



ABE Named #1 By US News & World Report—Again!

For the third time in its history, and the second consecutive year, the Purdue University department of Agricultural & Biological Engineering undergraduate program has been named the #1 program by US News & World Report, along with the University of Illinois at Urbana-Champaign. For an unprecedented fourth consecutive year the graduate program at

Purdue has held this distinction. Every year, USNWR publishes their US News College Compass, listing the best colleges, best graduate schools, best universities, and best programs, along with their Best series on other topics. This is a valuable tool for families who have students exploring their continuing education options. Purdue University is ranked #65 on

this year's list with the College of Engineering sharing the #10 ranking with Cornell University.

Because this is a peer-determined ranking, we consider it an honor to be ranked, and have consistently been included in the top three. Our students, faculty, staff, and alumni deserve a heart-felt congratulations for their efforts.



Inaugural ABE Entrepreneurial Day

October 12, 2012, was the beginning of what we anticipate will be an annual tradition for the department. Six of our outstanding alumni who have taken the entrepreneurial career path returned to campus to help our students see their future in a different light.

Particularly during times of economic uncertainty, determining your own career path can be a frightening and exciting endeavor. Vane Clayton ('81), Dave Doster ('79), Joe Garwood ('78), Kevin Kelley ('92, '95), Stan Morton ('66), and Brian Vorst ('93) each brought a tightly-condensed narrative of their career path to help our students see the possibilities. A representative of the Trask Fund at Purdue Research Park, Elizabeth Hart-Wells, also presented information on start-up fund availability.

Coordinated by Professor Gary Krutz, the day was much-anticipated and well-received, both by current students, faculty, and staff, and by alumni who were close enough to be able to attend. While many of the presentations had common

themes, each of these men has arrived where they are by different paths.

If you are interested in information on the 2013 event, please contact Carol Sikler for more information (sikler@purdue.edu or 765/494-1174).

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L to r: Brian Vorst, Stan Morton, Vane Clayton, Dave Doster, Joe Garwood, Kevin Kelley, Libby Hart-Wells

2012 ABE Outstanding Students



Benjamin Daily



Elymae Cedeño



David Bedel



Jonathan Pelsy

Each year, the ABE faculty recommends one student from each class for recognition as an Outstanding ABE student. A list of students with a GPA of 3.2 or higher is reviewed and the Academic Program Co-Chairs make a final selection with input from the ABE Student and Academic Services Specialist. The 2012 students honored below represent our student population well.

ABE Outstanding Senior: Benjamin Daily—Ben’s recognition this year is the third such honor during his career at Purdue. Having been previously named the Outstanding Freshman and Junior, Ben received his degree in Agricultural Systems Management and Agricultural Economics this past Spring. He also received an Associate’s Degree in Agronomy and a minor in Spanish. He was Vice President of the Agricultural Systems Management Club and a member of Alpha Mu, the Honor Society of ASM. He is a Lilly Endowment Community Scholar and a member of the Boilermaker 400 Club for maintaining a 4.00 GPA. He is a member of Sigma Delta Pi, the Spanish National Honor Society, through which he serves the Spanish-speaking community through volunteer work. He is a member of St. Peter’s Lutheran Church in Columbus, IN. The son of Jim and Carol Daily, he “chose to come to Purdue because Purdue has the best agriculture program in the country. Since I want to return to the family farm upon graduation, Purdue, with its outstanding agricultural program and the variety of ag-related degrees offered, was the best fit for me.”

ABE Outstanding Junior: Elymae Cedeño—Elymae is a Biological Engineering major pursuing a minor in Economics. From Panama City, Panama, Elymae has always been passionate about biology. She chose a career in engineering to learn to solve real-life problems by integrating science and engineering.

She is actively involved here at Purdue; she co-founded the Global Business Brigades Chapter, serving previously as treasurer and currently as Vice-President. Upon graduation, she hopes to continue her engineering education by completing a Master’s Degree.

ABE Outstanding Sophomore: David Bedel—David is an Agricultural Engineering student working toward earning his Certificate in Entrepreneurship and Innovation. He has an excellent academic record here at Purdue; he has maintained a 4.0 GPA thus far. David is also an active member of the on-campus pro-life organization, Purdue Students for Life. He is a parishioner of St. John’s Catholic Church in Enochsburg, IN, and enjoys playing cards, watching movies, and spending time with his four siblings. He chose to attend Purdue because of “its well-respected agriculture and engineering programs, and more traditional values.”

ABE Outstanding Freshman: Jonathan Pelsy—Jonathon is an ASM student who grew up on a farm in Northern Indiana. Jonathan always wanted to attend Purdue and ASM seemed like a very good fit because of its broad applications in the field of Agriculture. Last Fall Jonathan enjoyed having the opportunity to participate in the Agriculture Future of America Leaders’ Conference and seeing the many opportunities that are available in Agriculture. He is currently developing his leadership skills through the Emerging Leaders’ Program. His future career plans are still developing, but he hopes one day to return to the family farm.

ABE Outstanding Graduate Students

Each Spring, the Agricultural & Biological Engineer department recognizes outstanding achievement by our graduate research students. The students are asked to submit an applica-



Laurent Ahiablame,
Outstanding PhD Student



Shariar Karim,
Outstanding MS Student

tion, a CV summarizing their accomplishments, and a transcript of their academic record at Purdue. The faculty review these summaries and select an outstanding student at both the Masters and PhD levels based primarily on research contributions. Academic performance and service/involvement (department, college, and university levels along with community and/or professional organizations).

This year’s honorees are Shariar Karim (MS—Analysis of Stochastic Receptor Signaling in BMP Pathways) and Laurent Ahiablame (PhD—Development of baseflow estimating methods to model low impact development practices using a simple hydrologic impact assessment tool).



Spotlight on new ABE Faculty

Dr. Abigail (Abby) Engelberth joined the ABE faculty on November 1, 2011. Born in Des Moines, Iowa, Abby has a heart for the Midwest.

Why did you want to come to Purdue?

I came to Purdue because of the research opportunities and the high esteem of Purdue Engineering. I am a Midwesterner and have a fondness for Land-grant institutions. Purdue was a great fit for me both geographically and academically.

What is your favorite thing about West Lafayette?

I really enjoy the trails and the parks in West Lafayette. I also really love that there is a weekly farmer's market just a few blocks from my house.

What is your primary research area?

I explore the best way to recover products, other than fuels, from biomass. This also means that I cannot hinder how much of the biomass is converted into fuels. I aim to help in the transition from a fossil fuel based economy to a bio-fuel based economy.

What do you do in your spare time?

I really enjoy running, especially when I get to run with my 3.5 year old Siberian

Husky, Willa. (pictured with Abby and Nate, right) She is the best running partner a gal could ask for. She is always ready to go, no matter the weather. I have completed 2 marathons and around 8 half-marathons. Willa trains for all my races with me, but sadly she is not allowed to compete.

Where did you get your degrees?

Undergrad: 2004, Iowa State University (B.S. in Chemical Engineering emphasized in Environmental issues). Graduate: 2006, Iowa State University - M.E. in Chemical Engineering (Major project : quantification of protein in switchgrass). Participated in a study abroad program "International Perspectives in Biorenewables"2009, University of Arkansas - PhD in Chemical Engineering



(Co-advised by professors in Chemical Engineering and Agricultural & Biological Engineering; Dissertation on the recovery and purification of value-added co-products

What did you want to be "when you grow up?"

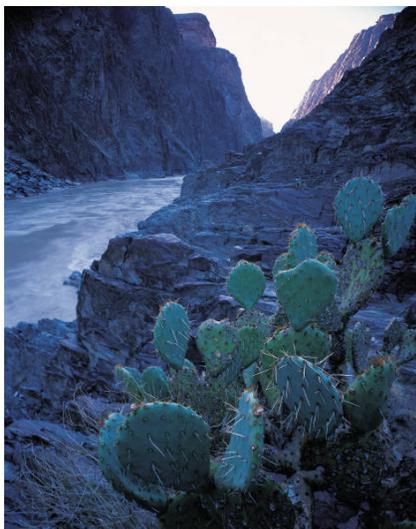
Sadly, the doctors all say that I won't be getting any taller. But as far as the other sense of growing up is concerned, I want to be a vibrant member of society; a person that people can rely on and seek advice from.

Dr. Jiqin Ni has been at Purdue University for 15 years He joined ABE in 1997 as a Research Associate before his promotion to Research Assistant Professor, then Research Associate Professor, and now Assistant Professor of Agricultural and Biological Engineering. His purpose in coming to Purdue was to continue his research on agricultural air quality after he finished his Ph.D. dissertation at the Catholic University of Leuven, Belgium. His current research area is waste management to protect water quality and air quality and generate renewable bioenergy.

His childhood dream of becoming a scientific researcher seemed to be as difficult as traveling to Mars when he was a child in China, but today Dr. Ni's family has many connections to Purdue. His wife is working in a Purdue student resident hall. He and his wife have one son who graduated from the Purdue University College of Pharmacy last year. They also have a nephew who is a graduate student at the Purdue University College of Veterinary Medicine.

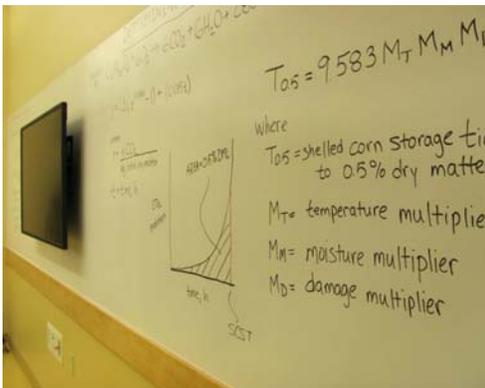
Dr. Ni loves West Lafayette for its size and its academic environment. In his spare time, he likes to watch cartoon and

action movies and visit with friends. He cannot wait to visit Yellowstone Park and Grand Canyon because they have been in his visiting plans ever since he started working at Purdue.



ADM Agricultural Innovation Center

Dedicated on January 18, the ADM Agricultural Innovation Center has seen a lot of activity this year! In April, we held our Senior Capstone Experience in our new building, where our seniors impressed us with their innovative ideas. Several departments across campus have held meetings in our interactive space. Our Advisory Board will meet in the building in December and the space will be full of activity as this year's crop of seniors complete their projects in time for our Capstone Experience on April 18, 2013!



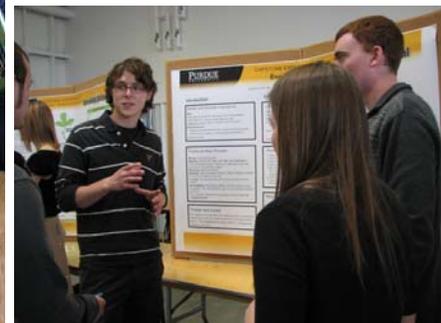
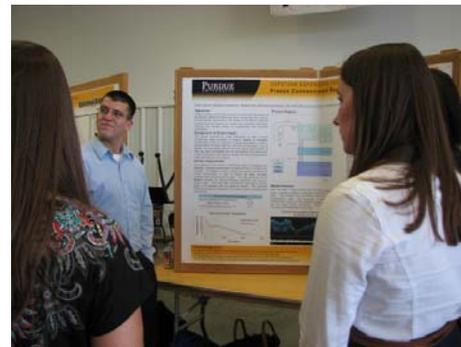
Clockwise, from upper left: Anthony Ruberti, ABE students, served as MC for the dedication; the Reynolds conference room; ribbon-cutting ceremony; ADMAIC sign; the demonstration bay; walls in the conference and lab rooms are painted with whiteboard paint, allowing large spaces for collaboration.



Senior Capstone Experience 2012

Here are just a few of the projects our seniors completed and presented to showcase the skills they have learned during their career in ABE. Held in April each year, alumni and friends from industry and government return to campus to help us by providing feedback to our students. Without this invaluable support, our students would not be as prepared for employment and graduate school!

Would you like to be a part of this next year? Contact Carol Sikler (Sikler@purdue.edu or 765/494-1174) for more details!



Maha Fluid Power Laboratory Timeline



Established in 2004, the Maha Fluid Power Lab has been a major force in the fluid power world. Here are a few high points from the past 8 years.



2004: \$3 M in laboratory equipment, 10 researchers, 700 kW of power. Professor Ivantysynova named the Maha Professor in Fluid Power Systems. Total 2004 funding = \$183,100.



2005: 15 researchers, 10th anniversary of the Ivantysynova research group. Prof. Ivantysynova receives JFPS International Symposium Distinguished Service Award. Funding hits the \$1 million mark for the first time.

2006: MFPL joins the National Science Foundation-sponsored Engineering Research Center for Compact and Efficient Fluid Power to develop technologies to reduce energy consumption in fluid power systems.

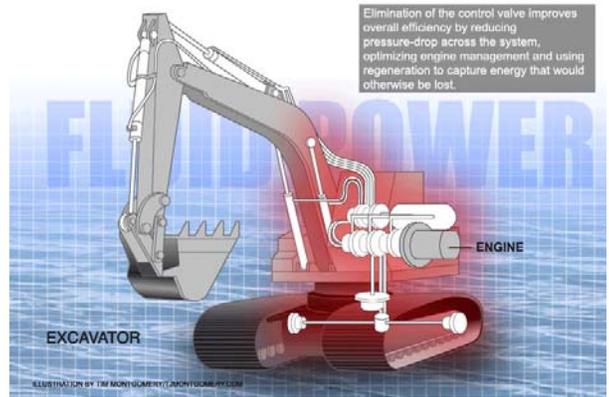
2007: MFPL research presented at every major international fluid power conference and symposium. Receives Seeds of Success Award from the Office of the Provost, Purdue University. Total funding reaches almost \$1.5 million.



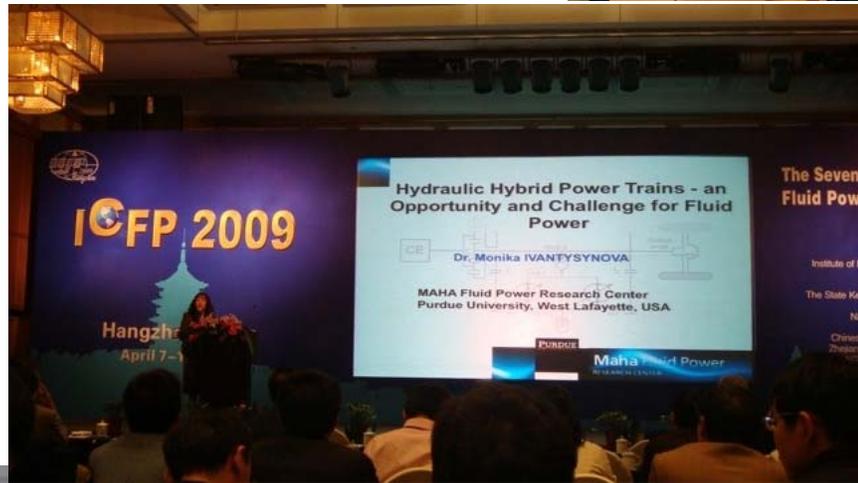
2008: June 2—Maha lab moves to Kepner Court facility, increases space by 50%; 1200 kW power capacity. New logo and website are launched; grand opening on August 27. Jonathan Baker wins the Backé Medal for the Best Paper at the 5th Fluid Power Net International PhD Symposium. Total funding approaches \$2 million.



2009: MFPL receives 7-year renewal from NSF for the Engineering Research Center for Compact and Efficient Fluid Power. Five patents are filed. Prof. Ivantysynova presents two important invited lectures: *Prius without a battery—an effective way to save fuel and reduce emissions with hydraulic hybrids* at the 2009 SAE Government/ Industry Meeting, February 4; *Hydraulic Hybrid Power Trains—an Opportunity and Challenge for Fluid Power* at the 7th International Conference on Fluid Power in Hangzhou, China, April 7.



2010: 10th anniversary International Journal of Fluid Power. MFPL hosts the 6th FPNI-PhD Symposium (largest to date). Prof. Ivantysynova receives the Joseph Bramah Medal from the Institution of Mechanical Engineers for outstanding commitment to international fluid power research and education, and a *Doctor Honoris Causa* degree from her alma mater, the Slovak University of Technology, Bratislava. Andrea Vacca joins Maha faculty March 1.



2011: Maha pump-controlled actuation technology min-excavator debuts at CONEXPO. Prof. Ivantysynova is keynote at 4th ICMEM in Suzhou China. Publications increase by 50%. Funding reaches the \$2 million mark.



2012: Matteo Pelosi and Prof. Ivantysynova win Best Paper Award at FPMC 2012. Naseem Daher elected PhD representative to the scientific board of Fluid Power Net International. Ken and Susan Warren pledge \$10,000 annual support of MFPL. Ken has been in the fluid power industry for decades and is currently working for Parker Aerospace.

The work we do here matters!

PURDUE UNIVERSITY

Faculty Honors and Patents



Alumni and Employers—we need your help! If you haven't already, please stop by <https://engineering.purdue.edu/ABE/AboutUs/ABET/abet.html> and complete a survey! Help us to continue to strive for excellence.



Do you have information on a job or internship that might be a good fit for one of our students or graduates? We need your help in identifying opportunities for our students. Contact Yvonne Hardebeck at 765.494.1172 or hardebey@purdue.edu

In addition to the #1 ranking, Purdue ABE has outstanding faculty. We have also had a couple of “firsts” for our faculty in 2012:

- Professor Joseph Irudayaraj was named the *first* Deputy Director of the Bindley Bioscience Center.
- Professor John Lumkes received the *first* Global Engineering Impact Award.

We had a number of faculty receive other significant honors as well:

- Professor Marshall Porterfield was named the new Division Director of Space Life and Physical Sciences Research and Applications Divisions at NASA.
- Professor David Umulis received the Richard L. Kohls Outstanding Early Career Award.
- Professor Indrajeet Chaubey received the Purdue University Agricultural Research Award.

We have great alumni because we have great students. We have great students because we have great faculty! The following patents have been awarded to our faculty and graduate students since 2009:

Jedlicka, Sabrina and Rickus, Jenna L. “Sol-gel Materials for Cellular Modulation.” US Patent 8183403, May 22, 2012.

Batdorff, M., and Lumkes J. “Fast-Acting Fluid Control Valve.” US Patent 7717130, May 18, 2010.

Deckard, A. and Krutz, G. “Hydraulic Hose with Integral Life-Sensing Capability and Method Therefor,” US Patent 7555936, July 7, 2009.

Ivantysynova, Monika, “System and method for blade leveling control of earthmoving machines.” US Patent 7942208 B2, May 2011.

Ivantysynova, Monika. “Displacement controlled hydraulic system for multi-function machines.” US Patent 8191290 B2, June 5, 2012.

Ivantysynova, Monika. “Power split transmission with energy recovery.” US Patent 8277352 B2, October 2, 2012.

Krutz, G., Harmeyer, K., and Holland M., “Structures with Integral Life-Sensing Capability,” US Patent 7752904, July 13, 2010.

Krutz, G., Harmeyer, K., Holland, M., and Gallien, T. “Polymeric Structures and Methods for Producing and Monitoring Polymeric Structures,” US Patent 7977952, July 12, 2011.

Vermerris, W.E., Mosier, N.S., and Ladisch, M.R. “Methods for increasing the yield of fermentable sugars from plant stover,” US Patent 7968764, June 28, 2011.

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