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RESEARCH TRACKS

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Engineering research seeks new methods for nondestructive testing of materials

When engineers want to test the strength of a material or a component part, the simplest method is to put the material under strain until it fails. This process is called destructive test or inspection. Unfortunately, that type of testing destroys the material being tested. Destructive testing is routinely used for small or inexpensive parts, but it may not be acceptable when dealing with large, expensive, or one-of-a-kind components.

Dr. David Jack, assistant professor of mechanical engineering, is partnering with L-3 Waco's Platform Integration Division (PID) to research nondestructive methods for testing. His research is focused on advanced aerospace carbon fiber. Each layer of the carbon fiber laminates, called a lamina, can be individually modified to create a part with tailored structural properties, reducing the part's weight while enhancing its strength.

"You can think of these carbon fiber lamina like a deck of cards," he said. "If you get several cards stuck together, they're stronger together than a single card by itself. We stack layers of carbon fiber to make them stronger, but we need a way to nondestructively test for delamination, that is, separation of the layers that significantly weakens the material."

To find these delaminations, Dr. Jack and his team are developing new techniques to use ultrasonic sound pulses to predict the structural response of the material both

with and without delaminations. Finding the separated layers helps to determine the strength of the material without breaking it.

The knowledge gained from this project will help post-OEM aircraft modification companies, such as L-3 PID, analyze composite laminates in ways they previously could not. The research being performed by Dr Jack, his students, and Birkeland Current, a local engineering company, could potentially impact a variety of industries, from aerospace to wind turbines to automotive manufacturing.

Depending upon the success of this research, Baylor could become known as a center of development for new, nondestructive materials testing processes and techniques.

In addition to helping to develop new testing methods, this partnership with L-3 also provides funding for graduate students and equipment that expand Baylor's research and teaching capacity, thus helping Baylor to attract research funding and bring national recognition in the area of advanced composites.

"The long-term benefit to Baylor is enormous," Dr. Jack said. "It will help us to place our graduates in the aerospace industry, which raises the profile of Baylor and the Mechanical Engineering department and will help us continue to attract the best and brightest students."

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Internal grant deadlines coming soon

FRIP/YIDP/URSA: Applications due February 8, 2012 at 12:00 noon

URC: Applications due February 29, 2012 at 12:00 noon

[Click here](#) to learn more about the internal grant programs, or [click here](#) to locate your academic unit's assigned OSP coordinator to begin the application process.

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FOR RESEARCH

Foundation grant supports research linking humility to helpfulness

Humility is often thought to be a positive character trait, but little research has linked it to positive overt behavior.

Recent research by faculty in Baylor's Psychology & Neuroscience department has shown that humble people are more likely than others to give aid to people in need.

Dr. Wade Rowatt, associate professor

of psychology, received a research grant from the John Templeton Foundation to support three studies on the link between humility and helpfulness.

"One problem with studying humility," Dr. Rowatt said, "is that it can be difficult to identify. Humble people will often under-report their own humility, while more egotistical people will over-report it."

To help get around this problem, Dr. Rowatt and his team devised a test that measured the speed with which people associated humility-related terms with themselves.

Dr. Rowatt and his team hope their findings will lead to future research on humility and its effects in specific contexts like innovation and leadership.

Tech transfer

Contact OVPR for assistance with technology transfer

The OVPR manages the process of identifying innovative discoveries, securing appropriate legal protections, and negotiating licensing agreements with industry.

The office retains the services of [TreMonti Consulting, LLC](#) to assist with management of intellectual property portfolios and technology commercialization.

The OVPR and TreMonti work together to assess the potential impact of inventions, analyze the



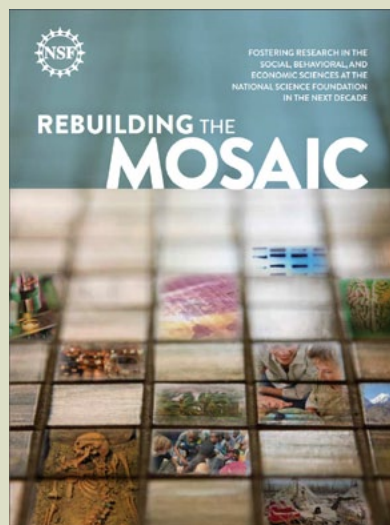
market for new innovations, and effectively license technologies to interested companies.

It is important that faculty contact the OVPR as soon as possible after the creation of innovations or inventions so that appropriate protections may be secured prior to disclosure.

For more information on tech transfer or to begin the disclosure process for a new invention, contact [Jim Kephart](#) at 254-710-1690.

Funding agency news

NSF outlines priorities for coming decade of research in social, behavioral, and economic science



The National Science Foundation's Directorate for Social, Behavioral, and Economic Sciences has released a report containing the findings from a year-long study of the directorate's priorities over the next ten years.

The project began in August of 2010 when the directorate asked members of the research community to submit 2,000-word white papers describing what they see as the biggest questions in their science as well as the capabilities and infrastructure necessary to pursue such research.

After considering 252 manuscripts submitted in response to the request, the NSF produced a report

that synthesizes and analyzes the community's views on the state of the science.

Notable findings in the report include an emphasis on collaborative and interdisciplinary research. The report also identifies four key topic areas for future research: population change; sources of disparities; communication, language and linguistics; and technology, new media and social networks.

[Click here](#) to download a PDF of the full report, or [click here](#) to learn more about the program and download white papers submitted in response to the directorate's call.

Baylor IRB honored for best practices in human-subjects research involving university students

Baylor's Institutional Review Board, the committee responsible for protection of human subjects in research, was recently awarded a Certificate of Merit from the Health Improvement Institute for its protocols related to research using students as subjects.

The certificate was given in the category of "Best Practices," recognizing the committee's work to identify the most effective methods of achieving the goal of protecting students in research.

Dr. Michael Sherr, chair of the IRB, said the recognized protocol was intended to balance the interest of students in being free from coercion with the need of faculty members to conduct research on teaching practices.

"In the past," Dr. Sherr said, "the IRB has had to deny approval of protocols involving students enrolled in courses where the



investigators were also instructors responsible for assigning grades. We needed to create an approved protocol that provided students the conceptual space and opportunity to give informed consent without fear of coercion related to class grades and performance."

In consultation with university administration and department chairs, the IRB created an

adjustment to protocol requiring a third party to introduce studies and collect consent forms. After collection, the consent forms are placed under seal and instructors do not know which students decided to participate in the study until after they have submitted the term's final grades.

Dr. Sherr said that development of the new protocol represents a proactive approach to human subjects protection on the part of the IRB, where the committee goes beyond just reviewing research and creates a campus environment that promotes ethical research practices.

"The protocol is consistent with Baylor University's mission as a research institution that emphasizes the spiritual formation of students as well as their preparation for leadership and service," he said. "It models the type of ethical behavior we hope our students will demonstrate in their own lives."

IRB to host seminar on research involving human subjects

The university, the Institutional Review Board (IRB), and individual investigators share a collective responsibility to ensure that research involving human subjects is guided by the highest ethical standards and is conducted in compliance with federal, state and university regulations governing such research.

If you or your students are considering conducting research

involving human subjects, make plans to join IRB Chair Dr. Michael Sherr and IRB support staff for a seminar on human subjects research. Dr. Sherr will discuss the ethical and regulatory underpinnings of human subjects research and specific topics related to human subjects research at Baylor. The seminar will cover the online training required of Baylor investigators, and the Baylor project

review and approval process.

It will also include informative "how to" demonstrations of the CITI online training program and IRBNet, the online system for protocol submission and review.

The seminar takes place on Tuesday, January 31, from 3:30 - 5:00 PM in the Baylor Sciences Building, room C.206.

IACUC clarifies procedures for online training

The Institutional Animal Care & Use Committee (IACUC) uses the CITI online learning program to meet federal and institutional requirements for training of investigators whose research or teaching involves animals.

Recently, IACUC Chair Dr. Rick Duhrkopf and OVPR staff reviewed

the training process and made changes to clarify the procedures.

The changes to the website do not affect training requirements for existing approved protocols. Faculty who have previously completed training will need to complete CITI training for new proposals if their previous training has expired or they

have not met all current training requirements of the IACUC.

A list of current IACUC CITI training requirements can be found on the [IACUC webpage](#).

[Click here](#) to visit the CITI portal, or contact [Jill Combs](#) at 254-710-3708 for assistance.

OVPR Colloquium in Religion

In conjunction with the OVPR, Baylor's Religion department presents a special lecture by Dr. Karl Galinsky.

Dr. Galinsky is the Floyd Cailloux Centennial Professor of Classics at UT Austin, and a past winner of the Max Planck Research Award for International Cooperation.

His talk, entitled "Why God Chose the Time of Augustus for the Birth of Christ" takes place Monday, January 30 at 3:45 PM in Miller Chapel in the Tidwell Bible Building. The event is free and open to the public.

Contact [Jason Whitlark](#) at 254-710-4592 for more information.

Arts & Humanities Faculty Research Program

In addition to the support offered through the FRIP, YIDP, URC, and URSA grant programs, the OVPR also provides grants specifically targeted at projects in the humanities and fine arts.

The Arts & Humanities Faculty Research Program (AHFRP) can fund any research, scholarly or creative work in the fine arts, humanities or education.

The most common use of the funds is to pay for travel to visit a special collection or for

supplies and fees related to creative projects.

The amount of funding for AHFRP grants is based upon need. Typical awards range from \$500 to \$1,500.

Applications are accepted year-round, but applicants must allow at least 60 days between the application submission and the desired project start date.

[Click here](#) for more information on the AHFRP or to read abstracts of previously funded projects.

Undergraduate Research Spotlight

URSA Scholars Week organizers look to build on past growth

As the 2012 Scholars Week draws near, leaders of Undergraduate Research & Scholarly Achievement (URSA) say they expect this year's event to be the largest yet.

Dr. Susan Bratton, URSA director, is pleased with the growth she's seen in the number and quality of student presentations.

"Scholars Week has continued to expand," she said. "It's really encouraging that between Scholars Week and the Honors Thesis presentations, we now have over ten percent of our undergraduate students producing professional-quality independent research."

Scholars Week has its roots in a previous event that recognized faculty and graduate student research. Dr. Bratton said that while only a few undergraduate researchers participated in these early programs, Scholars Week has now grown beyond the size of the former faculty event.

In addition to expanded participation, this year Scholars Week will feature awards to recognize the outstanding student researchers in each department.

Participation in Scholars Week is open to any student who has undertaken independent research in the past academic year. All students

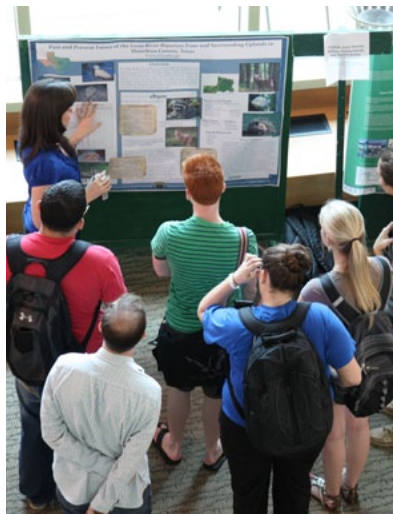
are encouraged to participate.

The 2012 Scholars Week takes place the week of March 26-30.

To participate in Scholars Week, students must submit an application to their department chair no later than Monday, February 27.

[Click here](#) to download the Scholars Week application form, or [visit the URSA website](#) to learn more about Scholars Week and other opportunities for undergraduate research.

Below, students showcase their research at the 2011 Scholars Week event.



Federal Grants

Opportunity Title	Due Date
<u>*NEA - Grants for Arts Education: Art Works</u>	01/26/2012 (Internal LOI)
<u>NIH - Translational Research for Prevention & Control of Diabetes & Obesity (R18)</u>	03/01/2012
<u>*NIH - Team-Based Design in Biomedical Engineering Education (R25)</u>	03/07/2012 (Internal LOI)
<u>Dept. of Ed. - Field-Initiated Disability and Rehabilitation Research Projects</u>	03/05/2012
<u>*NEH - Preservation Assistance Grants</u>	03/20/2012 (Internal LOI)
<u>*NEA - Challenge America Fast-Track</u>	04/12/2012 (Internal LOI)
<u>NSF - Social Psychology Program</u>	07/15/2012
<u>NSF - Education and Interdisciplinary Research</u>	10/31/2012
<u>NSF - Physics at the Information Frontier</u>	11/16/2012

Foundation Grants

Opportunity Title	Due Date
<u>Robert Wood Johnson Foundation - Changes in Health Care Financing and Organization</u>	Open
<u>The Voice Foundation - Education and Research Grants</u>	Open
<u>Kresge Foundation - Arts and Community Building</u>	02/01/2012 (Pre-application)
<u>International Education Research Foundation - Research Grants</u>	02/15/2012
<u>Pasold Research Fund - Research Project Grants (Textile History)</u>	03/01/2012
<u>Harry S. Truman Library - Research Grants</u>	04/01/2012

* - Limited submission opportunities. [Click here](#) for application information

Questions?

If you'd like to apply for these or other specific opportunities, contact your department's assigned **OSP coordinator**. For questions about searching for funding or setting up funding alerts, contact [Blake Thomas](#) at 254-710-3153.