### Significant Increase in Proposals Submitted for External Research Funding

In the period between the start of the fiscal year (July 1st) and the end of the calendar year (December 31st), there was a 49% increase between 2013 and 2014 in the number of proposals submitted for external research funding, and a 58% increase in the total dollars requested in the proposal submissions. This increase is one indication that CSU Researchers understand the importance of securing external funding to support the high quality scientific research and scholarly investigations here at Cleveland State University. CSU’s culture of research and innovation is moving in the right direction.

### Over $300,000 NASA Grant Awarded to CSU Researcher Funds Investigation of Samples Used at International Space Station

Surendra Tewari, Professor in the Department of Chemical and Biomedical Engineering recently learned that the aluminum-silicon alloy sample prepared in his Materials Processing Lab has just been brought back to Earth from the International Space Station by SpaceX Dragon-CRS-4. This is the third CSU-grown sample processed on the Space Station under a joint NASA-ESA research program called MICAST (Microstructure Formation in the Casting of Technical Alloy under Diffusive and Magnetically Controlled Convective Conditions). Under this program the U.S. research team consisting of Professor David Poirier from the University of Arizona, Dr. Richard Grugel from NASA-Marshall Space Flight Center and Professor Tewari is exploring how formation of defects during casting of metallic alloys here on Earth can be minimized by understanding the role gravity-driven fluid-flow plays in their onset and growth.

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From left to right: Professor Tewari, Francis Chiaaramonte (NASA-HQ), Winfried Aicher (ESA), Corky Clinton and Frank Szofran (NASA-MSFC) examining the MICAST6 sample just extracted from its Cartridge Assembly at NASA-MSFC, Huntsville, Alabama.

MICAST6, the first CSU sample sent to the Space Station in 2010, had the distinction of being the first U.S. sample processed in the U.S. Materials Science Research Rack on the Space Station using the ESA-Materials Science Laboratory furnace facility, and has generated valuable information for the solidification community. The Specimen Cartridge Assembly (SCA) containing the CSU sample is currently in Germany for CT-scan and X-ray radiography by ESA engineers. Professor Tewari's graduate students are eagerly awaiting its arrival to CSU so that they can begin characterizing the sample.

Professor Tewari has an impressive research background in high temperature materials and solidification processing. His work has attracted significant external research funding from NASA, DOE, and industry, which has supported dozens of graduate students and post-doctoral researchers. He has more than 160 refereed journal publications, and he has received several internal and external recognitions, including, CSU's Distinguished Faculty Award for Research, the Metallurgical Society's Champion H. Mathewson Award for the "paper or series of closely related papers considered the most notable contribution to metallurgical science," and Fellow of American Society of Materials International for "outstanding scientific and technical contributions in solidification processing of materials."

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Call for Proposals - 2015-16 DRA, FRD and FSI

The Office of Research is pleased to announce another Call for Proposals for the following 2015-2016 internal funding programs:

- Dissertation Research Award (DRA)
- Faculty Research and Development (FRD)
- Faculty Scholarship Initiative (FSI)

All three funding programs have a deadline of March 6, 2015.

In order to assist in the preparation of successful applications, the evaluation forms that will be used to evaluate the proposals are included at the end of the guidelines file associated with each award. For more information, please contact Joy Yard, 687-9364, j.yard@csuohio.edu, or Conor McLennan, 687-5171, c.mclennan@csuohio.edu.
The Office of Research is pleased to announce the availability of funding to support undergraduate student research and scholarship for Summer 2015. The application deadline for the Undergraduate Summer Research Award is February 5, 2015. Click here for more information.

Funding for faculty-student research collaborations during the academic year is also available from the Undergraduate Research Award program.

Meet CSU's New Research Faculty

The Department of Mechanical Engineering welcomed three new tenure-track Assistant Professors this fall, Drs. Jason Halloran, Eric Shearer, and Wei Zhang. All three new faculty members have active research programs. Dr. Shearer was featured in the October issue of this newsletter. Read below to learn more about the research programs of Drs. Halloran and Zhang.

Dr. Halloran was previously a staff researcher at the Cleveland Clinic, where he worked on developing novel approaches for simulation of human movement. In this realm he performed work centered on various joints in the lower limb. From evaluating foot mechanics during gait to quantifying how cells deform in the knee, his work has spanned multiple spatial domains. Dr. Halloran has contributed to the discussion on the challenges of modeling cartilage, the low friction bearing surface in joints, and also developed tools to evaluate commonly used implants that address various knee deficiencies.

Related to this work, Dr. Halloran has consulted for numerous orthopaedic device companies and
hopes to continue this trend in his new position. Dr. Halloran's publishing record addresses topics ranging from reporting practices in computer simulation studies to applied orthopaedic biomechanics. Along with continuing to build his record in analysis of natural and replaced knee mechanics, Dr. Halloran has an emerging interest in understanding how surgical interventions alter movement and pain sensations in the lower limb.

Dr. Zhang's research is currently the thermal/fluid and energy area of the department. Prior to joining Cleveland State University, Dr. Zhang conducted research on a wide variety of topics ranging from large-scale systems such as atmospheric turbulence, tornado-like vortex dynamics and wind-blown sand saltation (two-phase flows), to small-scale laminar-turbulent transition over the airfoil of micro air vehicles.

Her research interests include: 1) the development of non-intrusive laser and imaging-based thermal/fluid measurement techniques, and 2) the applications of these techniques to understanding the governing mechanism of complex thermal/fluid and energy systems in nature and in industry. Dr. Zhang's current research includes laminar-turbulent transition, turbulent flow and heat transport over heterogeneous surface, wind-farm wake modeling, and utility-scale wind farms' impact on local/global micrometeorology and the environment.

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**Featured Researcher Video Series**

Dr. Joanne Goodell's research is the focus of the latest installment of the Featured Researcher Video series. Dr. Goodell is a Professor of Teacher Education at Cleveland State University. Her research includes the innovative teacher preparation program for math and science majors focused on STEM project-based instruction. We encourage you to learn about Dr. Goodell's work, and to take a look at our previous Featured Researcher Videos.

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**CSU Scholar News**

Dr. Vasilios D. Kosteas, associate professor in the Department of Economics, and Francesco Renna of the University of Akron, recently published an article in the *Journal of Health Economics* showing how wage rigidities affect firms' decisions on how much of the premiums for its employer-sponsored health insurance plans to pass on to their employees.

In a setting where firms offer two types of health insurance plans (an HMO and a PPO plan), their model shows that an increase in the premium for one plan will affect how much employees will contribute towards the premium. Using data from the Kaiser Family Foundation's Employer Health Benefits Survey, the authors find support for the models predictions.

Professor Kosteas has also published research on the labor market impacts of regular exercise, how holding traditional beliefs about gender roles affect women's educational attainment and labor supply decisions, and the relationship between early career employment disruptions and the probability of holding a supervisory position mid-career, as well as other topics.
Please share with us important news or updates on your research, scholarly, or creative activities. Updates may be related to a paper that has been accepted for publication in a high-impact journal, a book you've just published, your work that will be exhibited at a prominent institution, or other updates you wish to share with our office. Send details to j.yard@csuohio.edu and c.mclennan@csuohio.edu.

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**News from the Technology Transfer Office**

**New U.S. Patent Office Guidelines on Patentability of Inventions Published.** The U.S. Patent and Trademark Office (USPTO) has released a new guideline to supplement its recent tightening of patent eligibility rules after the Supreme Court struck down a number of patents on inventions derived from nature. The USPTO requires that a patent involving a law of nature must amount to "significantly more" than what’s found in nature. To learn more, please read [this article](https://www.sciencemag.org/) in *Science* magazine, which also includes a link to the new guidelines.

**Business Idea Competition.** LaunchTown is Northeast Ohio's top annual event for venture and angel investors to come see the best ideas from student led entrepreneurial teams. Winners of the competition will be provided cash prizes of up to $10,000 provided by the Burt D. Morgan Foundation plus business development consultation from area professionals valued at $20,000. The competition is open to students of all majors, with a focus on technology from graduate student led teams. For more information and to register, please visit this [website](https://www.launchtown.org/).

**SBIR/STTR Conference.** The National SBIR/STTR Conference, co-located with the National Innovation Summit, will be held in Washington D.C. from June 15 to June 17, 2015. SBIR/STTR programs are the nation's largest source of early stage / high risk R&D funding for small business. At this conference, you'll learn how to participate and compete for funding in these two programs that encourage small businesses to engage in Federal Research/Research and Development (R/R&D) and to commercialize your technological innovations. Click [here](https://www.sbir.gov/) for more information.

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**Learn How to Use SPIN to Find Funding Opportunities for Your Research**

The Office of Research is pleased to invite all CSU faculty, staff, and student researchers interested in learning how to use [SPIN](https://www.sbir.gov/) to attend a webinar on Thursday, January 22nd from 11:30am - 12:30pm. Click [here](https://www.sbir.gov/) to register for this webinar. SPIN is an extensive research funding opportunity database that allows you to locate all types of funding for your research. Although anyone can search the SPIN database from a CSU domain computer on campus, in order to use the database from off campus, and to take full advantage of the database (e.g., personalize your searches, save searches, request emails with new funding opportunities that match your searches, etc.), you must create a GENIUS account. CSU researchers, faculty, and students interested in establishing a GENIUS account, please click [here](https://www.sbir.gov/) for instructions.

The Center for Faculty Excellence is providing a forum for faculty to attend this Office of Research webinar together in RT 401. Please use the link above to register for the webinar and then if you would like to join colleagues for the webinar and lunch, please RSVP to cte@csuohio.edu by Tuesday, January 20th. Please indicate if you have any dietary restrictions. You may bring your own device or there will be laptops available for attendees to use. Walk-ins are always welcome!

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