



newsletter

Ray W. Herrick Laboratories

Purdue University, West Lafayette, IN 47907-2031

<https://engineering.purdue.edu/Herrick>

Spring 2011

Volume 20, Number 1

Ceremonial Groundbreaking

—with excerpts from Emil Venere’s News Release, Purdue University News Service

Purdue University “broke ground” Friday, April 1 on the project to expand Ray W. Herrick Laboratories. The ceremonial groundbreaking took place at 3 p.m. in front of current Herrick Labs and represents the start of a multi-phase, 68,000-square-foot rebuilding project. The new Herrick building, when all phases are completed, will roughly double the usable square footage of the labs.

Margaret Mathieson, Ph. D. student in the Thermal Sciences Area of Herrick Labs, was the “Master” of Ceremonies for the event. Purdue President Cordova’s first remarks after being introduced were to congratulate Margaret on being close to completing her Ph.D. and her acceptance of a faculty position at Marquette University. “Herrick’s expanded capabilities will enhance Purdue’s ability to attack the challenges surrounding major issues, including energy conservation and indoor-environmental health,” said Purdue President France A. Córdoba.



Purdue University President France Córdoba speaking at the groundbreaking.

She went on to point out that buildings are responsible for roughly 40 percent of the nation’s energy use, 71 percent of electricity consumption and 38 percent of carbon dioxide emissions, and that Americans typically spend more than 90 percent of their time indoors, while 20 percent to 30 percent of occupants have health problems related to indoor environments, according to a project report prepared by Purdue and the National Institute of Standards and Technology, an agency of the U.S. Department of Commerce.”

“Research in the Herrick facilities will help to create buildings that are better for the environment, more comfortable and healthier for people,” said Leah Jamieson, Purdue’s John A. Edwardson Dean of Engineering. “Future building designs



Artist’s interpretation of Phase I of the rebuild and expansion of the Ray W. Herrick Laboratories. The existing Herrick Labs are in the background. (AEI & Flad Architects)

will lead to dramatic improvements in health and productivity.”

Michael Diestel, the program director for the NIST Construction Grant Program also attended. Michael is very busy as many of the laboratories sponsored under the four rounds of this program are moving, or are in construction, and so we were very pleased that he could make the event. This Construction Grant Program was started in 2008. He pointed out how competitive the program was and how good our proposal must have been to win. The number of proposals is a reflection of the strong need for funds for research infrastructure and the limited number of programs available to address that need. As most of our readers will know from previous Newsletters, NIST is providing 50 percent of the funding for this Phase I project.

Other funds are from private donations. These include gifts from ME alumni including Gerald Hines and Roger Gatewood and from Herrick alumni such as Terry Manon, Ed Eisele, Dick Erth, Don Coates, and Jack Elson (and many others). The Ford Fund, Herrick Foundation, Cummins, and Copeland have also contributed to the project and Carrier, Kawneer, Lutron and Viracon have generously committed to some very significant in-kind donations. No State or University funds have been applied to this project.

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Upcoming

Building

June 9th, 2011: Bids due for the Phase I project.

July, 2011: Purdue Board of Trustees Meeting, request for approval of bid for Phase I.

August, 2011: Projected construction start.

IAC

October 20-22, 2011: Herrick Laboratories **Industrial Advisory Committee Meeting**, Homecoming Weekend, Illinois Football Game, & Dedication of the Roger Gatewood Wing of Mechanical Engineering.

2012 Purdue International Compressor, Refrigeration & Building Conferences & Short Courses

July 14-15, 2012: Short Courses

July 16-19, 2012:

- 21st International Compressor Engineering Conference,
- 14th International Refrigeration and Air Conditioning Conference &
- 2nd International High Performance Buildings Conference

(see pages 7-9 inside)

Ceremonial Groundbreaking (continued)

Representing the donors to the project, John Wall, Chief Technical Officer and Vice President at Cummins, also gave a speech. Patricia Davies, the Director, gave a speech acknowledging all the people working on the project at Purdue, AEI & Flad Architects, and all those who have contributed to make this project possible. Margaret Mathison gave a graduate student's perspective on the new building.



Ray W. Herrick Labs. ceremonial groundbreaking held Friday, April 1, 2011. From left are John Wall, vice president and chief technical officer for Cummins Inc.; Purdue President France A. Córdoba; Michael Diestel, federal program officer for the National Institute of Standards and Technology; Leah Jamieson, Purdue's John A. Edwardson Dean of Engineering, Patricia Davies, Director of Ray W. Herrick Laboratories. (Purdue University photo/Mark Simons)

Margaret's Speech

"When I decided to attend Purdue for my graduate studies, my decision was based primarily on the reputation of the school of mechanical engineering and my interaction with my future advisors, Professors Braun and Groll. I didn't know much about the reputation of Herrick Labs. In fact, on my first visit to campus I remember being somewhat shocked to realize that the labs were built in an old barn. However, after touring the experimental setups and studying the posters hanging in the lab, I felt certain that these labs would provide me with the opportunity to not only engage in quality research, but also to have an impact through interaction with industry.

I know that Herrick Labs will continue to provide students with outstanding research experiences that will only be enhanced by the unique facilities of the new building. I also know that Herrick Labs will continue to welcome new students with barbecues and opportunities for mentoring; that students will continue to grumble about cleaning the lab and preparing posters, but will benefit from the experience of presenting their research and interacting with our Industrial Advisory Committee; and I know that students will continue to experience an exciting blend of industry and academia at the biannual International Compressor, Refrigeration and Air-Conditioning, and High Performance Buildings Conferences organized by our faculty.

When I leave Herrick Labs to begin my own academic career in August, I will take with me not only the skills that I need to succeed as a researcher and a teacher, but also the support of the faculty, staff, and students that have encouraged me throughout my Ph.D. studies. As the new labs become a reality, I plan to visit often and collaborate with the Herrick faculty to take advantage of these exciting facilities.

Six years after my first tour of Herrick Labs, I recognize its true "inner beauty." However, I look forward to the time when this building becomes a reflection of the quality of the research, the faculty, and the students that it supports."



Margaret Mathison, current Ph.D. student, gives the welcoming remarks and introduces Purdue University President, France Córdoba.

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It was a pleasure to see so many people at the Laboratories celebrating with us including Dick Fontaine, son of the Laboratories founder Bill Fontaine, and our former directors and spouses: Ray & Lila Cohen, and Bob & Deb Bernhard.



Alums of the Herrick Laboratories Don Coates (MS '66, Ph. D. '70) and Marion Pottinger (MSME '63, Ph.D. '66) with their former research advisor Ray Cohen and Lila Cohen.

Dick is now retired from his dentistry practice and living west of Lafayette. He promised to send us the ball from the original Herrick weather vane, which apparently has holes or dents in it from people using it for target practice when the building was a barn, out in the far west edge of the Purdue campus.

The day ended with a dinner at a Bistro 501 in downtown Lafayette.

A video recording of the ceremony is available on You Tube at <http://www.youtube.com/watch?v=qGTj2nFsLnY>.



John Wall, CTO and VP of Cummins talking to Lisa Calvert, the new VP for Development at Purdue and Amy Noah, Interim Associate VP for Advancement. Leah Jamieson, Dean, and Melba Crawford, Associate Dean for Research, in the College of Engineering are to the left. In the background on the right are Deb Bernhard, Jim Braun, and Bob Parrin.

Fritz Peacock Retires



An early photo of Fritz taken shortly after he started at the laboratories.

On January 31, Fritz Peacock came to work for the last day. He retired after 30 years at Purdue. Part of the time he worked in Transportation Services, and the remaining time he was at the Herrick Laboratories. He's shepherded many graduate students through the shop's procedures and made sure they left wiser for safety awareness.

Fritz was honored with a reception in the Hudelson Room. His wife, Brenda, and their twin sons, Alex and Sam, were able to

attend. They were excited about leaving school early for this special event. His older son, Eric, was invited, but was couldn't rearrange his schedule to make the trip from Springfield, MO.

Fritz with his son Alex talking to the previous head of Herrick Technical Services, Avery Norfleet. (Photo by A. Jessop.)



Among the gifts Fritz received was a brass 3-D representation of the existing building made by Gil Gordon. It even included the weathervane on top of the building. The faculty, staff and students at the labs collected funds to purchase a leather jacket with the Purdue brand custom stitched on it. Brenda Peacock helped with the sizing and logo choices. He can use it for his motorcycle rides or for special occasions. He also received a gift certificate for Von's bookshop which he should put to good use now that he has some time to read for pleasure, perhaps.



The model of Herrick Laboratories made by Gil Gordon. (Photo by A. Jessop.)

Fritz plans to return from time to time to consult on the construction of the new building which is expected to be completed by the beginning of 2013. He's been actively involved in the process and would like to see it through to the end.

After his retirement, we received a lovely thank you note addressed to everyone he's worked with over the years. We'd like to share it with you.

Thank You from Fritz

Have I really been here at Herrick Lab twenty-three years? That sounds like a long time...about the same length of time as it must seem to those of you struggling to finish your thesis. That too can seem to go on and on. I remember coming here after seventeen years of teaching auto mechanics students at Ivy Tech. I was full of ideas with things to do to make a difference. I thought I was the teacher and you were my pupils. How wrong I was.

It took a while to understand what my job really was. Along the way, I discovered that research is most productive when it is a collaborative effort. One thing I did believe was that our job in the shop was to make sure you were successful. Experimental work of the kind we do here at Herrick entails a lot of hands-on work; it can be dangerous if we do not approach it carefully.

There was a big disconnect in what I thought you knew and what many of you actually did know about graduating from Purdue with all your fingers and toes. I assumed engineers knew all about tools, processes, mechanics, and safety. The gap in those early days between what I thought I needed to supply and what the students and faculty actually needed was wide.

There were times when bridging that gap with some individuals wed, and we became colleagues learning from one another. Another thing my time here did teach me about people is that being stubborn, rude, and hard to get along with is an equal opportunity character trait, and it has nothing to do with race, creed, color, or ethnic background.

Over the years, I have been privileged to have worked with many fine people here at Herrick Lab. They must have caught a glimmer of my desire to truly understand because I have learned more from them than they have from me. We often joke about Herrick's *fasted seed*¹, but I believe a unique *esprit de corps* does exist here. It's stronger in some years than others because of the mix of people at any one time. There is some wonderful magic that takes place in this old building, it is the chemistry that takes place between people when they allow themselves to be seen, not just for who they are, or have been, or what they have done, or where they came from. It's about learning, it's about sharing, it's called being in a safe place with friends. It helps make success a whole lot easier when you are not alone. This is not to infer that misery loves company.

I'm leaving and soon the old Herrick Lab will be gone and a new building will replace it. Will the magic go away? I don't think so. The human chemistry that has given Herrick Lab its legacy of excellence will continue because it's the people not the red-bricks and horse manure who are Herrick Lab.

(continued on page 4)

¹ "Fasted seed" refers plaques in the laboratories about the characteristics of the laboratories. Michael Moaveni (Ph.D., 1972) surveyed Herrick alumni, faculty, students and staff and asked them what made Herrick special to them. He grouped their responses into categories: Family, Acceptance, Sharing, Trust, Interdependent, Diversity, and Community making the acronym FASTID-C.

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Fritz Peacock Retires (continued)

I want to thank my colleagues in the shop for their support and friendship. I will always remember our shared laughter, our time at lunch spent solving all the world's problems, our joys as well as our struggles. I thank them for their words of encouragement, for keeping me awake and alert, but mostly for their sincerity and trust. It is with gratitude that I look back, I know I made the right decision coming here 23 years ago, and I am proud to have been part of the Herrick Lab family.

If your eyes are beginning to water as you read this it may be because you did not read the MSDS for the materials you are using. You're not rid of me yet, I'll be around from time to time helping with the new building details, and finishing up a few irons still in the fire.

If I can be of help to any of you, please feel free to e-mail me or drop in at my new office near the copy machine.

*With Affection,
Fritz*

Fritz models the bomber style leather jacket the faculty, staff, and students purchased as a gift. His wife, Brenda, helped with the sizing and choosing the Purdue brand on the jacket.



Multidisciplinary University Initiative Awarded

Purdue University is part of a national effort to create a new line of defense against improvised explosive devices and hidden bombs by developing detectors that use sound and radio waves to penetrate shielding materials. The \$7 million Multi-University Research Initiative, or MURI, is led by electrical and computer engineering professor Michael Steer of North Carolina State University and is funded by the U.S. Office of Naval Research. Purdue will receive \$2 million over five years. Because of its emphasis on acoustics this MURI is named SEMIWAVE.

Douglas Adams is the Purdue lead investigator with vibrations and acoustics co-PIs at the Herrick Laboratories: J. Stuart Bolton, Jeffrey F. Rhoads and Patricia Davies. Colorado School of Mines physics professor John Scales, whose interests lie in electromagnetics, ultrasonics, mesoscopic phenomena, millimeter wave physics and disordered media, is also part of the team, as is Mohammed Zikry, a professor in the Mechanical and Aerospace Department at NC State, whose interests include computational modeling for materials/structures from the nano- to the micro-scales and failure models for heterogeneous systems. Rounding out the MURI team is Waymond Scott, professor and chair of the electromagnetics group at Georgia Tech's School of Electrical and Computer Engineering.

The researchers will study how to use sound and radio waves to probe objects to identify the types of materials in them. Computational and physics-based models of the materials and composite structures will be developed to explore how to design the sound and radio waveforms to enable efficient identification of the object composition. The proposed waveforms will be tested with surrogate objects in the laboratory and models and waveforms will be refined to improve performance. Algorithms to process the measured responses of the objects and quickly detect the types of materials present will be developed. The major challenge here is to get sufficient energy into the object to be able to identify the structure of the object and the constituent materials, and also to design waveforms that interact well with a variety of objects. This fundamental research will involve both modeling and experimental explorations.

The research will involve doctoral students at all the participating universities. This is in keeping with the Herrick mission of graduate-student focused research projects, but also, an objective of these types of multi-university research centers is to help create a workforce that is equipped to study fundamental problems. At Purdue the team will be working at Herrick Laboratories, the Kepner facility and the Birck Nanotechnology Center. The research team will also be interacting with another research team at Purdue headed by mechanical engineering professor, Steve Son whose research interests include study of energetic materials.



Stuart Bolton working on materials testing with a former student, Taewook Yoo who now works for 3M/Aearo/E.A.R.

Jeff Rhoads working with one of his former students, Venkata Bharadwaj Chivukula, (now currently at Xerox in Webster, NY) in his lab at Birck Nanotechnology Center.



Douglas Adams, at right, doctoral student Sara Underwood and graduate student Matt Houtteman review data measured using a 3D laser vibrometer at Kepner.

(Purdue News Service file photo/Andrew Hancock)

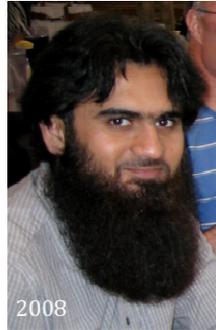
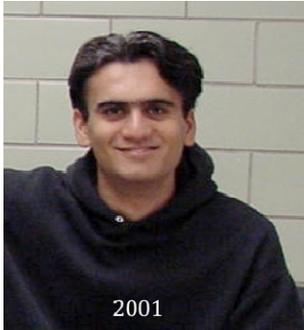
This article includes excerpts from Emil Venere's article for the Purdue University News Service

A Tribute to Muhammad Haroon

Herrick Graduate Student 2001-2009

“Truly great friends are hard to find, difficult to leave, and impossible to forget” (G. Randolph)

Dr. Muhammad Haroon was a Graduate Research Assistant with us at the Herrick Labs from 2001-2009. We lost Haroon to brain cancer earlier this year. We want to pay tribute to him with a short article about his journey with us at Purdue.



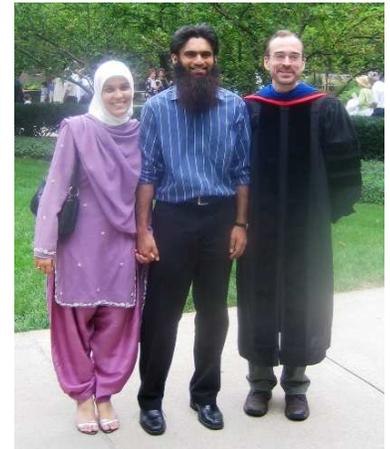
The two photographs shown above capture the journey that Haroon took at Purdue University, where he entered in 2001 to pursue a Master of Science in Mechanical Engineering degree and left in 2009 as a Doctor of Philosophy. The pictures and his facial hair, in particular, tell the story of someone who aged physically during this period of time, but the sparkle in Haroon's eyes and his enthusiasm for learning were constant reminders of his vibrant and youthful spirit.

As his advisor in the School of Mechanical Engineering at Purdue, I have many fond memories of Haroon. I remember the outstanding job he did on our final project presentation for Goodyear Tire & Rubber Company at the end of his Master's research project. I also remember the long conversation we had during our 10 hour drive to and from Akron, OH. He talked about his parents' desire for him to marry and have children. We talked quite a bit about children and he talked about his strong desire to be a father. He and his wife, Maryam, welcomed their beautiful daughter Halah into the world two years ago, and I know that Haroon spent every moment of the last two years being a loving and proud father of his daughter. I suspect that Haroon spoiled his daughter like all proud fathers because he used to bring my daughter's numerous gifts from his trips to Pakistan. My daughter cherishes a small hand crafted reindeer that Haroon brought to her seven years ago.

Haroon conducted his MS and PhD experimental research in the East Wing of the Herrick Labs working with the electrohydraulic automotive two-post road simulator. I suspect that some of you reading this article remember visiting the tall, bearded gentleman who proudly described his research in suspension reliability and mechanical fault detection to the many visitors through the years. I am certain that his co-students remember Haroon's strong design to collaborate with others. He wrote 7 peer-reviewed journal papers in his time at Purdue and much of this research was done with fellow students. He was such a joy to work with. He was an incredibly productive researcher and his

many research accomplishments earned him the honor of writing a chapter in the Encyclopedia of Structural Health Monitoring, which was published by John Wiley & Sons in 2007. To read the many press releases that describe his significant research and practical engineering contributions, simply *google* "Muhammad Haroon Purdue University."

There were many things to celebrate in Haroon's time at Purdue including his commencement to receive the Doctor of Philosophy in Mechanical Engineering. The picture to the right speaks to how proud Maryam and I were of Haroon on that overcast day in May of 2007. Of course, Haroon ate his usual celebratory Veggie Lover's pizza during our annual get together to say goodbye to our graduating students.



Haroon was a gentleman, a philosopher, a gentle soul, and a brilliant researcher. I share with you one last picture of he and I from fall 2006 (below). At this time, Haroon was just beginning to prepare his dissertation and we were discussing the outline during this meeting. I cherish this photo because Haroon framed it and presented it to me after his PhD graduation as a gift. The photo captures many things about our relationship including the fact that he did all the work while I marveled watching him.



Many of you have fond memories of Haroon as do his fellow former students and I. We are beginning the process of putting together a fund for his daughter, Halah, to financially assist her mother in supporting Halah's college education when the time comes. If you are interested in contributing to this fund, please contact Donna Cackley at cackley@purdue.edu and we will include you in this activity.

—Doug Adams, Haroon's Advisor

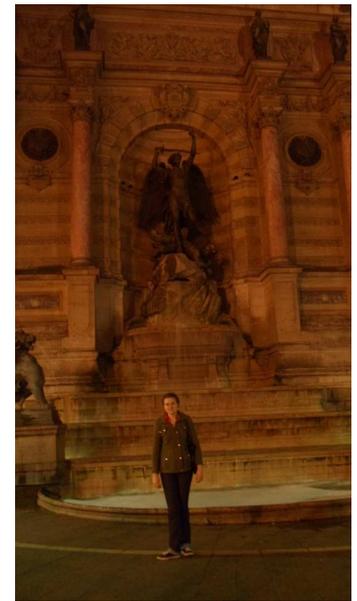
Reflections on My Time in Paris—Spring 2011

This past spring I had the privilege of doing an internship at IFP Energies Nouvelles in France through the Chateaubriand Fellowship. I had an excellent experience learning more about engine control development for spark ignition engines. While my



research at Purdue has focused on engine controls for fuel-flexible diesel engines, my project in France involved investigating similar control issues on fuel-flexible gasoline engines. I was able to become familiar with the different operating principles of gasoline engines and various technologies commonly used with these engines as well as work on modeling and control development for these fuel-flexible engines. IFP does a variety of research from geology to mathematics to hybrid vehicles and employs people from all over the world so it was exciting to get to know a lot of people from different ways of life and in different areas of research. While in France, I also attended a course in Flatness-based Non-linear Control at MINES ParisTech which was very beneficial. The course gave a different perspective on nonlinear control than would be available to me at Purdue and definitely broadened my knowledge of the topic

But my life in France wasn't all research and coursework. IFP is located in the suburbs of Paris so I was able to live and explore a beautiful and historic city. Being in a very central spot in Europe was wonderful and I loved the French culture and pace of life in Paris. I also got the opportunity to take several weekend trips to other European countries (Belgium, Spain, Italy, England) and explore a variety of other different European cultures



.....which was great.

—Carrie Hall, Ph.D. Student

Ray Cohen Honored



Ray Cohen, the Director of the Herrick Laboratories from 1971-1993, was named a 2011 Distinguished Engineering Alumnus. The College of Engineering Web site writes, "The Distinguished Engineering Alumni (DEA) Award is presented to engineering alumni who have distinguished themselves in any field of endeavor that reflects favorably on Purdue University, the engineering profession, or

society in general.

In the case of alumni who are engaged in engineering work, their record of accomplishments should indicate a high potential for future growth into positions of increasing responsibility. The College of Engineering has over 81,000 living alumni. The distinction of DEA has been bestowed upon 472 of these outstanding individuals."

Ray received his award, "In recognition of his international prominence as a researcher and his exceptional service to the engineering profession and Purdue University." He is truly a

Boilermaker having received his BSME in 1947, his MSME in 1950, and his Ph.D. in 1954—all from Purdue.

On Friday, February 25, there was a luncheon and award convocation for the 2011 honorees from 12:00 to 1:30. It was held in the North Ballroom of the Purdue Memorial Union.

More information about the award is available at https://engineering.purdue.edu/Engr/People/Awards/Institutional/DEA/DEA_2011/.

Congratulations, Ray, on your well-deserved award.



Ray with Dave Tree in 1978 in Ray's office at Herrick

Anil Bajaj, Alpha P. Jamison Professor of Engineering Named William E. and Florence E. Perry Head of Mechanical Engineering



Anil has been serving as Interim Head of Mechanical Engineering since last August. He was one of six people who were interviewed by the search committee who passed their findings to the Dean (Leah Jamieson) who is the person responsible for appointing Heads in the College of Engineering at Purdue. Anil was named as the new Head and officially started his appointment on June 1st, 2011.

The Headship in the School of Mechanical Engineering is supported with an endowment from William E. and Florence E. Perry and is named after them. In December 2009 Anil Purdue's Board of Trustees approved Anil's Appointment as the Alpha P. Jamison Professor of Engineering in recognition of his outstanding research in the area of nonlinear dynamics and vibration and for his service to the School. He served as the Associate Head for Graduate Affairs for many years before becoming Interim Head last year. The Associate Head job involves being Chair of the Graduate Committee. With over 400 graduate students in ME, that is quite a job! However, it has given Anil a deep appreciation for the challenges and opportunities for our graduate program. Among his many awards, Anil won the Provost's Outstanding Graduate Mentor Award at Purdue in 2006.

Anil has been part of the Herrick faculty for many years working with Chuck Krousgrill on brake squeal and with Patricia Davies modeling seat-occupant systems and the behavior of coupled modes in nonlinear structures. More recently he has also begun working with Stuart Bolton and graduate student Ryan Schultz investigating simultaneous vibration and acoustic performance of foam materials. He also collaborates with others on many projects outside of Herrick and is a member of the PRISM team of researchers: <http://www.purdue.edu/discoverypark/prism/>.

Anil is the author or co-author of over 90 journal papers and 70 conference papers. He has regularly taught both undergraduate and graduate classes at Purdue including the large sophomore Statics and Dynamics classes. At the graduate level he has taught the "core" graduate classes focused on dynamics and vibration and has also taught classes on nonlinear dynamics and chaos. He is a Fellow of the American Society of Mechanical Engineering.

Well respected worldwide for his research contributions and within Purdue for his dedication to teaching, he is greatly admired by his colleagues within Mechanical Engineering for his selfless devotion to the School. In his interview he brought tears to the eyes of even his most hard-hearted colleagues when he said that the reason he wanted the job was because he "loved the School". We wish him all the best in his new position.

2012 Conference Planning Starts

Planning for the 2012 Biennial Purdue Conferences started in earnest last week (see the next two pages for some details on major dates, etc.). Ginny Freeman had an agenda that was as long as your arm but Eckhard [Groll] kept us on track and we hit most of the major items.



From left to right: Herrick Prof. Jim Braun; Craig Bradshaw and Ian Bell (Ph.D. Students); Prof. Eckhard Groll; Professors Pangiota Karava, Thanos Tzempelikos, Travis Horton and Ming Qu (Arch E & Construction Faculty); and Ginny Freeman, the conferences secretary in the foreground.

The number of people we assigned to various tasks is an indication of how large these conferences have become. Also, despite the involvement of a lot of faculty (8 and counting), it is clear that we could not do this without the help of our students who

take care of, e.g., the main conference web site, the abstract & paper website, student tours, audio-visual and other conference logistics, tours, etc. The High Performance Buildings Conference, added in 2010, was a great success and we look forward to the 2nd in that series in 2012. The Student Paper Competition will continue with similar prizes to 2010 in 2012 (\$1000, \$500 & \$250 in each of the three conferences in 2010).



A different view from left to right: Craig, Brandon Woodland (Ph.D. student), Ian and Eckhard.



**The 21st International Compressor
Engineering Conference
Travis Horton, Chair**

**The 14th International Refrigeration
and Air Conditioning Conference
Jim Braun, Chair**

General Chair: Eckhard Groll

July 14-15, 2012 Short Courses

July 16-19, 2012 Conferences

**The 2nd International
High Performance Buildings Conference
Thanos Tzempelikos, Chair**

Conference Location: Stewart Center on the Purdue Campus, West Lafayette, Indiana 47907, USA.

Lodging: see <https://engineering.purdue.edu/Herrick/Events/visitorinfo/accommodations.html>

Website: <https://engineering.purdue.edu/Herrick/Events/2012conf/>

Conference Secretary: Ginny Freeman, herlconf@purdue.edu, +1 (765) 494 6078.

The conferences begin on the morning of Monday, July 16th around 9:00 a.m. with the welcome speeches and a presentation from the conferences' Keynote Speaker. There will also be Plenary Speakers every morning of the conference. The Keynote and Plenary speakers, leaders in their fields, will speak on topics of broad interest to the attendees of all three conferences.

During the conferences, you will have the chance to interact with many different people from around 30 different countries. The 2010 conferences attracted more than 500 of the world's leading researchers, engineers, government officials, and equipment users working in the fields of compressors, HVAC&R, solar energy, buildings and green technologies. The High Performance Buildings Conference was started in 2010 and was very successful, complementing the technical scope of the Refrigeration & Air Conditioning and Compressor conferences, which have been held every two years over the past three decades. Learn more at: <https://engineering.purdue.edu/Herrick/Events/2012conf/about.html>.

Student Paper Competition:

The 2010 conferences included the launch of the Student Paper Award Competition, with 1st, 2nd & 3rd placed winners in each of the three conferences receiving \$1000, \$500 and \$250, respectively. In 2010 Tecumseh Products sponsored the competition. A similar competition will be held in 2012, so please encourage students you know to keep these dates free so that they are eligible to enter the competition. Deadlines for abstract and paper submission are the same as for everyone else.

Event Sponsorship:

Thank you to our 2010 Event Sponsors: Danfoss, Emerson Climate Technologies, Grundfos Pumps Corporation, Shanghai Hitachi Electrical Appliance Co., Kawneer Company, Lutron Electronics and Tecumseh Products. If you or your company is interested in sponsoring an event at the 2012 conferences, there are many opportunities available ranging from \$3000 to over \$10,000 depending on the visibility of the event. Events can also be shared between sponsors. Recognition of being a sponsor includes: corporate logo on promotional material, in the proceedings, on the web site, and on on-site banners; recognition at the opening ceremony; company banner at the sponsored event; free conference registrations for 2 people; corporate material in attendees' conference bags; company logo and web link on the conferences web page. The benefits of being an industrial sponsor include: improved recruitment of future engineers, greater visibility to potential customers, exposure to a worldwide audience. For **more information on sponsorship** call the Conferences Chair, Prof. Eckhard Groll, +1 (765) 496 2201, groll@purdue.edu or the Conference Secretary, Ginny Freeman, +1 (765) 494 6078 or email her at herlconf@purdue.edu.

2012 Conferences (continued)

Short Courses:

Short courses will be held on Saturday and Sunday prior to the conferences (14-15 July, 2012). There will be three courses related to the themes of the three conferences: Compressor; Refrigeration and Air Conditioning; and Buildings. The registration for these short courses is separate to that for the conferences. Links can be found at https://engineering.purdue.edu/Herrick/Events/2012conf/about_shortcourse.html along with additional information about the short courses. You will receive 1 hour of engineering credit for attendance at the courses.

Key Dates for Abstract & Paper Submission & Early Registration Date

	Latest Date
ABSTRACT SUBMISSION Online at www.conftool.com/2012Purdue/	December 12, 2011
Notification of abstract acceptance with Paper ID number/code & instructions to authors on manuscript preparation	January 15, 2012
Registration for presenting author (authors of rejected manuscripts may request a full refund if they do not attend the conferences) https://engineering.purdue.edu/Herrick/Events/2012conf/registration.html	Prior to manuscript uploading on website.
MANUSCRIPT SUBMISSION Requires the code given to the presenting author after registering. All manuscripts are submitted via the website: http://www.conftool.com/2012Purdue/ .	March 30, 2012
Notification of acceptance or rejection of manuscripts	April 27, 2012
Early registration deadline for all attendees except presenting authors who will have already registered prior to manuscript upload https://engineering.purdue.edu/Herrick/Events/2012conf/registration.html	May 25, 2012

A note from Patricia, the Ray W. Herrick Labs Director. It was my pleasure to take part in the 2010 conferences organized by my fellow Mechanical Engineering and Architectural Engineering faculty at the Herrick Laboratories assisted by Ginny Freeman, the conferences secretary. It was particularly exciting in 2010 to see the large number of young, international researchers taking part in the conferences. There was a vibrancy and excitement in the atmosphere at the conferences with very lively discussions taking place in all the sessions that I attended. The audiences appeared to be paying very careful attention to the details of the work being presented and in the sessions I chaired I had to close down the questioning to keep us on schedule. What a perfect venue in which to present your work and to get feedback from the top experts in the field well versed in both theory and the challenges of making good ideas work in practice.

The barbeque, conference lunch, reception on Monday night, and the coffee breaks provide great opportunities to continue discussions in a more informal setting and to meet and make new friends in this technical community. These conferences are technically interesting and great fun, too!

Please join us at Purdue in July of 2012

Jim Braun & Yan Chen Receive Chaired Professorships

The Purdue University Board of Trustees met on Friday, April 8. During the meeting, two members of the Herrick Faculty received special appointments. **Jim Braun** was appointed the Herrick Professor of Mechanical Engineering, and **Yan Chen** was named the Reilly Professor of Mechanical Engineering.

When asked about the Reilly Professorship, Yan Chen wrote, "I can barely express how grateful I am to the Search Committee led by Professor Patricia Davies; Professor Anil Bajaj, the Interim Head of Mechanical Engineering; Professor Leah Jamieson, the Dean of Engineering; and other administrative officials at Purdue to honor me as Reilly Professor of Mechanical Engineering. The professorship is not merely the recognition of my scholarship, teaching and service. The Reilly professorship is also to honor many of my former and current students, post-docs, visiting scholars, colleagues, et al. who have contributed to my achievements.

The Reilly professorship I have is an endowed chair in Mechanical Engineering. As a professor with research interests in built environments and energy-efficient buildings, I am very pleased to

see this area be recognized by Purdue. In the United States, most people spend 90 percent of their times in built environments, and buildings use 40 percent of primary energy. Sustainable (or green) buildings can improve built environments, conserve energy, and reduce related greenhouse gas emissions. Sustainable buildings can also make us more comfortable, healthier, more productive, and safer.

I hope the Reilly professorship will inspire many more students to pursue a career in sustainable and high-performance buildings. I am sure that they will experience the incredible satisfaction in working on an area that can sustain our limited resources and is very important to our well being."

Yan was also honored in March 2011, with an "Honorary Professor" title from The Royal Melbourne Institute of Technology (RMIT) University, Melbourne, Australia. He was also selected by the ASHRAE Chapter Technology Transfer committee as an ASHRAE Distinguished Lecturer.

Herrick Laboratories News

Herrick Featured on Daily Planet

Research work by Greg Shaver and his students was one of the featured stories aired on the January 20, 2011 edition of Daily Planet, a show on the Discovery Channel. The segment talks about the fuel-flexible combustion control research at Herrick, and explains the research in easy to understand terms for the general public. If you were unable to watch the show, it's posted on the Web at <http://watch.discoverychannel.ca/daily-planet/january-2011/daily-planet---january-20-2011/#clip405284>. You have to sit through a 30 second commercial, but it is the first story after that commercial, beginning at the 0:25/7:33 mark.

New Herrick Labs Group on LinkedIn

For the members of the Herrick Laboratories community who use LinkedIn, you may be interested to know that **Sanghoon "Sam" Suh** (Ph.D., 2003) has created a Herrick Labs group. Just sign into LinkedIn, search groups for "Herrick Laboratories Purdue University" and join up. Sanghoon is working as a Senior Engineer at John Deere. Thanks to Sanghoon for getting this started; it's a great way to catch up with Herrick alums all over the world.

Where Are They Now?

Gerhard Frei (former visiting scholar) is Product Manager HX at Guntner AG & Co. KG near Munich, Germany. The appointment was effective at the beginning of December 2010.



Nick Stites (MSME 2007) and his wife Emily and baby Addison dropped in to see us in March. Nick is working in the Integrated Teaching & Learning Program and Laboratory at the University of Colorado at Boulder. Learn more about this program at:

http://itll.colorado.edu/index.php/about_us/.

Bo Shen (Ph.D. 2006) accepted a position as a Research Scientist in the Energy and Transportation Division at the Oakridge National Laboratory in Oakridge, TN. His wife, **Hou Jiang** (Ph.D. 2008) also has a potential offer at the same lab. Their son, William (Weilin) is three. Hou says, "I always find his clothes are short, and he needs new ones. He is big fan of Thomas the tank engine and wants to be a rock and roll star."

Faculty Honors and Promotions

George Chiu will be awarded the status of the Society for Imaging Science and Technology Fellow. The award will be presented in October at the Non-Impact and Digital Printing Technologies 2011 Conference in Minneapolis, MN.

The Board of Trustees also promoted **Greg Shaver** to Associate Professor. His promotion is effective at the beginning of the 2011-12 Academic Year.

The Institute of Noise Control Engineering (INCE) Board of Directors elected **Patricia Davies** as a Fellow on February 27, 2011. She served as President of INCE USA (2008-2010).

Staff Honors

Service Anniversaries

On December 9, 2010, **Frank Lee** and **Cathy Edging** were honored for their years of service to Purdue. They were invited to a lunch of salad, beef pot roast with roasted garlic smashed potatoes, caramelized pearl onions, seasonal vegetables, and assorted fruit pies. Frank, who works in our shop, has worked at Purdue for 15 years and chose a watch as his gift. Cathy, who keeps our building clean, was honored for 25 years of service. She also chose a watch and received a plaque. Service anniversaries are recognized after 10 years of continuous service and in 5-year increments thereafter.



From left to right are Al Diaz, Executive Vice President and Treasurer; Cathy Edging; and Terry Ashlock, Senior Director of Building Services.

Student Honors

Sarah McGuire, current Ph.D. student, and **Matt Blevins**, current undergraduate student, received the Leo Beranek Student Medal for Excellence in the Study of Noise Control.

Sarah is completing her doctorate and anticipates graduating in August. Matt Blevins plans to complete his undergraduate studies and to become a full-time graduate student at the University of Nebraska in the fall.

Ned Troxel was recognized on April 26 during the annual Celebration of Graduate Student Teaching Excellence at Purdue. He was selected for the award by the Committee for the Education of Teaching Assistants Excellence in Teaching. Recipients are selected by individual academic departments for their commitment to undergraduate education. Departments can only select one recipient for every 50 graduate teaching assistants they support. Ned recently took some time off to help people in the south with the clean up after tornadoes damaged their homes.

Ned Troxel and **James Mynderse** also received the Magoon Award at a luncheon on April 5. As Magoon Award recipients, each one received a monetary gift.

Graduations

Ian Bell (Ph.D. May 2011), Theoretical and Experimental Analysis of Liquid Flooded Compression in Scroll Compressors. Ian will do some world traveling before starting a Post-Doc position in Belgium.

Frank Eberhardt (MSME May 2011), Study of the Feasibility of Estimating Combustion Noise Radiation in Reverberant Environments. Frank took a position with Cummins, Inc in Columbus, IN.

Jitendra Gupta (Ph.D. December 2010), Respiratory Exhalation/Inhalation Models and Prediction of Airborne Infection Risk in an Aircraft Cabin. Jitendra is employed by General Electric in Bangalore, Karnataka, India.

Andrew Huang (MSME May 2011), Environmental Acoustics. Andrew's employment is not known at this time.

Ravindra Kakade (MSME May 2011), Fault Detection Using Spectral Methods: Wavelets and Correlation Techniques. Ravindra is now working at Cummins, Inc. in Columbus, IN.

Yan Fu Kuo (Ph.D. May 2011), Improving Tone Consistency and Reducing Calibration Frequency for Color Electrophotography. Yan anticipates a faculty position in Taiwan.

Chris Satkoski (MSME December 2010), Modeling, Estimation, and Control of a Piezoelectric Actuated Fuel Injector. Chris took a position with Tesla Motors in Palo Alto, CA.

Ryan E. Schultz (MSME December 2010), moved to Jupiter, FL to begin work at Power Systems Manufacturing (PSM) as a monitoring and diagnostics engineer.

Bao Tong (MSME December 2010), moved to San Diego after graduation and took a break from his studies. He returned to Herrick Laboratories this summer to pursue his doctorate.

Matt Vargo (MSME May 2011), Compressor Performance Testing started working part-time at Carrier Corporation in Indianapolis before the semester ended. He accepted a full-time position with them effective Monday, May 2. He took a day off work to come back for commencement. He and his wife, Crystal, have purchased a home in Indianapolis.

Births

Greg Shaver and his wife, Erica, welcomed Allison Jayne, May 2 at 8:02 p.m. She weighed 6 pounds 7 ounces and was 18.25 inches long. Allison will join siblings Billy, age 9, and Katie, age 2.





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News about You and Address Changes

We are always interested in hearing your news, and we want to be kept up-to-date on current addresses. Please send notes to Judy Hanks or to the e-mail address below. Don't hesitate to let us know of other alums who have moved. Photos are always welcome.

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