

# Highlight

## Three National Science Foundation Fellows Choose UW Aeronautics & Astronautics

The Department of Aeronautics & Astronautics has always attracted amazing students, and this year is no exception. With three recipients of the prestigious National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) in our department — Brian Hinson (PhD 14), Keon Vereen (PhD 15) and Kristina Wang (PhD 15) — UW A&A is demonstrating its competitiveness in preparing the next generation of aerospace engineering leaders to take on tomorrow's challenges.

Encouraged by advisors at their undergraduate institutions, Hinson, Vereen and Wang decided to pursue the NSF GRFP, which was founded in 1952 to advance scientific innovation. The fellowship provides an outstanding three-year research package, including a full stipend each year, an annual cost-of-education allowance, access to international research and professional development opportunities, among other benefits. The generous award allows students to focus on their research and studies instead of working or searching for teaching assistantships to support themselves. "Being able to do research without worrying about funding is an amazing freedom," says Wang, who is studying computational fluid mechanics and turbulence modeling.

All three fellows chose UW A&A due to our unique research programs, the wide variety of courses available, plus our proximity to key aerospace industries, such as Boeing and Blue Origin. Before coming to the UW in autumn 2010, Kristina Wang held an internship at Blue Origin in Kent, WA, where she met A&A Professor Robert Breidenthal. He gave her a campus and department tour, and after that, the University of Colorado - Boulder student was convinced that the UW was the place she wanted to pursue her PhD.

Brian Hinson entered our PhD program in winter 2011 after earning his Master of Science in Aerospace Engineering from Wichita State University. He is currently working with



*A&A graduate students and NSF fellows Kristina Wang, Brian Hinson, and Keon Vereen (l-r) take a moment from their busy school and research schedules to pose for a photo.*

Professor Kristi Morgansen to study motion planning for teams of autonomous vehicles for efficient data collection and feature tracking. One particular application is routing a team of Autonomous Underwater Vehicles (AUVs) to estimate ocean currents and track harmful algae blooms. According to Hinson, "Being a scientific researcher is an art. There's a lot of sharing and collaboration that has to happen to make the research work." Hinson cites the UW as a particularly good place to conduct interdisciplinary research. In his work with Professor Morgansen, he collaborates with mechanical and electrical engineers, as well as biologists.

Our newest NSF Fellow, Keon Vereen, joined the department this year to work with Professor Sett You on experimental plasma physics and space plasma propulsion (see related article on page 5). A McNair Scholar from the University of Central Florida, Vereen hopes that the NSF GRFP will open many doors after graduation. "This NSF fellowship is the golden standard of awards in the science and engineering community. I think it will help immensely with my career goals."

Despite their busy schedules, the students are very involved in departmental and university activities. Hinson has worked with groups like STEM-BRIDGE and DO-

*Continued on page 12*

### IN THIS ISSUE

Page 2

Message from the chair

Page 3

Boeing 787 takes flight with help of A&A alums

Page 6

Using rocket science to improve refrigerators

Page 8

Grad student attends NASA Planetary Science Summer School

# Message from the CHAIR



Jim Hermanson

As another busy and exciting year comes to a close, I am delighted to share with you in this edition of *Highlight* some of the many accomplishments of our students, faculty, alumni and staff. As you will see in these pages, 2011 has been a very eventful year for our department. Our faculty is carrying out vibrant research programs on topics ranging in scale from getting into outer space and how to work

there, to the bioprocesses in the cells within us. Our undergraduate and graduate programs have grown 22% since 2009, adding more outstanding students to our department, including the three introduced in our cover story. Our students continue to win awards, gain recognition, and contribute to cutting-edge research. One example is the students of Professor You, who are working on a new way of characterizing 3D plasma flows (see page 5). Our alumni continue to make us proud, and achieve great things in both big and small ways every day. We watched with great anticipation the maiden flight of the Boeing 787, which so many of our former students had a hand in creating (page 3). Lars Andersen (BS 68), our 2011 Distinguished Alumnus and long-time Boeing leader (page 3), inspired us all at our annual spring banquet.

Professor Tom Mattick retired from the department after 36 years of remarkable service to A&A and the UW. We expect more retirements in the upcoming years, which will present both opportunities and challenges as we seek to recruit new, world-class scholars to continue our tradition of excellence in training the next generation of aerospace engineers (page 4). We are very grateful for the support of our alumni, friends, and industry partners who continue their commitment to our department and to its current and future students.

We look forward to the coming year and the promise it holds for many new developments in aviation and space, including opportunities for new research in areas such as lightweight, advanced structures; aerodynamics and propulsion; plasma and energy systems; UAVs and controls; and other technologies relating to aerospace. We are equally enthusiastic about the changes and challenges the upcoming year will bring to the A&A Department, and its excellent programs and students. We wish you all the best in 2012!

Sincerely,  
Jim Hermanson

## Flying Cleaner, Greener, and Smarter: Fall Lecture Series

This fall, the College of Engineering Lecture Series featured some of the great innovations happening in aerospace engineering, and the UW faculty and alumni who are making them happen. From developing more fuel efficient and recyclable airplanes, to using alternative energy sources to power military aircraft, and creating dynamic autonomous vehicles, the future continues to look bright for the aerospace industry.

In her presentation on October 26th, UW alumna and Vice President of Environment, Health & Safety at The Boeing Company, Mary Armstrong (BS ChemE 79) talked about Boeing's latest efforts to shrink its carbon footprint. Using green engineering techniques, new aircraft are more fuel-efficient and more recyclable, and are using fewer resources during production. Under Armstrong's leadership, Boeing has reduced its domestic carbon footprint by 25% and is paving the way for further decreases in the airline industry.



Tim Vinopal (MS Engineering 91) of Boeing Defense, Space and Security spoke about the uses of alternative fuel in military vehicles during his lecture on November 9th. With the U.S. military aiming to dramatically reduce dependency on imported oil to power ships and aircraft, Boeing has been developing hydrogen- and solar-powered aircraft, and designing smart-grid electrical systems for government facilities.

Last, but certainly not least, in the lecture series was our very own A&A Professor Mehran Mesbahi. In his lecture on November 16th, he discussed his research on autonomous vehicles in the Distributed Space Systems Lab on the UW campus. These vehicles, with their influences from biological systems, are being developed for space applications and will allow us to explore challenging areas of outer space without the aid of humans.

If you were not able to attend the lectures, they will be available for viewing on the College of Engineering website:

<http://www.engr.washington.edu/alumcomm/lectures.html>

## Boeing 787 Dreamliner Takes Flight

The Boeing Company reached a major milestone for the 787 Dreamliner in August 2011 when the Federal Aviation Administration certified the airplane for commercial service. Thanks in no small part to many UW A&A alumni and current students who worked on the aircraft — too many to name — the predominantly carbon-fiber plane successfully made its first delivery to the Japanese airline All Nippon Airways (ANA) in September, then set a new world record for the fastest around-the-world flight for a commercial plane in December, clocking in at just over 40 hours.

*“Having the opportunity to fly the airplane you helped to design was an incredible experience.”*

*Heather Ross (BS 85)*

Alum Heather Ross (BS 85) was a 787 project pilot. She was a participant in the design of all systems on the airplane, so she was required to be conversant in all major systems, as well as failure analysis and understanding message logic statements. When asked about the rewards, Heather said, “having the opportunity to fly the airplane you helped to design was an incredible experience.”



*The Boeing 787 flies over Seattle on a test flight. Photo courtesy of The Boeing Company.*

The Dreamliner was designed to be the most fuel-efficient and passenger-friendly aircraft to date, with significant changes to the structure, electrical systems, and cabin features of previous planes. These changes caused some initial delays in the certification process. According to alum Bruce Groenewegen (BS 85, MS 89), the Chief Engineer for Certification for the 787 program, “the certification process is both challenging and rewarding. The 787 includes many new technology features not found on previous large commercial aircraft, all of which required additional discussions with the regulator and in many cases regulations written specific to those features.” The plane is expected to be about 20% more fuel-efficient and 30% less expensive to maintain.

Now that the certification process is complete, Boeing can begin the process of filling its orders. With over 800 orders for the Dreamliner, the Boeing facilities in Washington and elsewhere will likely be busy for many years to come. ■

## UW A&A Distinguished Alumnus 2011 Lars Q. Andersen (BS 68)



At our annual spring banquet in May 2011, Lars Q. Andersen was awarded our distinguished alumnus award for his leadership in the aerospace industry. Andersen earned a BS from our department in 1968, while simultaneously earning two varsity letters in rowing. After graduating, he worked as a propulsion engineer at Pratt and Whitney Aircraft Engines and concurrently completed a master of science in mechanical engineering from Rensselaer Polytechnic Institute in 1972. In 1973, Andersen began his long and illustrious career at Boeing working on the 7X7, 707/CFM-56 re-engine, 757 and the 7J7 programs; he also served as a Propulsion Engineering Manager for the 747 and 767. Among other duties, he was responsible for the preliminary design of the propulsion system on the 767-X, which became the 777 program. Beginning in 1989, Andersen took on various leadership roles for the 777, working closely with the FAA (Federal Aviation Administration) and the European JAA (Joint Aviation Authorities) to develop regulatory requirements, and managing all aspects of the design, production, testing and certification process. In 2000, Andersen became Vice President of the Boeing Commercial Airplanes 777 Program in Everett. Despite his retirement in 2007, the company called him back to serve as Vice President of 777 Product Development for Boeing Commercial Airplanes, responsible for planning the future of Boeing’s twin-aisle airplane.

**Hans Boenish (MS 11)**, research scientist and engineer in the UW Aeronautical Laboratory (UWAL), was selected as a Bonderman Travel Fellow for 2011-12. In December, Hans packed his bags for an around-the-world adventure to explore music and culture in South America, Asia and Africa. The Bonderman Fellowship provides \$20,000 for eight or more months of solo international travel in order to promote a greater understanding of other cultures. You can follow Hans' travels through his blog: [hansboenish.wordpress.com](http://hansboenish.wordpress.com)

Last January, descendants of former A&A **Professor Everett O. Eastwood** came to visit the A&A Department. Three generations of Eastwoods came to tour Guggenheim Hall and to learn about their forebearer.

**Professor Paolo Feraboli** and the Automobili Lamborghini Advanced Composite Structures Laboratory unveiled the newest carbon fiber member of the Lamborghini family, the 2012 Aventador, at the Paris Motor Show in October.

Congratulations to **Professor Antonino Ferrante** who received the prestigious National Science Foundation Faculty Early Career (CAREER) Development Award. His CAREER project is titled, "Petascale DNS of Evaporating Droplet-Laden Homogeneous Turbulence" and is funded by the Office of CyberInfrastructure, Fluid Dynamics, and Particulate and Multiphase Processes programs of the National Science Foundation.

**Deidre Girard**, coordinator of the online master's programs and our social and digital media guru, graduated with her Master of Science in Human Centered Design & Engineering in June 2011. She plans to use her knowledge to advance A&A's presence both online and off-line.

**Professor and Chair Jim Hermanson** was invited by Senator Cantwell to testify at a U.S. Senate Committee on Commerce, Science, and Transportation hearing in October 2011. The subject of the hearing was "The Aviation Workforce: Industry and Labor Perspectives on Training Needs and Challenges." Professor Hermanson addressed the challenges of guaranteeing both the quantity and quality of a strong force of engineers that will be critically needed to fill the future needs of the aerospace industry.

*continued on page 7*

## Supporting Innovation with a Faculty Endowment

As a generation of aviation engineers prepares to retire, industry is searching for qualified candidates to take their place. Currently, we graduate about 55 BS and 30 MS students each year. Our ability to grow that population is limited in part by the number of faculty in our department.

Faculty provide the exceptional learning experience for our students, so recruiting exceptional faculty members is critical to our ability to compete nationally and internationally with other top ranked departments. To meet current and future demands of industry, UW A&A must leverage existing resources to maintain and grow a strong faculty.

In the next five years, we will likely see at least five full-time tenured professors retire. Each new faculty member we hire will require a start-up package that can approach \$1 million. As state funding shrinks, we are increasingly reliant on private funding to attract and retain top faculty.

*In this changing funding landscape, we look to our alumni to help support the growth and vitality of our department.*

Endowed chairs and professorships are critical to the department's future, as they provide us the freedom to hire new faculty, increase opportunities for critical research, as well as promote our prestige and national visibility. Endowed chairs and professorships allow the department to hire new faculty to grow its ranks and meet the needs of increased populations of students. Discretionary "venture funding" supports entrepreneurial ideas, encourages faculty to conduct important research, and enhances the student experience. In addition, endowed positions carry recognition among colleagues within academia, industry, politics, and beyond that acts as an important retention tool. They also allow the department to compete with lucrative bids from peer institutions and industry competitors.

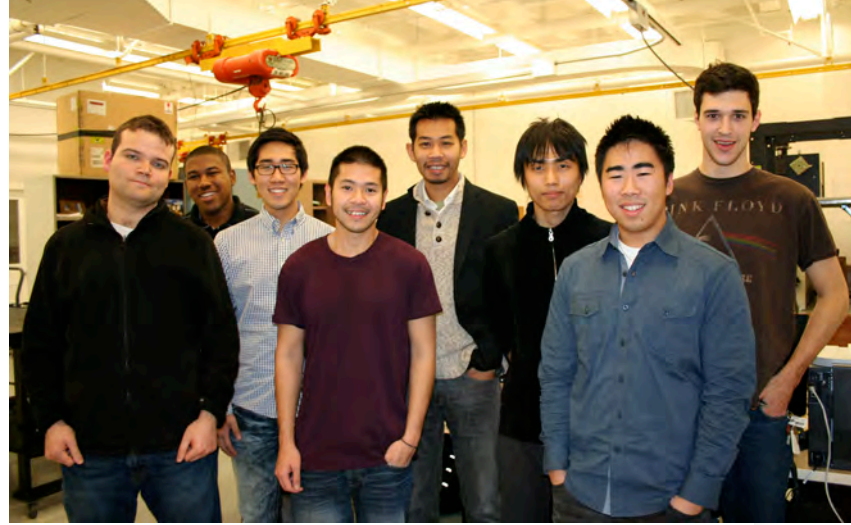
In this changing funding landscape, we continue to look to our alumni to help support the growth and vitality of our department. If you are interested in supporting us, consider creating an endowment or making a gift to the A&A Faculty Fund. Please contact Megan Ingram at (206) 685-1378 or [mkingram@uw.edu](mailto:mkingram@uw.edu). ■

## New A&A Professor Builds His Research Program

### *Developing High Performance Plasma Devices for Fusion and Space Propulsion*

Professor Setthivoine You, who joined the UW A&A department in 2009, is working with his research group to build an experiment to provide the first measurements of three-dimensional patterns of flow inside plasmas confined by magnetic fields.

Plasmas are gases which are hot enough to have atoms and molecules break apart into ions and electrons. Since ions and electrons are electrically charged, magnetic fields can manipulate and mold plasmas into a wide variety of shapes. In nature, plasmas exist as bright arched prominences protruding from the surface of the Sun, or million parsec-long high-speed jets shooting out from supermassive black holes at the centers of galaxies. In the laboratory, carefully designed magnetic fields shape plasmas into the shape of doughnuts, then heat the plasmas to ten million degrees to produce fusion energy, or accelerate them with electrical currents and eject them



*Undergraduate and graduate students working with Prof. You (left to right): Jens von der Linden (grad), Keon Vereen (grad), David Cho (undergrad), Dennis Lim (undergrad), Professor You, Yu Kamikawa (undergrad), Christopher Uyeda (undergrad), and Eric Sander Lavine (grad).*



*Professor You, above, describes his experiment to some new student researchers in his lab in the Aerospace Engineering Research Building.*

through magnetic nozzles to produce very efficient thrust for space propulsion. Professor You's research group is building an experiment to study details about how magnetic field shapes affect plasma flows and how flows in return feed back into magnetic field shapes.

The research group is developing the first diagnostic capable of measuring the evolution of plasma flows in three dimensions. The diagnostic technique works on the same principle as medical imaging used for looking inside the body. After taking spectral measurements from all around the plasma, a sophisticated computer algorithm can then reconstruct the patterns of flow inside the plasma. The diagnostic is unique because the flow patterns are not limited to one- or two-dimensional flows. Therefore, the interaction between flows and magnetic fields can be studied in a much more general manner. The aim is to verify theoretical predictions of a model called "generalized relaxation." The resulting new knowledge could be used for space propulsion and to build smaller and cheaper fusion energy reactors.

Professor You earned his PhD in physics from the Imperial College in London, and conducted research at the Culham Centre for Fusion Energy near Oxford, at Caltech, and at the University of Tokyo prior to coming to the UW. ■

## Professor and Doctoral Student Use Rocket Science to Improve Grocery Store Refrigeration

Open-front refrigerated display cases, which make up roughly 60 percent of the refrigerated cases in grocery stores and supermarkets, provide quick access to chilled products such as dairy, meat, fish and produce. However, while they are convenient, they consume large amounts of energy.

Engineers at UW and Kettering University in Michigan are working to cut the amount of energy used by these coolers, while enhancing product safety and quality. Recently published results in the journal *“Applied Thermal Engineering”* show that tweaking the flow physics can reduce the energy used for refrigeration by as much as 15 percent.

The lead author of the article is Mazyar Amin (MS 06, PhD 10) a former UW doctoral student in A&A now doing postdoctoral research at Missouri’s Saint Louis University. For his doctoral thesis, Amin, working with A&A Professor Dana Dabiri, used fluid dynamics to improve the energy efficiency of these cases. Dabiri specializes in experimental work to measure and visualize fluid flows.

On the Kettering campus in Michigan, researchers built a modular mock display case and an air curtain simulator to test various designs. They measured how much air



*Former UW doctoral student Mazyar Amin working on the test refrigerated display case in Michigan.*

“We’ve shown we can get 10 to 15 percent improvement, which is definitely a tangible impact. In this whole push for energy efficiency, anything you can do is a help.”

*Professor Dana Dabiri, UW A&A*

was infiltrated for various air curtain speeds, angles, and other factors to minimize the amount of warm, moist air entering the chilled compartment of the case.

Instead of proposing costly redesigns and new display cases, the researchers decided to explore what small changes could be made to improve the energy efficiency of the existing units. Combining experimental results and mathematical models, the team developed a tool that lets manufacturers optimize their particular design.

Researchers collaborated with a leading display-case manufacturer to retrofit a proof-of-concept case. Tests showed the retrofit was a cost-effective way to get a 10 percent reduction in infiltration of warm air. Calculations for other display designs show potential savings of up to 15 percent.

Members of the team in Michigan have established a company that provides technical tools and training to help display-case manufacturers improve their products’ energy efficiency. “There’s definitely room for improvement in these display cases,” Dabiri said. “We’ve shown that we can get 10 to 15 percent improvement, which is definitely a tangible impact. In this whole push for energy efficiency, anything you can do is a help.”

An industry-wide implementation of the findings across the U.S. would save roughly \$100 million in electricity costs each year. ■

*Article courtesy of Hannah Hickey, UW News & Information*

## More Efficient Fusion Energy Developing in UW Lab

Engineers in the department led by A&A Professor Thomas Jarboe have developed a new magnetic confinement system for controlled fusion energy.

Fusion is the energy source of the sun, and has the potential of producing essentially unlimited clean energy on earth. Fusion is inherently safe because it produces no long-lived waste or greenhouse gases and its energy producing reaction extinguishes quickly when desired. The fuel for fusion is abundant, but it must be heated to the plasma state at very high temperatures to burn (100 million degrees) and must be kept away from the reactor walls by magnetic fields. The goal is to develop a system to form and sustain such a magnetic bottle at a low enough cost for practical power generation.

The UW system is an inductively formed and sustained "spheromak." The spheromak is a close relative of the thoroughly-studied fusion approach, the tokamak, in that the magnetic bottle has the shape of a doughnut. But whereas the reactor wall and magnetic field coils thread the "doughnut hole" of the tokamak, this is not necessary in a spheromak, making this reactor design much simpler and less expensive. A key element of this breakthrough is the team's development of the formation and sustainment method called steady inductive helicity injection.

The research is being done on a machine called the Helicity Injected Torus - Steady Inductive (HIT-SI). HIT-SI has demonstrated the method by forming and sustaining 55,000 Amps of electrical current in the confined plasma, (a lightning bolt averages 30,000 Amps). The current in the plasma serves the dual purpose of forming the magnetic bottle and also heating the plasma fuel (much as a light bulb filament gets hot when current runs through it).



*The spheromak concept: the magnetic bottle is the colored region, and the gray edge is the field line.*

The next step in this research is to demonstrate that a magnetic bottle formed and sustained by this method has sufficient confinement for fusion power production. A higher-current spheromak formed in a larger machine will be required for this next demonstration. The spheromak concept has a relatively low system mass and has also been used in fusion propulsion concepts for interplanetary travel. ■

**Professor Kuen Lin** accepted the 2011 award by the American Society of Engineering Education (ASEE) for Excellence in Engineering Education Collaboration for his work with Boeing on the composite certificate programs. These certificates are offered by UW to Boeing engineers who apply advanced academic knowledge to their work on Boeing composite-related projects, such as the 787.

The American Institute of Aeronautics and Astronautics selected **Professor Eli Livne** to succeed Dr. Thomas M. Weeks as the editor-in-chief of the "Journal of Aircraft." The journal is devoted to the advancement of the applied science and technology of airborne flight.

**Professor Tom Mattick** retired in spring of 2011 after 36 years of service. Professor Mattick made many contributions to our department, including conducting research in heat transfer and gas dynamics, and teaching many courses, including the senior Space Systems Design class. Congratulations to Tom on his retirement, and a big thank you to him from all of us in A&A!

**Professor Kristi Morgansen** began leading the research for the \$7.5 million Multidisciplinary University Research Initiative (MURI) this fall to study biological flight and its applications to autonomous vehicles.

**Professor Uri Shumlak** received the College of Engineering Community of Innovators Award for Excellence in Teaching & Learning in 2011. Among the nominees were **Professor Kristi Morgansen** as a Faculty Innovator for Research, and **Wanda Frederick** as Professional Staff Innovator. These awards honor faculty, students and staff members who make exceptional and meaningful contributions to the College of Engineering community.

**Loren Steinhauer**, research scientist at the recently closed UW Redmond Plasma Physics Laboratory (RPPL), published a review paper on Field Reversed Configurations (FRCs) this summer in the journal "Physics of Plasma." This is only the second review paper ever written on FRCs and the first one written in 23 years. Though RPPL has closed, Steinhauer continues to consult with Tri Alpha Energy and other FRC labs around the world.

A team of six students from Professor Mattick's Space Systems Design class attended the 2011 forum of the Revolutionary Aerospace Systems Concepts (RASC-AL) in June in Cocoa Beach, Florida, sponsored by NASA and the National Institute of Aerospace. They placed second in the competition of 15 undergraduate teams attending the conference. The team - **Phil Andrist, Alisha Babbitt, Vince Ethier, Mike Pfaff, Gabriella Rios-Georgio, and T.R. Welter** - was also treated to a "VIP" tour of Kennedy Space Center, including an up-close visit of Shuttle Atlantis on Pad 39A.

A paper written by PhD student **Francesco Deleo** for the Virtual Prototyping & Testing Session of the Society of Plastics Engineers Automotive Composite Conference (SPE ACC) was selected as a 2011 Best Paper Award Winner. Francesco was honored at the SPE ACC opening ceremonies on September 13th.

Congratulations to doctoral student **Noah Reddell**, who was one of two UW nominees and is now in the final selection to attend the 2012 Lindau Nobel Laureate Meeting in Germany, which will feature recipients of the Nobel Prize in Physics. Noah, who works with Professor Shumlak, is a Department of Energy Computational Science Graduate Fellow.

A&A students took time out of their busy schedules to volunteer on Martin Luther King Day 2011 by doing some clean up work in a local park. Photo (l to r): **Kristina Wang, Kenneth Low, Alexandra Sobin, Jens von der Linden, and Michael Blom.**



## Grad Student Attends NASA Planetary Science Summer School



*Soumya Vasisht poses with Curiosity, the Mars rover, before its launch, during her stint at the NASA Planetary Science Summer School.*

Soumya Vasisht, an A&A PhD student, specializing in Guidance, Navigation and Control, was chosen from a large applicant pool of post-docs, recent PhDs and current doctoral students from across the nation to attend the 2011 NASA Planetary Science Summer School (PSSS) in August. The summer school takes place every year at the Jet Propulsion Laboratory in Pasadena, California. PSSS is an intensive one-week team exercise, preceded by several weekly webinars and assignments, to learn the process of developing a robotic mission concept into reality through concurrent engineering. The space mission chosen this year was "Trojan Asteroid Exploration and Rendezvous" (TASTER). The mission involved a detailed investigation of Jupiter's Trojan asteroids, a family of minor bodies occupying Jupiter's L4 and L5 Lagrangian points. The trainees assumed roles including principal investigator, project manager, and mission and system designers and were mentored and assisted by JPL's Advanced Projects Design Team ("Team X").

Often called a mission design boot camp, PSSS gives students a clearer understanding of the mission design relationships among science instruments, cost, and schedule, and the trade-offs necessary to stay within cost and schedule while preserving the opportunity to acquire high-quality science.

More information can be found on the PSSS website at [scischool.jpl.nasa.gov](http://scischool.jpl.nasa.gov). ■



# Alumni UPDATES

In recognition of his 90th birthday, and his remarkable 40 year career as one of the world's top airline designers, GE Aviation named a room at the GE Learning Center in Evendale, Ohio in honor of 1985 A&A Distinguished Alumnus **Joseph Sutter (BS 43)**. Joe was also honored this year at the launch of the new 747-8 test flight. His initials were engraved on the plane!

1980 A&A Distinguished Alum **George Jeffs (BS 45, MS 48)** was selected as the recipient of the College of Engineering's 2011 Diamond Award for Distinguished Achievement in Industry. The Diamond Awards honor outstanding alumni who have made significant contributions to the field of engineering.

**Philip (Flip) Wingrove (BS 52, MS 54)** wrote to share some memories of Professor Ganzer, whom he says instilled in students a professional work ethic they carried into many successful careers. Ganzer was the most influential professor Flip had in A&A. Flip said that during his career as a Marine Corps pilot, 27 years in flight test engineering at Boeing, and consulting in Europe, when confronted with a knotty problem, he asked himself, "What would Vic Ganzer do?"

**Donald Ciffone (BS 60)** stopped by to visit the A&A Department from his hometown of Portland, Oregon. Donald worked for NASA from 1966 – 1990, and during that time managed to complete his master's degree in Aeronautics & Astronautics from Stanford University.

**Larry Erickson (BS 61, MS 63)** visited the department in early 2011. Larry, who received his PhD from Virginia Tech, worked at NASA for more than 30 years, and was later a lecturer at California Polytechnic State University San Luis Obispo.

**Fereydoon Aboosaidi (MEngr 83)**, who is retired from Boeing, stopped by with his son in December to say hello and look around Guggenheim Hall. He regaled us with stories about his time in A&A and remembered many of our current and former faculty.

**Alek Komarnitsky (BS 84)** shared photos of his family's trip to the Galapagos Islands. He also sent the link to his Controllable Halloween Decorations for Celiac Disease, which raised more than \$60,000 for Celiac research. The Controllable Christmas Lights went up in early December: [http://www.komar.org/cgi-bin/christmas\\_webcam](http://www.komar.org/cgi-bin/christmas_webcam)

**Heidi (Humphry) Lyman (BS 84, MS 92)** was selected as a "Key Influencer" by the U.S. Navy and was chosen to fly with the Blue Angels on August 1st. Photo below, courtesy of Ron Wurzer and UW Columns Alumni Magazine.



**Dave Carlile (BS 90, MS 91)** visited this summer to take a look around the UW and Guggenheim. Dave works at Lockheed Martin Skunkworks in California.

Professor Kuen Lin presented a lecture at the Korean Aerospace Research Institute during summer 2011, where alum **In Hee Hwang (PhD 90)** is director of the Institute's rotorcraft program. Professor Lin was treated graciously by Dr. Hwang and enjoyed his visit immensely.

**Heidi Schubert (BS 93)** kindly sponsored students to attend our banquet this year, as she has many years in the past. She sent a nice note telling us how much the banquet meant to her as a student here. Heidi is director of research at Real-Time Innovations. She and her husband live in Palo Alto, California with their two boys.

**Ralph Ewig (BS 95, MS 97, PhD 06)**, who works at SpaceX, is also a science fiction writer! Ralph has published several Ebooks on Smashwords and hosts a website: <http://ralphewig.tumblr.com>.

**Ki Seuk Lee (BS 96, MS 98, MEngr 00)** played host to Professor Kuen Lin while he was in Korea for the 18th International Conference on Composite Materials. Ki Seuk works in the Electrics & Electronics Certification Center, Digital Industry Division of the Korea Testing Laboratory. He and his wife have two beautiful young sons who keep them busy.

**Sutthiphong "Spot" Srigrarom (MS 98, PhD 01)** visited Seattle with his wife Sze Yee in September on their way to California. They left their baby girl at home with family on this trip. Spot is head of the Aviation Maintenance Program in the School of Science & Technology at SIM University in Singapore.

**Shahin Afshari (BS 99)**, who works in the Statics Load group at Boeing, participates in Professor Dana Dabiri's Incompressible Aerodynamics class (AA302) each spring as a co-instructor. At the end of the quarter, Shahin

*continued next page*

# Alumni UPDATES

gives the students a project to tackle on wing-design, so they get exposure to real-world problems.

**Chris Nave (BS 00, MS 11)** is a research engineer at Ford Motor Company in active safety control systems and autonomous driver assistance technologies for advanced projects. This year, he received the prestigious Henry Ford Technology Award for his work on a radar-based pre-collision warning system. This is the highest honor for technical achievement at Ford. Photo below (l-r): Alan Mulally, Ford CEO, Chris Nave, and Phil Martens, Ford CTO.



**Vincenz Knagenhjelm (MS 01)**, is a chief analyst at Lockheed Martin Space Systems in California, and he says that he is, "doing exactly what the UW taught me, and enjoying it, too!" Vincenz and his wife have two sons, Viktor (3) and Nikolai (8 months).

**Christopher Keeler (MS 02)** wrote with New Year's wishes. Chris is deputy program manager of the Landsat Data Continuity program at Orbital Sciences Corp. in Arizona. Chris and his wife, Joelle, keep busy with their two boys.

**Jeremy Wimer (MS 03)** graduated from the U.S. Air Force Test Pilot School on December 10, 2011 at a ceremony attended by his A&A advisor, Professor Kurosaka. Jeremy has

flown 20 different aircraft during his 130 hours of training. He will stay at Edwards Air Force Base in test operations. Jeremy and his wife and children are enjoying being in California.



**Andrew McComas (BS 03, MS 07)** and his wife, Ashley, have a beautiful baby boy: Sawyer Scott McComas was born on August 3, 2011 (photo above). Andrew is an aerodynamicist at Analytical Methods, Inc. Congratulations Andrew and Ashley!

**Andrew Hooks (MAE 04)** and his wife Megan and their son Luca welcomed baby Milo on September 1st. Andrew, who works in the 787 Autoflight program at Boeing, reports that Milo is full of smiles. From the looks of it, Luca will be a very good big brother (photo below).

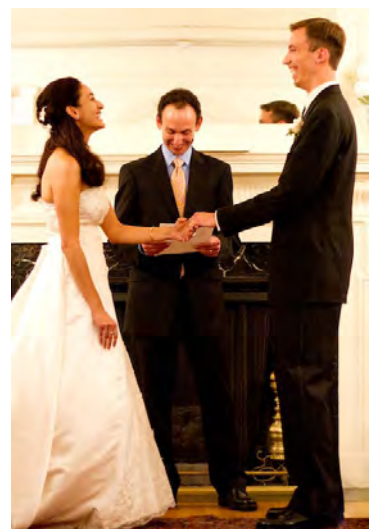


**Richard Tarbill (BS 04)**, an aerodynamic flight test engineer at Boeing, will be participating in the Africa to the Americas row. First, though, Richard and his three teammates plan to row around Vancouver Island nonstop for 14 days, which would break the current record. In December 2012, the team will begin their voyage from West Africa to South America to raise funds for Right To Play, International.

See their website <http://oarnorthwest.com/> to learn more. Good luck to Richard and his team!

**Graylan Vincent (BS 04)** visited A&A at the start of autumn quarter. Graylan travels extensively throughout the US in his position as a reconnaissance specialist, installing seismometers for Incorporated Research Institutions for Seismology, a consortium of the National Science Foundation.

Alums **Colin Adams (BS 05, MS 09)** and **Bhuvana Srinivasan (MS 06, PhD 10)**, below, were married on September 24th in a beautiful ceremony officiated by none other than their academic advisor Professor Uri Shumlak! It was a heartwarming ceremony (even with the references to physics), and a joyful celebration. Current and former A&A students seemed to outnumber family and friends at the celebration.



**Pierre-Luc Chambion (MAE 05)** stopped by A&A with his wife Becky and their two sons before attending the naturalization ceremony after gaining his U.S. citizenship! Pierre-Luc is working at Greenpoint Technologies, Inc., in Kirkland. Congratulations, Pierre!

**Daniel Klein (MS 05, PhD 08)** and his wife Judy welcomed their new baby Elliott Thomas on April 21st. Elliott joins his big sister Eleanor. Dan is working on the HIV modeling team at Intellectual Ventures in Bellevue.

**Toru Yamasaki (BS 05)** visited A&A with his wife Maria during the holiday break in December, and plans to connect with former classmates. Toru has been with Software Cradle Ltd., Co. in Japan since his graduation.

**Joseph Giordano (MS 06)** and his wife Jihyan have been remodeling a home in Ticonderoga, New York. Work on this project, and raising son, Jonah, is keeping them busy these days.



**Manav Bhatia (PhD 07)** was married on August 6th in a very festive and beautiful ceremony attended by a large group of family and friends, which included A&A staff and students as well as his advisor, Professor Eli Livne. Manav and his wife Andrea (photo above) live in Blacksburg, Virginia, where Manav is a postdoctoral fellow at Virginia Tech.

**Kimberlee Shish (BS 07)** stopped by to say hello over the Thanksgiving break. We gave her a tour of the building since she spent her time in A&A over in Condon Hall during the

Guggenheim remodel. Kim is pursuing her PhD, working in the Stanford Space Exploration group on trajectory optimization under uncertainty for entry, descent and landing systems.

**John Donner (BS 08)** is pursuing his master of financial engineering at UC Berkeley's Haas School of Business. John says there are a lot of people in his program from math, science and engineering, and he highly recommends it!

**Scott Moon (BS 08)** visited the department in November and caught up on all the news. Scott is enjoying his job at SpaceX in California.

**Amir Rahmani (PhD 08)** came to visit us in July before beginning his position as an assistant professor at the University of Miami Department of Mechanical and Aerospace Engineering. Prior to accepting this faculty position, Amir was a postdoctoral fellow at Georgia Institute of Technology.

**Brian (Jaedong) Hwang (MS 09)** is a software engineer at GE Aviation Systems on the IT (solution and application) team in Kent, Washington.

**Zahra Nazari (BS 09)** stopped by this spring after completing her master's degree from UC Irvine. Zahra is an engineer at Cobham Aerospace in Bothell, Washington.

**Luke Jensen (BS 11)** is traveling around South America and then Asia on a Bonderman Travel Fellowship for 8 months. On his blog, Luke posts fabulous photos and talks about his experiences — among them, taking the GRE in LaPaz, Bolivia (in preparation for graduate school application).

**Ralph S. Eskenazi (BS 41)** passed away on October 17, 2011. Ralph enjoyed a long retirement after more than 30 years of service at Boeing. Our condolences to Ralph's family.

We were saddened to learn that **Kazuo Kumasaka (BS 50)**, who was retired from a distinguished career at Boeing, passed away in November 2010.

1991 A&A Distinguished Alum **Moustafa Chahine (BS 56)** passed away in March 2011. Former Chair **Adam Bruckner** recalled that "he was a true gentleman and scholar, and had a stellar career at JPL." Our thoughts are with his family.

**Ed Odell (BS 96)**, who had significant roles in NASA Mars robotic exploration programs as flight software engineer at Lockheed Martin Space Systems, passed away in April 2011 after a long illness.

## Thanks to our 2011 Seminar Speakers

As a part of our winter quarter 2011 undergraduate seminar series, students were privileged to hear from many distinguished speakers, including A&A alumni and industry affiliates. Our thanks go to:

Roger Myers, **Aerojet**  
 Mike Dunlop, **Net-inspect**  
 Scott O'Brien (PhD 93),  
**The Boeing Company**  
 David Lednicer, Davud Kasparov (BS 06, MS 07), and Nate Lachendro,  
**Raisbeck Engineering**  
 Miguel Santos (BS 78),  
**Boeing Commercial Aircraft**  
 Robert Zubrin, (MSAA 86, MS Nuc. Engr 84, PhD Nuc. Engr 92)  
**Pioneer Astronautics,**  
 Erika Wagner, **X-Prize Foundation**  
 Laila Elias (BS 98), **Blue Origin**

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## Highlight

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# Highlight

## Engineering Networking Night 2011



*Photo courtesy of Kenneth Low, A&A Undergraduate and UW AIAA Historian*

On November 8, 2011 the A&A AIAA Student Section organized a Career Networking Night. Representatives from several companies came out to meet our students to talk about career and internship opportunities. Our thanks to all of the participants (who included several of our alumni): David King, Asher Yap (MS 06), Tom Terreau (BS 03), Ben Welander, Chuck Cushing from Aerojet; Robert Lind (BS 90, MS 92), Sydney Clos (BS 09) from TLG Aerospace; Jeff Hogan (BS 02, MAE 08) and Kurt Veitengruber (BS 89) from The Boeing Company; and Laurent Debuire from Zodiac Aerospace.

## NSF Fellows (cont.)

IT to help incoming freshman and students with disabilities, respectively, explore research opportunities. Vereen is an active participant of the Graduate Opportunities and Minority Achievement Program (GO-MAP) through the Graduate School, where he helps to recruit scientists and engineers of color. Wang is an active member of the Society for Women Engineers, and is in the process of founding a chapter of Students for the Exploration and Development of Space (SEDS) at UW. In order to prepare our A&A undergraduates and first-year graduate students for the 2012 NSF GRFP application process, all three fellows volunteered to present a workshop with tips on applying for the NSF and other federal research funding.

Upon completion of their PhDs, the NSF fellows in A&A are looking to take on leadership roles in industry. Wang wants to pursue work in the manned space vehicles industry; Hinson is looking at aircraft design and controls; and Vereen is thinking about becoming a plasma research scientist who teaches on the side. While their specific career goals may evolve over the next few years, the future looks bright for all of them. ■