

### Eric V. Eason



Eric is an engineering physics/applied mathematics graduate of the University of Colorado at Boulder, where he has been Corresponding Secretary. He plans to do graduate studies in applied physics

at Stanford University. His goal is to earn a doctorate and become a professor or research scientist in condensed matter physics—the science of solids and liquids. He particularly wants to study advanced materials like high-temperature conductors, with applications in areas such as electromagnets, power transmission, and magnetic-levitation systems. Eric has held a NIST summer fellowship working on an experimental atomic clock and worked on an NSF-funded research project in the field of scanning tunneling microscopy. A classical piano performer and composer, he has studied French and Japanese at intermediate level, is an Eagle Scout, and has been an assistant scoutmaster. Eric is also one of only 10 students nationwide to receive a Hertz Fellowship, worth more than \$250,000, for up to five years of graduate studies.

### Benjamin A. Baker



Ben graduated first in his class in nuclear engineering at Idaho State University. He will remain there for his master's, with a focus on fast reactors. Currently, there are none in the U.S., and he may do research

using French data. He wants to help prevent the U.S. from having to “reinvent the wheel.” He believes that fast reactors are essential for the future; fission resources will last thousands of years longer, and the waste can be burned. After graduate school he wants to work at a national laboratory, even if he cannot research fast reactors. Ben expects that their development will eventually become a priority, giving him a chance to contribute even more. In the meantime, he can take part in technological developments. He has interned at the Idaho National Laboratory, working to extend the life of the advanced test reactor there. He was TBII Treasurer and played basketball, ran track, and lifted weights. He spent two years as a missionary in Brazil, learning Portuguese, and qualified as an Eagle Scout.

### Stephanie E. Beckett



Stephanie graduated first in her aerospace engineering class of 60 at the University of Texas at Austin, where she was chapter President, with a 4.0 G.P.A. She is moving on to law school at Harvard, aiming

to become involved with patent law, and eventually with patent-related policymaking. Stephanie plans to be involved in activities like editing the *Harvard Journal of Law and Technology*. She believes her engineering background will help her in the school's strong research programs in environment, biotechnology, and internet law. Stephanie believes that current patent laws are confusing so different courts interpret them in various ways, making the patent system unpredictable and sometimes unfair. She hopes to have internships at a law-making body like Congress and attain a federal appellate court clerkship after law school. Engineering internships have included Lockheed Martin, JPL, and the Applied Physics Laboratory. She plans to spend the summer preparing for the patent-agent examination.

### Brian D. Carlton



Brian graduated at the top of his class with a B.S. in civil engineering and a 4.0 G.P.A. from Washington State University. He was diagnosed with Hodgkin's Lymphoma at the end of his sophomore year and

underwent chemotherapy while studying for 18 credits. The cancer disappeared after six months of treatment. Then he spent a year studying in Chile, as well as playing trumpet in a funk band there. He returned to Chile on an internship and reported on the possibility of generating electricity from the ocean. He also became interested in earthquake engineering. As a Christian and an Eagle Scout, Brian believes we all should have access to clean water, safe buildings, functioning sewers, and efficient transportation. He will study for a master's in geotechnical and hydraulics engineering at the University of California, Berkeley. He plans to go on for a doctorate and then to work for an international aid organization. He hopes to combine his education and fluency in Spanish to improve the world's infrastructure.

### Brandon L. Eidson



Brandon is working on a master's in electrical control systems at Auburn University. He ranked first in his undergraduate class with a 4.0 G.P.A. He plans to continue with E.E. for a doctorate, concentrating on electrical control and power systems at his *alma mater*. He plans to investigate methods to justify using digital control of power systems over analog control. In support of his goal to maintain a balanced personal education, Brandon has applied for a one-year program on Christian apologetics, combining theology and philosophy, at Wycliffe Hall in Oxford, England. He is not sure what direction he will pursue after his Ph.D. and believes his education will shape that vocation. Activities apart from TBII have included serving as chapter president of IEEE and participation in HKN and the National Society of Black Engineers. He has also been active in his church, and worked with local Christian churches and organizations in Latvia and Russia for the benefit of their communities.

### Arash Farhang



Arash has graduated with a bachelor's in electrical engineering from the University of Utah, with a 4.0 G.P.A. He plans to stay there for graduate studies in E.E. and go on for a doctorate, with possibly a master's

in his undergraduate minor of mathematics. He is interested in high-frequency electromagnetics, especially the terahertz/infrared band, where he believes knowledge is still limited. He sees this as the unexploited portion on the electromagnetic spectrum. Advances would have profound impacts on terahertz computing. Arash believes there are many opportunities for observations of completely new phenomena, as in any unexplored fundamental area of science. Such observations often lead to cutting-edge developments, and that is where he wants to be. He is also a dedicated juggler, which he began in middle school. He takes part in competitions held by the World Juggling Federation, which promotes it as both an art and a sport, and placed second in an overall intermediate championship.

## Joshua J. Hammell



Josh has gained a bachelor's in mechanical engineering at South Dakota School of Mines & Technology, where he was first in his engineering class with a 4.0 G.P.A. He plans to stay there for graduate studies

in mechanical engineering. His eventual aim is to teach, and he plans to stay with research and development of cutting-edge technology. He is especially interested in the marriage of mechanical engineering and material science, and advanced courses in controls, robotics, manufacturing systems, and material science, coupled with research and development, are a central focus. Josh believes this path will take him far beyond a Ph.D. A member of ASME, TMS, and AISC, he has worked as a structural steel welder on a wide range of projects and studied structural design software. He is an artist, working with acrylic paint, pencil, and charcoal, and has artwork on show across the U.S. He also writes poetry, prose, and philosophical prose for the possible prospect of publishing a book.

## Christine E. Holl, E.I.



A mechanical engineering graduate of the University of California, Davis, Christy was TBII President and 2008 Convention Chair and a member of SWE and  $\Phi K \Phi$ . Interested in materials science, she

plans to continue at the University of California, Berkeley, for her Ph.D. She would like to pursue research in energy and combustion. Her career goal is to become an engineering professor at a four-year university, combining teaching and research. Christy sees herself as thorough, careful, and tenacious, working diligently on the problem presented until a solution is reached—good qualities for a research engineer. She has served as an independent researcher and a teaching and laboratory assistant, which has all confirmed her belief that she has chosen the correct career path. Thermodynamics, fluid mechanics, heat transfer, and materials science intrigue her. She would like to extend the body of knowledge in those fields by using her abilities to excel as an independent researcher.

## Towa Matsumura



Towa has graduated from Worcester Polytechnic Institute with a bachelor's in electrical and computer engineering and a second B.S. in biomedical engineering. He remains at his *alma mater* on

a M.S./B.S. program. Towa was TBII Vice President and president of his HKN group. He planned to become a medical doctor when he started his undergraduate career. He became a research intern at the New England Center for Stroke Research at UMass Medical School and became aware of the issues facing stroke patients, particularly the loss of motion caused by the death of motor neurons. He developed the concept of an implantable chip to do the signal processing the neurons used to perform. This insight gave him the ambition to get a Ph.D. and do his own research. He plans to gain sufficient knowledge and experience in both technology and management to become a competent researcher. Then he will be able to contribute to the ranks of engineers trying to help stroke patients regain control over their lives.

## Sarah E. Ott



Sarah has completed her bachelor's in civil engineering at Valparaiso University, where she ranked first in her department. She is pursuing a master's in transportation engineering at North Carolina

State University as the next step toward a career as a college professor in that field. Sarah will be joining the NCSU superstreets project. She sees these junctions as a promising solution for congested and collision-prone intersections. Sarah believes in the holistic teaching approach of her engineering professors who taught her current engineering knowledge and helped to shape her character. She enjoys the academic setting and the search for new solutions. Her plan is to help the next generation and become a catalyst for future students' growth. TBII Cataloger and active in SWE, she served on a service project building a road in a Costa Rican shanty town. Sarah captained the Valparaiso women's basketball team and has coached girls and boys in the sport at clinics and summer camps.

## D. Cody Rice



Cody is a mechanical engineering graduate of Colorado School of Mines. He was also active in  $\Sigma \Phi E$  as chapter president, as well as ASME, and was class representative on the student council. He

plans to attend Purdue University and earn a master's in aeronautical and astronautical engineering. He has always been enthralled with flight and aircraft and wants to become an aerospace engineer in the field of aircraft conceptual design, the process in which an idea moves towards form and flight. He wants to focus graduate school research on up-and-coming ideas that will impact the way future aircraft are designed. Cody is currently in the process of realizing a childhood dream to work for Lockheed Martin's "Skunk Works" program. He has already interned with the firm and is working to obtain an internship with the program's conceptual design group. He believes that combining internships with graduate research will help him use his education to implement new technologies.

## Christopher W. Stivers



Chris has received his B.S. in M.E. from Northeastern University, where he was TBII Corresponding Secretary. He plans to begin graduate studies in biomedical engineering at Stanford University. The

insulin pump he uses as a Type 1 diabetic has helped in his awareness of the benefits from this type of technology. He has already enjoyed classes in areas like biomechanics and has undertaken a capstone project to design and prototype a bionic ankle. Captain of the wrestling team, he participated in the cooperative education program, which strengthened his desire to enter the medical-device arena. Chris also worked on designing, building, and testing prototypes, project management, and dealing with customers. His ultimate career goal is to become an entrepreneur and create his own medical-device company. After graduate school he will seek employment to develop leadership skills. He has been a treasurer, secretary, and vice president of  $\Pi T \Sigma$  and is a member of Engineers Without Borders.

## Brady N. Wiesner



Brady is a civil engineering graduate of South Dakota School of Mines & Technology, where he was TBII Vice President. He is staying for graduate school, where he will be working on

highway systems engineering, foundations, and reinforced concrete. He plans to create a provisional specification for a direct tensile test of concrete, with the ultimate goal of creating an ASTM standard, as there is no current specification. He has significant summer experience in testing of soils and concrete for South Dakota DOT. On completion of his master's, Brady intends to start full-time employment at Puget Sound Naval Shipyard, working in the nuclear facilities and tanks division. He also plans to take the P.E. examination. He was one of the two students selected by the regents to serve on the screening committee for the next university president. An Eagle Scout and Order of the Arrow member, he entered his school after attending a campus summer program for high-school students interested in math and science.

## Samuel F. Wight



Sam majored in mechanical engineering dynamics and machine design at Washington University in St. Louis, where he was TBII Corresponding Secretary. He ranked first in his class with a G.P.A. of 4.0. He

enjoys engineering because he likes solving real-life problems and helping people. He believes the most valuable asset of an engineering education is learning to adapt to new ideas and technology. He chose a graduate project at his *alma mater* in mechanical design because he is fascinated by machines and their impact, from wind turbines to staplers. Mechanical design influences global societal problems, as well as mundane daily issues. Sam plans to summer intern at Boeing and hopes to begin his career working as a structures designer and analyst in a large firm. Aerospace interests him because of the design challenges to balance weight, strength, and space, making sure all the systems work together. A former ASME section president, he wants to learn more about industry from a non-academic perspective.

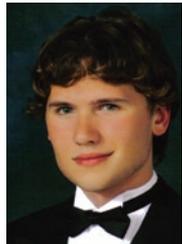
## Richard L. Winslow



Rich is a mechanical engineering graduate of the University of Florida, where he was TBII President. He helped pioneer GatorTRAX, his chapter's MindSET program, and was active in ASME and the American

Solar Energy Society. He is set for graduate school at the University of California, Berkeley. His planned focus is nanotechnology so he can contribute to solving problems in many areas. He believes we are on the cusp of discovery of smart medicines to fight disease and cancer, ultra-efficient solar cells to meet growing energy demands, and new materials to clean the environment. The only thing standing in the way is the number of motivated people working to get there. Once he has a closer understanding of nanotechnology, Rich plans to travel abroad to see what kind of problems exist. For instance, he believes that places like Africa could benefit from better water filters. Using resources like Engineers Without Borders would allow his travel to be funded. He plans to earn a Ph.D. while continuing his research.

## Zachary H. Bugg



Zachary graduated first in his class with a 4.0 G.P.A. with a B.S. in civil engineering/mathematics at Mississippi State University. He plans to continue his studies at North Carolina State University. He has

long been inspired by roadway design and traffic engineering, in which he plans a summer internship. He plans to stay with road transport for his master's, and he wants to look at how intelligent transportation systems work with traffic management and variable message boards to ease congestion and improve safety. He is also interested in researching the effects of high-occupancy-vehicle (HOV) lanes and the possible benefits of converting HOV lanes into high-occupancy-toll lanes. He has made two studies using electromagnetic detectors to measure traffic volume. His goal is to gain experience as a traffic engineer for either a state agency or a private firm. Zachary may eventually progress toward a Ph.D. in academia, but only after spending several years in his field.

## Robert P. Schroeder



Robert is a mechanical engineering graduate of Valparaiso University, where he ranked first in his department and was TBII Corresponding Secretary. He will begin graduate studies at Pennsylvania State

University, concentrating on thermodynamics, heat transfer, and fluid mechanics. He is fascinated by power-generation devices and machines that harness great amounts of energy. Robert wants to develop a sustainable energy policy, working on machines that benefit people without damaging the environment. He has worked on an undergraduate research project investigating the feasibility of a process that stores solar energy in the chemical form of zinc. This has been complemented by four co-op tours at NASA Johnson Space Center, working on power and propulsion systems. Toward the end of his master's work, he will decide whether to go on for a doctorate or find an engineering job in power machinery development. An Eagle Scout, he has also been active in ASME and SAE.

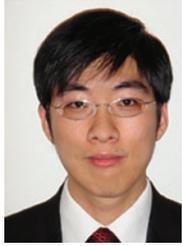
## Kristin M. Busa



Kristin graduated with her B.S. from Syracuse University at the top of her aerospace engineering department. She plans to study for a master's at the University of Virginia and is aiming for a Ph.D. in

mechanical and aerospace engineering. She sees a doctorate as beneficial because she plans to work in either industrial research and development or academia. She is focused on the advanced propulsion and fluid mechanics of high-speed flows. This follows an internship at GE Global Research's propulsion systems laboratory, where she found herself engrossed in a genuine research setting. She is exploring the operational limits of a supersonic wind tunnel, responding to blockages and conditions required for supersonic flow. She has been looking at scramjets and pulse-detonation engines, which use a rapid combustion process to burn fuel/air mixture at a constant volume, leading to superior burn efficiency. Kristin sees herself returning to academia to continue research or teach, so she can leave the world a better place.

### Arthur H. Chang



Arthur was first in his class when he graduated from California Institute of Technology at Pasadena with a 4.0 G.P.A. in electrical engineering. He will remain at his *alma mater* for graduate studies,

focusing upon circuit design, possibly with wireless/RF circuits. He wants to work on transmitter architecture for cognitive radio, which he believes has immense potential for wireless communications. It will improve use of that precious natural resource—the radio electromagnetic spectrum. Arthur wants to graduate with a Ph.D. and become a professor at a research institution. As a teaching assistant for several classes, he learned that he enjoys teaching. Arthur never leaves the laboratory until he feels his students have firm grasps of the theoretical concepts and enough information to proceed with assignments independently. He wants to pursue both teaching and research, encouraging students and seeking out those who might not otherwise benefit.

### Jerry A. Bradley Jr.



Jerry graduated first in his engineering class with a 4.0 G.P.A. at the University of South Alabama, where he was TBI Treasurer. He plans to continue with his major of civil engineering when he

starts graduate school at Virginia Tech in the fall. He believes the U.S. has entered a silent crisis as aging wastewater treatment facilities annually discharge billions of gallons of untreated sewage. ASCE states that if the nation fails to meet the investment needs of the next 20 years, it risks reversing the public health, environmental, and economic gains of the past three decades. Jerry believes technology like decentralized wastewater processing, which he worked on as a research assistant, can help solve this problem of rapidly aging infrastructure. Graduate school plans include building on his environmental-engineering knowledge base. Undergraduate activities included service as a free private tutor, ASCE treasurer, and membership in the ASCE environment and water resource institute.

### Uchechukwuka D. Monu



Uche has received her B.S. in electrical engineering from Howard University, where she was TBI President. First in her class with a 4.0 G.P.A., she will begin graduate work at Stanford University

and plans to advance to a doctorate in digital signal processing. She is intrigued by the current and potential applications in this field, where she has worked on intrusion-detection systems, as well as on image processing and pattern recognition, including the use of algorithms to recognize people's faces. This taught her how signal processing is being used to solve real-world problems. A member of the Nigerian national swimming team and her university's team, Uche believes the discipline and skills involved help her academic career. She hopes her accomplishments will show children in her Nigerian homeland and everywhere else that anything is possible with hard work and unwavering determination. Learning can be an avenue to better lives for all.

### Tal Rusak



Tal has received his B.S. in computer science from Cornell University, where he ranked first in his department. He plans to continue for his master's at Stanford University. He has a passion for research in computer science and engineering, especially the study of networked systems. Current research is focused on the simulation and modeling of low-power wireless systems. He has been an engineering intern in the wireless networking business unit of Cisco Systems Inc., working on next generation wireless access. He considered signal power data from a more thorough and theoretical perspective. His work was recognized with the 2009 Computing Research Association outstanding undergraduate award. This research will form the basis of his Ph.D. After graduate school, he hopes to pursue a long-term academic career that combines research and teaching. Tal has also served as a peer tutor and teaching assistant on subjects that included economics, sociology, and an afterschool wildlife program.

### Christopher M. Potts



Chris has completed his bachelor's in electrical engineering at Union College, where he ranked first in his department and was TBI Treasurer. He plans graduate studies at Duke University leading

to a Ph.D. He intends to specialize in micro electromechanical systems and is well prepared for a research or teaching assistantship during his studies. He also hopes to be an intern on NASA's undergraduate student research program. Chris believes that four seasons of playing Division I ice hockey as an E.E. major, with a double minor in mathematics and economics, has taught him skills that enabled him to sustain academic excellence. A former corresponding secretary for HKN, he believes that electrical engineering will not only continue to drive innovation and productivity around the globe, it will be essential in solving many of the problems we face in the coming century. His ultimate goal is to be at the cutting edge of this research, leading his own projects and teams.

### Gregory R. Lehnhoff



Greg has graduated with a B.S. in metallurgical engineering at Colorado School of Mines with a 4.0 G.P.A. He will remain and continue for a master's in metallurgical and materials engineering. While attending

graduate school, he plans to continue contributing through research and his mathematics minor to capture metallurgical phenomena in an elegant way. He intends to specialize in steel because it is important in almost every engineering discipline. However, he is also interested in other important engineering metal systems, such as aluminum, titanium, and nickel. Another component of graduate school he finds appealing is the chance to contribute unique research to his peers. Greg has been researching at his school's center for welding, joining, and coatings, covering heat transfer in gas-metal arc-welding electrodes. He presented his work at the 2008 American Welding Society Conference. The feedback he received made him confident he had made an important contribution to engineering.

**Indraneel Sircar**

Neel received his bachelor's in mechanical engineering from Worcester Polytechnic Institute with a 4.0 G.P.A. He is starting graduate studies at Purdue University, where he plans to focus on alternative

energy. This results from his awareness of the consequences after the world's most populous nations, India and China, become developed and prosperous. He believes that we must be looking beyond fossil fuels. He began studying thermal fluids and has been researching a method to improve the efficiency of gas compression technologies and using a liquid-piston concept. This led to development of a simulation that shows up to a 40 percent increase in efficiency over current methods. After completion of his Ph.D., Neel plans a post-doctoral research project, followed by a few years working in industry. He intends to pursue an assistant professorship on a tenure track. Then he will be able to research and develop alternative energies, as well as educate future generations about the challenge of energy security.

**Derek J. Woodman**

Derek has received a B.S. in computer engineering from Kansas State University, where he ranked first in his class with a 4.0 G.P.A. He has been TBPi Treasurer and was HKN vice president. He is staying

at his *alma mater* for graduate school and plans to study for a doctorate. He will be focusing on reconfigurable computing, combining the flexibility of software with the performance of hardware. One of the bottlenecks in computing is getting information from memory. Because this happens continuously, the hardware must be robust enough for all situations. He plans to spend this summer interning on a project with memory controllers that can be used with reconfigurable systems. He was unhappy with previous internships at commercial businesses. He wants to work for a national laboratory or governmental agency for 10 to 15 years and then become a college professor. Derek plans to continue as a teaching assistant at graduate school, because this has taught him how to present himself in an academic setting. He believes this will give him the skills to be a teacher.

**Benjamin G. Freedman**

Ben graduated with a B.S. in chemical and bioengineering from the University of Maine, where he was TBPi President. He will continue his studies this fall as a direct Ph.D. candidate in Bioprocess Engineering

at Virginia Tech. His studies have taught him the raw complexity and power behind everything we take for granted, ranging from pulp wood to the microbial production of penicillin. He plans to focus on the development of new bioactive materials and producing them on a significant scale. Ben is interested in using microbial processes to make complex molecules as a *green* alternative to toxic chemical solvents. He has been looking at this while interning in the paper production industry. He has not yet decided on a specific industry or employer. However, he believes similarities between culture and bioreactor systems will allow him to use them to improve people's lives across the world. He has also been a certified tutor in calculus and organic chemistry. He has helped in NASA research on changes in lung cells during reduced-gravity flight.

**Dane A. Grismer**

Dane is a paper science and chemical engineering graduate from North Carolina State University. He is starting graduate studies in chemical and biomolecular engineering at the University of Notre

Dame and plans to continue for a Ph.D. He is interested in exploring nanoscience to develop realistic solutions in areas like sustainable energy, renewable materials, and environmentally benign processes. He has spent internships working on coating for gypsum wallboard and testing cellulose-based polymers. This also involved collaborating with scientists and vendors around the world and helped him to decide upon a career as a research scientist. Dane envisions a future as a professor, combining his passion for research with teaching and mentoring aspiring engineers. He believes that nothing builds one's character quite like research, working alone or in a team and learning to deal with frustrating results, and finally enjoying the satisfaction earned when things go well. He is also a member of Omega Chi Epsilon.

**Andrew J. Jones**

Andrew has graduated with a B.S. in chemical engineering at the University of Minnesota-Twin Cities, first in his department. He has been active in the AIChE and plans to begin working

on his doctorate at the University of California, Berkeley. He will continue his studies in chemical engineering and eventually hopes to become a leading expert in that profession. His awards have included an astronaut scholarship and a Dow outstanding junior award. He also successfully competed for the chance to conduct organic synthesis research at the University of Leeds, England. Andrew plans to study catalytic partial oxidation and the future of non-petroleum based fuels. He sees experience in research and industry, academic success, and leadership activities as the basis to become an emerging leader in his field. Ultimately, he plans a career in industry or consulting and also to make a difference in the future of energy use.

**William C. Selby**

Will has graduated in systems engineering at the United States Naval Academy, where he ranked first in his class. He will attend Massachusetts Institute of Technology in the fall to begin studies

in robotics. He wants to use his control systems knowledge to let robots help humans with bomb disposal. While there already are similar robots in the field, he wants to research the possibility of a group of robots undertaking the entire "kill chain," from detection through disposal. Will has been a Trident scholar at Annapolis, which helped him to focus his research. This led to an internship at the Naval Research Laboratory. He is now investigating how a swarm of unmanned aerial vehicles can follow military convoys through urban terrain. This involves investigating control algorithm gains, vehicle separation distances, and vehicle speeds. He has also been a Defense Intelligence Agency junior analyst. He is a marathon runner, and is a member of ΦΚΦ, Semper Fi Society, and the Society of American Military Engineers.