites in order to attain the structural information of size, shape, size distribution, repeated spacing and anisotropic orientation.

A meeting describing SAXS and its capabilities is in the preliminary planning stages. Details will be available shortly. For more information please contact Mu-Ping Nieh (mu-ping.nieh@ims.uconn.edu).

UConn Materials Science Visits Bacon Academy

For the complete article see: http://news.engr.uconn.edu/news-from-materials-science-engineering.php

On December 21st, 2012, six members of the UConn Materials Advantage student chapter (UCMA) visited Bacon Academy high school to educate and inform integrated science students about materials science and engineering. Making the trip were seniors Jason Chan, Jillian Falcetti, Gabe Paun and Tim Plourde; sophomore Alexandra Merkouriou; and lab technician Adam Wentworth (‘09, ‘11).

The UCMA members used demonstrations to help students understand engineering principles relating to different materials, such as the insulating effect of a space shuttle tile and the Meissner effect of a high-temperature superconductor. The UCMA team also exhibited a number of novel materials, including shape memory alloys and the world’s lowest density solid, a silica aerogel, to showcase the diverse and far-reaching applications of the discipline. They explained how materials research and discovery leads not only to exotic applications but also to everyday items such as smaller computers, long-lasting LED lights, and efficient transportation.

The chapter members also discussed some of the exciting technological challenges that materials scientists and engineers are involved in, such as biocompatible implants, carbon fiber applications, and nanomaterials. Bacon Academy students enjoyed learning about the possible career paths available to Material Science & Engineering graduates, including the sports, transportation, energy, electronics, and biomaterials sectors, among others.

The UCMA student chapter is among the most active and successful chapters nationwide focusing on outreach. It has won the prestigious “Chapter of Excellence” award twice and the “World Materials Day Outreach” award a number of times. Materials Advantage membership is open to any student.
Multiferroic materials combining at least two ferroic properties – ferroelectric, ferromagnetic or ferroelastic – are of particular interest for multifunctional devices. When ferroelectric and magnetic materials are integrated together to form magnetoelectric (ME) multiferroics, the combined ME coupling effect confer the potential for revolutionising functional electronic device architecture.

Professor Menka Jain, who heads up the Advanced Functional Materials Research Group of the Institute of Materials Science at the University of Connecticut, believes that ME nanocomposite films could be suitable for efficient energy harvesting devices. This is possible because ME vibrational energy harvesters can be more effective than their piezoelectric counterparts, operating in a broader range of frequencies; and ME generators could harvest energy from stray magnetic fields, for example, near an electric motor.

Drs. Maurice Gell and Eric Jordan (IMS members, Ed.) have developed a new process for making ceramic thermal barrier coatings (TBCs) that are used extensively in gas turbine engines. This Solution Precursor Plasma Spray (SPPS) process allows the deposition of higher temperature, lower thermal conductivity TBCs that will provide significant fuel savings for aircraft and land-based gas turbines.

This technology captured the interest of HiFunda, LLC, a Salt Lake City small business, in 2011. As a result, HiFunda LLC and UConn have teamed on two U.S. Department of Energy Small Business Technology Transfer Program (STTR) projects. The latest is a newly-begun Phase II award totaling $1 million, of which UConn receives $387,000 as the sub-contractor.

By Victoria Chilinski (CLAS ’16) and Maurice Gell, Ph.D. For the complete article see: http://news.engr.uconn.edu/public-private-partnership-advances-gas-turbine-materials-technology.php

Jain - International Innovation

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Suib New Director of IMS

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More Than 100 Companies, Business Groups Endorsing Next Generation Connecticut

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“They understand they need human capital to compete with the rest of the world,” Malloy told the crowd Thursday, outlining the need for an innovation-based economy and Next Generation Connecticut’s potential to help drive job creation in high-tech fields.

“These are important investments that will allow us to be successful not in the past, but in the future – not with yesterday’s technologies, but with tomorrow’s technologies,” Malloy said. “It also ensures we will be competitive to keep the jobs we have in the state and attract others.”

Many members of the IMS Associates Program wrote letters in support of this effort. We thank them for their efforts and continuing support.

Eight UConn Professors Inducted into Connecticut Academy of Science and Engineering

(Continued from page 3)

Nalini Ravishanker, professor of statistics in the College of Liberal Arts and Sciences has broad research interests including statistical methods in time-series analysis and signal processing

Frank M. Torti is the executive vice president for health affairs and medical school dean at the University of Connecticut Health Center

Suzy Torti, an accomplished cancer researcher, is a professor in the UConn School of Medicine’s Department of Molecular, Microbial, and Structural Biology, and the Center for Molecular Medicine at the UConn Health Center.

J. Evan Ward, professor of marine sciences in the College of Liberal Arts and Sciences, has contributed significantly to the field of marine biology by advancing knowledge of the feeding processes of invertebrate animals.

Public-Private Partnership Advances Gas Turbine Materials Technology

(Continued from page 12)

program, entitled “Ultra-High Temperature Thermal Barrier Coatings,” utilizes the SPPS process to deposit highly durable TBCs made from yttrium aluminum garnet (YAG), a high-temperature, low thermal conductivity ceramic that cannot be deposited with adequate durability using commercial TBC processes. The SPPS process uniquely provides YAG TBCs with a strain-tolerant microstructure that provides excellent durability in thermal cycle tests.

HiFunda has established a Thermal Spray Facility within the technology incubator at UConn’s Depot campus, moved a senior researcher to UConn, and is providing funds for capital equipment and supplies. The company’s intention is to license this UConn-patented technology and to establish a new company at UConn to further develop and market the SPPS technology.

Pilania Receives MSE Outstanding Graduate Student Award

(Continued from page 10)

implications for advanced digital data storage, and the latter is expected to provide a pathway for the optimization of complex oxide compositions for catalysis applications.”

As a student, Dr. Pilania received the Best Poster of the Symposium Award at the MRS Fall 2011 meeting and won second place in the 2010 ASM Hartford-sponsored Student Speaking Contest. He also secured an NSF Travel Grant Award to visit the Fritz-Haber-Institute of the Max Planck Society, Berlin, Germany in July 2011. In recognition of his academic achievements, he was recently inducted into the Alpha Sigma Mu professional honor society at UConn.
This course has sold out. However, we have started a wait list with the hope that we will be able to offer a second session soon. If interested, we encourage you to contact Rhonda Ward at rhonda.ward@uconn.edu or 860-486-5874 to be added to the wait list.

IMS ASSOCIATES PROGRAM

INTRODUCTION TO
STATISTICAL DESIGN OF EXPERIMENTS

An IMS Associates Program
Short Course

October 16-17, 2013

About this Course
This two-day course will be hands-on beginning with statistical experimental designs such as the t-test, as well as one-way and multi-way factorial design. Understanding and interpreting experimental output will be given high priority. Multiple sources of variability and blocking will be considered. Special design types like screening designs, Box-Behnken designs, Orthogonal Arrays (Taguchi), Plackett-Burman (Screening) designs and other response surface designs will be included. Factorial designs, which allow the determination of the effect of important parameters and their interaction with each other, will be considered. When there are a number of different parameters, Fractional Factorial designs along with their resolution are studied because they can be more efficient. For all designs we will see how to analyze the results both analytically and graphically. We will also consider using experiments sequentially so that prior experiments can be easily combined with current results. How to handle hard-to-change factors will be considered. Finally, sample size and power calculation, which give the engineer insight into whether or not a proposed experiment is worthwhile, will be introduced.

About Your Instructor
Professor Koehn received his Ph.D. in Statistics from the University of Illinois at Urbana-Champaign. He was Head of the Department of Statistics at the University of Connecticut for 12 years and directed the department’s statistical consulting service for more than 25 years. Having taken emeritus status, he is devoting his time to statistical consulting and research. He has consulted with and taught short courses to more than 30 companies and organizations, as well as having worked with numerous engineers and scientists within the University. He has had a long association with the Institute of Materials Science. Professor Koehn’s consulting in the scientific and engineering fields has involved experiments in the biological and physical sciences as well as processes in manufacturing and chemical engineering. He is particularly interested in problems in process optimization. He also supports Industry outreach and materials problem solving for the IMS Associates Program.

Who Should Attend
Engineers and scientists wishing to increase the power of their experiments by using statistical design of experiments (DoE). The equivalent of one college statistics course would be desirable.
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/](http://www.ims.uconn.edu/) and clicking on Outreach.

The open positions 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).

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.

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 full-blown 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) or Steve Suib (860-486-4623, steve.suib@uconn.edu)

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, 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 material at UConn when they are created by external sources.

Large Sample Quantities

It is rare that the Associates Program needs more than 100gr of material for our investigations — actually we rarely need more than a few grams. When we receive unnecessarily large sample quantities we must return or dispose of the unneeded material. This can incur significant expense that we must pass along to the requestor. If you are unsure of the quantity of sample required for various projects please feel free to discuss that with us before sending samples.

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), x-ray photoelectron spectroscopy (XPS) and contact angle 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 non-contaminating/non-plasticized material.
Fall Semester Starts

Fall semester classes start August 26, 2013. Some courses that may be of interest include the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 5341</td>
<td>Polymer Synthesis</td>
<td>G.A. Sotzing</td>
</tr>
<tr>
<td>CHEG 5351</td>
<td>Polymer Physics</td>
<td>E. Dormidontova/R. Parnas</td>
</tr>
<tr>
<td>CHEM 5381</td>
<td>Polymer Physical Chemistry</td>
<td>T.A.P. Seery</td>
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<tr>
<td>CHEM 5382</td>
<td>Polymer Characterization I</td>
<td>Y. Lin</td>
</tr>
<tr>
<td>CHEG 5395-2</td>
<td>Applied Nanomaterials</td>
<td>A. Ma</td>
</tr>
<tr>
<td>MSE 5305</td>
<td>Phase transformations in Solids</td>
<td>S. Nakhmanson</td>
</tr>
<tr>
<td>MSE 5309</td>
<td>Transport Phenomena</td>
<td>R. Maric</td>
</tr>
<tr>
<td>MSE 5317</td>
<td>Electronics and Magnetic Properties of Materials</td>
<td>R. Ramprasad</td>
</tr>
</tbody>
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Gant Complex Construction

The masonry façades which enclose the northwest and southwest stair towers of the Gant Building are in serious disrepair and present a danger of falling masonry. Protective scaffolding has been in place for some time to ensure the safety of pedestrians and visitors entering and exiting the Gant building via these stair towers. The glass walls which enclose these stairwells are aged and leaking and are also in need of replacement. The roof of the Physics wing leaks and is causing damage within the building.

The University retained the engineering firm of Simpson, Gumpertz and Heger who have prepared corrective designs to repair and restore these damaged parts of the Gant building. NER Construction Management (NER), an experienced Masonry Contractor, will undertake the necessary construction work to restore the deteriorated portions of the building. NER will mobilize its workforce during the week of Thanksgiving and erect construction fencing to prepare the site for construction operations. The project is scheduled to be completed at the end of 2013.

The deteriorated masonry will be removed and replaced with new masonry. The glass curtain wall system surrounding the stair towers will also be removed and replaced. The restoration work requires the alternate closure of the stair towers for periods of 4 to 6 months each. The UConn Fire Marshal and Building Inspector’s Office has approved emergency exit routes and signage will be placed to direct occupants to safe exits.