Volume 19 – Issue 2

EERC EDGE

Our Edge Is Our People

March–April 2008

Brandon Pavlish (left), Research Engineer, and Jason Laumb, Research Manager, in front of the main testing area for the Partnership for CO_2 Capture Program.

The Partnership for CO_2 Capture

Efforts are under way throughout the world to reduce the emissions of carbon dioxide (CO_2) as a potential means of mitigating climate change. One effort is to capture the CO_2 before it has been released into the atmosphere. While a number of capture technologies have been developed, it is unknown how efficient or economically feasible these technologies are. In an effort to determine that, Energy & Environmental Research Center (EERC) staff developed a program entitled the Partnership for CO_2 Capture. The program will test and evaluate the efficiency of CO_2 capture technologies as well as ways to improve upon them and make them cost-effective. EERC staff recently held a kickoff meeting for the program at the EERC.

"We have had tremendous industry interest—exceeding what we expected," said Michael Jones, Senior Research Advisor.

With funding from the U.S. Department of Energy (DOE) and industry sponsors, the EERC will look for the best possible options for CO_2 capture from stationary sources, like power plants and factories, focusing on coal-fired plants generating electricity.

"We will evaluate a suite of technologies by pilot-scale testing to determine the critical components," said Brandon Pavlish, Research Engineer and Project Manager. "We want to determine the critical components of all technologies, find ways to improve them, and make them more efficient, thereby more economically feasible to implement."

"The current estimated cost of CO_2 capture is very expensive because of technology power requirements," said Steve Benson, Senior Research Manager. "We need a breakthrough technology to decrease the power requirements."

The EERC has over 50 years of analytical experience and a full complement of test facilities. The bulk of the testing will be done in the EERC's combustion test facility. When testing has been completed, industry will be able to use the information as another carbon management strategy option.

– Trish McGuire

Inside

Chris Zygarlicke (center), EERC Deputy Associate Director, along with Nogio Chiba (left), Integrated Greenhouse Technology, and Angela Damman (right), BBI Vice President of International Business Development, in front of the EERC's booth at the International Biomass '08 Conference & Trade Show.

financing, among others. Conference participants also enjoyed access to a 90-exhibitor trade show with two networking receptions as well as opportunities for industry tours of the District Energy St. Paul Combined Heat and Power Plant and the Minnesota Renewable Energy Research and Demonstration Center.

For more information on BBI International, please visit www.bbibiofuels.com.

EERC Partners with BBI International, Plans for Biomass '08 Workshop

International Biomass '08 Conference & Trade Show

More than 850 people from 15 countries attended the International Biomass '08 Conference & Trade Show focusing on biofuels sustainability held April 15–17 at the Minneapolis Convention Center in Minneapolis, Minnesota. The conference was developed through a partnership between BBI International and the EERC.

BBI International is a global leader in the biomass and biofuels industry, providing client-based services in project development, conferences, and events and publishes industry magazines such as *Ethanol Producer, Biodiesel,* and *Biomass*. The EERC is a research, development, demonstration, and commercialization facility at the University of North Dakota (UND) recognized as one of the world's leading developers of cleaner, more efficient energy and environmental technologies.

"As the technical program advisor for this conference, the EERC is drawing on more than 100 years of combined technical expertise in the area of biomass utilization and renewable energy," said EERC Director Gerald Groenewold.

The International Biomass conference in Minneapolis opened with a panel session titled "Biofuels, Sustainability, and Carbon: Getting It Right," setting the theme of sustainability for the conference. In addition, topics included climate change and associated policies and the role of biomass as part of the solution.

An international panel addressed the opportunities and challenges of biomass utilization around the world. Panelists came from Argentina, Canada, India, and Poland.

The conference offered technical workshops on new technologies, government policies, feedstocks, and

Biomass '08: Power, Fuels, and Chemicals Workshop

The EERC will host the upcoming Biomass '08: Power, Fuels, and Chemicals Workshop at the Alerus Center in Grand Forks, North Dakota, July 15–16, 2008. The Biomass '08 Workshop is an intense 2-day technical program that complements the International Biomass Conference and Trade Show held in Minneapolis in April. BBI International will be the signature sponsor for the Workshop, which will focus on the opportunities for practical, market-driven economic utilization of biomass (i.e., plant matter such as straw, corn, and wood residue) for power, transportation fuels, and chemicals.

"Attendees will have an opportunity to hear presentations on the technical aspects of cutting-edge research and new technology developments leading to the economical utilization of biomass in our region," said EERC Deputy Associate Director for Research Chris Zygarlicke.

Biomass '07, held in May of 2007 in Grand Forks, attracted over 400 participants. For more information on how to register for the Biomass '08: Power, Fuels, and Chemicals Workshop, visit www.undeerc.org.

–Sandy Van Eck

EERC student employees and UND Mechanical Engineering students (left to right) John Johnson, Kyle Palmiscno, Mandy Redfield, Glenn Lucachick, and Eric Moe.

Real-World Experience and Solutions

Five of the EERC's student employees working with Scott Tolbert, Research Manager, recently designed a hydraulic lift system for the EERC's baghouse as part of their Mechanical Engineering Senior Design project. The baghouse is mounted on a trailer and transported to remote locations for on-site mercury capture testing. Normally, the baghouse, which is lowered onto its side for transit, requires a crane to lift it up into its vertical position and five people to assist. However, it is not always easy to find a crane in remote locations, and the travel costs of a crane add up.

The students held weekly design meetings with EERC staff to assess the needs of the operators of the system. As the students tackled the project, they found that cost-effective solutions to other problems could be integrated into the lift system. For this reason, they also added a welder/generator so that the system can be self-sufficient the moment it arrives on-site and awaits power connections from the main facility. The students also found that leveling the trailer was a problem, so they added hydraulic leveling jacks. Lifting and lowering expenses went from a full day for five people and a crane with its operator to about 30 minutes for two people. The new design will pay for itself within three to four projects because of the cost savings.

"In my previous position as an Assistant Professor of Mechanical Engineering at UND, I taught these students when they were freshmen. It's great to see them now in this stage of their development, coming up with creative, cost-saving, and very practical solutions," said Tolbert. "I am really proud of them."

Jason Laumb, Research Manager, noted, "This was so successful that we're already planning for the next Senior Design project. This is a great integration of our research efforts and the academic programs at UND."

– Trish McGuire

Research Manager Scott Tolbert (left) watches as Mandy Redfield, UND student and EERC employee, operates the system controls.

EERC Senior Research Advisor John Hurley skywatching from home.

No Limits

Many of us, when looking toward the sky at night, see the moon and stars. EERC Senior Research Advisor John Hurley also sees possibilities.

"Astronomy gives me knowledge of nature, an understanding of our place in the universe," said Hurley. "I realize how unbelievably insignificant we humans are."

Hurley was born in Grand Forks, North Dakota, just a few months before the former Soviet Union sent Sputnik 1, the first artificial satellite, into orbit.

Hurley's own space journey began when he was 6 years old. He and a friend read about astronomy in the friend's encyclopedia of science. Initially, it was a way to learn reading and writing by copying pages from the encyclopedia. However, as the years went by, Hurley's interest grew, and he read more detailed science books, looked at the sky through a friend's telescope and then, in the tenth grade, built his own telescope.

"It took me months and months to polish the mirror to the right shape," said Hurley. "I was going to send it off to get it coated with aluminum after I used it to look at a partial eclipse."

When leaving the eclipse viewing site, Hurley slung the telescope with the glass mirror over his shoulder. The mirror rolled out of the tube and broke. Hurley decided then that it was easier to buy a telescope than make one while he continued pursuing his interest in astronomy, which included wanting to be an astronaut from late grade school and into junior high school.

"At different times, I was interested in different sciences such as meteorology, geology, and oceanography, but observational astronomy and astrophysics were always there," said Hurley.

After high school, Hurley attended the National Youth Science Camp in West Virginia. It was a 3-week camp attended by two science-oriented high school seniors chosen from each state.

"I'll never forget visiting the National Radio Observatory and the Smithsonian Institution, places that I had only read about up until then," said Hurley. "Also, finding out that even though I was from a state with a low population, we North Dakotans did just fine compared to the others. In fact, the other attendee from North Dakota, Edie Broschat, was elected president of the camp."

The following fall, Hurley attended UND and received a B.S. in Physics in 1980. After graduation, Hurley and his wife spent 2 years in the Fiji Islands, as members of the Peace Corps. When they returned to Grand Forks, Hurley began working for the Grand Forks Energy Research Center (now known as the EERC) as a research scientist.

When Hurley decided to pursue a Ph.D. at Penn State in Fuel Science

Astronomy Picture of the Day 20 November 2006: M42 – Wisps of the Orion Nebula by Jon Christensen.

from the Department of Materials Science and Engineering, he made a conscious decision to make astronomy his avocation rather than his vocation.

"With astronomy as a hobby," said Hurley. "I could visit it as I wanted and still be in awe of it."

Hurley's office at the EERC is decorated with pictures and posters related to space. He continues to read astronomy-related magazines, like Sky & Telescope, and occasionally attends astronomy club meetings at UND and visits UND's observatory. Besides his backyard, Hurley takes his telescope, a much newer and bigger one than the one he built in the tenth grade, to areas away from the lights of the city, such as Lake Sakakawea and Thompson, North Dakota, and Maple Lake, Minnesota. Hurley says that the best directional view is toward the south.

"It's more interesting," said Hurley. "There are more astronomical features in that section of the sky because that is toward the heart of our galaxy."

According to Hurley, it's only been within the last 10 years that we really have been able to see the scale of the universe.

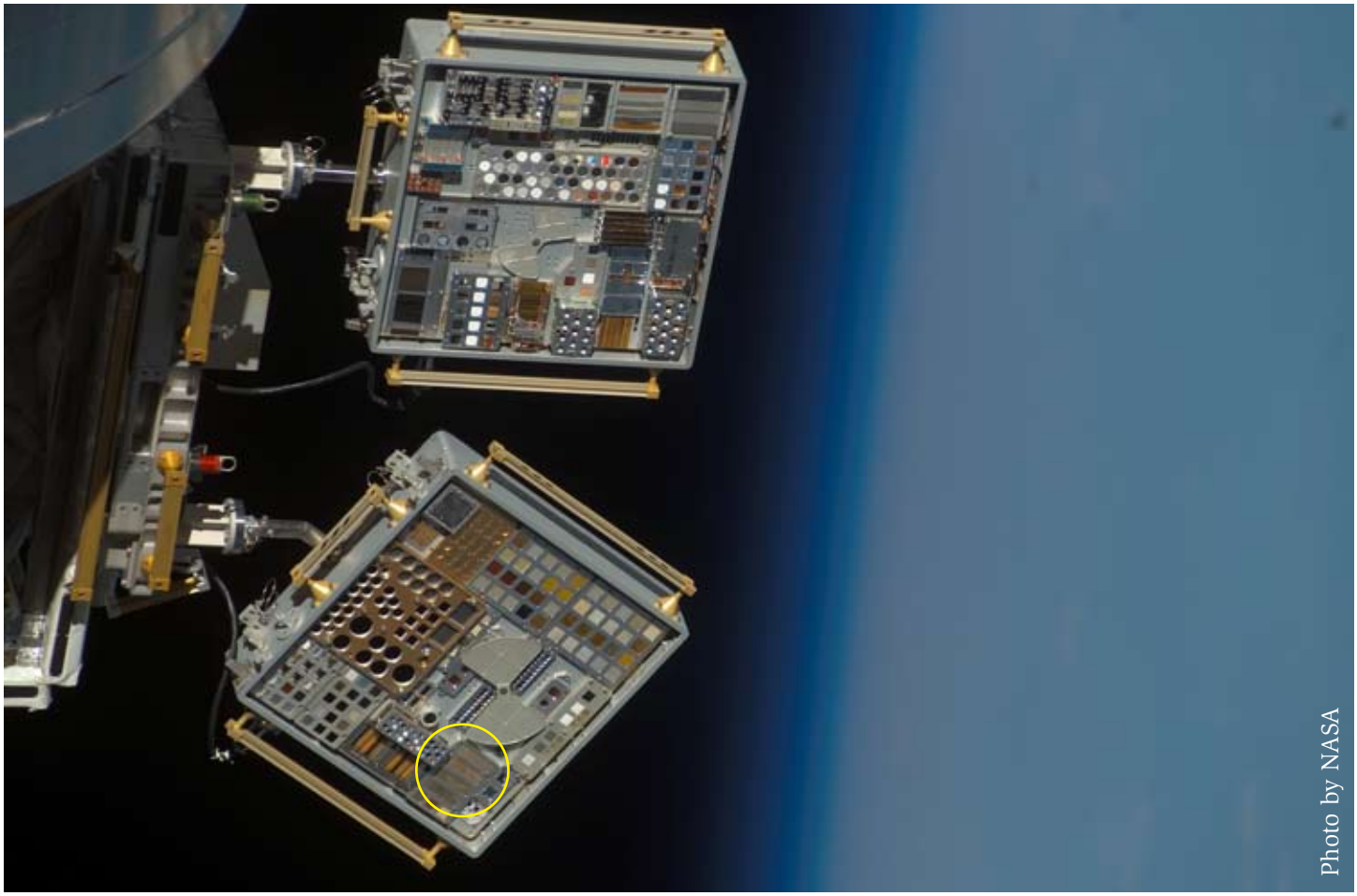
"The Hubble Space Telescope focused on an unremarkable spot in the sky for 10 days. What NASA's astronomers found were galaxies—thousands and thousands of galaxies in an area the size of a grain of sand held at arm's length" said Hurley. "Except for one or two spots, what we see every day or night is within our own galaxy, which is the Milky Way, and that is only 4% of the mass and energy of the universe. We cannot see the rest of the 96%, nor do we know what it is."

Hurley's work at the EERC has benefited from his love for astronomy. Besides the development of a product recently installed at the International Space Station (see page 6), Hurley's creative and inquisitive mind keeps him searching for solutions.

As for the future, Hurley said he would love to study astronomy from a space station. He also wants to learn digital photography as it relates to astronomy and, perhaps, buy an RV and travel around to all the astronomy clubs and events, even the one in the North Dakota Badlands.

As to what astronomy has done for his life, "It's taught me that we shouldn't take ourselves too seriously. It's given me a sense of wonderment and awe of nature and affected me spiritually," said Hurley. "I believe we can change anything within our lives at any time."

–Trish McGuire



Suspended in space, the EERC's coupons are located in the bottom corner of the lower suitcase-like container.

Update on NASA Connection

When the recent space shuttle Endeavour was scheduled to blast off and head toward the International Space Station (ISS), John Hurley, EERC Senior Research Advisor, was beside himself. In fact, he said, "I'm totally psyched."

Hurley's passion for space is well known throughout the EERC, so this news was exciting for his coworkers, as well.

In addition to the astronauts, Endeavour was loaded with some precious cargo from the EERC, in particular, two sets of four 3-inch-long by 1-inch-wide silicon carbide composites, or coupons, that Hurley and others have been working on for years. The coupons were mounted inside a suitcase-like container along with test samples from other organizations from around the country. The container was attached to the ISS and is scheduled to remain there for a year, exposed to the elements (space debris, monoatomic oxygen, and intense ultraviolet radiation on the side in the direction of travel and just ultraviolet radiation on the wake side) in order to test the coupons' chemical and physical stability.

"Once the coupons are returned, we will examine them microscopically for impacts by solid objects and to determine the depth of degradation caused by reaction with the radiation and oxygen," said Hurley. "We will also determine if the coupons lost any strength. If they performed well, we will then talk further with Boeing, NASA and, possibly, the U.S. Department of Defense to determine possible applications for the material."

In the meantime, Hurley continues to look toward space.

–Trish McGuire

New Employees

Dr. Alexander Azenkeng is a Research Scientist at the EERC, where he uses a computational modeling approach to research areas including NO_x control, Hg control and its toxic effects, and CO_2 capture and sequestration, all involving gasification, power systems and conversions, and renewable fuels.

Azenkeng received a Ph.D. degree in Physical Chemistry with a concentration in Theoretical and Computational Physical Chemistry from UND in 2007. A native of the West African country of Cameroon, Azenkeng earned M.S. (1998) and B.S. (1996) degrees in Chemistry from the University of Buea, Cameroon, where his master's work involved the preparation of metal oxide thin films.

Azenkeng previously worked as a temporary employee at the EERC and, before that, as a Graduate Research Assistant in the Chemistry Department and at the EERC. Before coming to the United States, Azenkeng served as an Assistant Lecturer of Chemistry at the University of Buea for 2 years.

Azenkeng is married with two children, a boy who is 5 and a girl who is 2, with another child on the way. Azenkeng's wife is an LPN student. Family activities include watching movies, attending church services, visiting friends, and simulating Cameroonian dishes using local food items. Azenkeng's hobbies include playing soccer in the summer, watching news, and listening to music, especially makossa: a jazz-, Latin-, rumba-, and ambasse bey-influenced Cameroonian music which evolved from Duala dance. It found popularity in the United States with Paul Simon's Rhythm of the Saints band and others.

"The difference between my culture, which is just one of about 250 or more other cultures in Cameroon, and the U.S. culture is like night and day," Azenkeng says. He's found two things he especially likes about the EERC. "First, the people are so friendly," he says, "I want to let my colleagues know that I feel very welcomed and comfortable being part of this great family, and I look forward to meeting and knowing everyone better. Second, the EERC is research-intensive and is finding solutions for many of society's burning issues, like pollution and energy. That's very satisfying."

Heather Johnson has been hired as a Research Information Associate to provide administrative support to the Plains CO_2 Reduction (PCOR) Partnership group, including activities related to scheduling, communications, and document production.

"Every day I learn something new," Johnson says of her job at the EERC. "Working here, you have a wide variety of work to do, and it provides you with many challenges."

Johnson has found the people at the EERC to be friendly, willing to help out, and great to work with. "It's very family-oriented here and has a wonderful culture," she says. "It satisfies me to know that I work for a business with hard-working people who give nothing less than 100% to produce the best possible product."

An East Grand Forks native, Johnson received her Associate in Applied Science (A.A.S.) degree from the Administrative Assistant program at Northland Community and Technical College. Before accepting her position at the EERC, Johnson worked as a Workforce Development/Workforce Training Program Assistant at UND in the Continuing Education Department's Outreach Program.

When Johnson isn't working, she can usually be found working out, running, or playing volleyball but says she enjoys watching football and the Minnesota Twins baseball team as well. Her hobbies include shopping, scrapbooking, watching movies, and lake activities in the summer.

"I love being with my family and friends. I really enjoy spending time at the lake, jet skiing, tubing, and just relaxing," she says.

Brent Lahr has joined the EERC Research Information Systems team as a Programmer/Analyst, where he is involved in developing databases, software applications, and database-driven Web applications for EERC projects and contracts using Visual Basic applications and SQL Server databases. Lahr says he likes being able to work in his areas of interest and expertise—computer programming and computer databases—on a day-to-day basis and likes working at the EERC as well.

"I really enjoy working with all of the people. The group that I work with is great and has a wonderful sense of humor. Everyone I have met has

been very friendly as well, and I have definitely felt welcomed," Lahr says. "I really enjoy being part of an organization where lots of exciting research is taking place, especially in the area of renewable fuels."

Originally from Sauk Centre, Minnesota, Lahr received a Bachelor of Business Administration in Aviation Management degree from UND in May of 2005. During college, he worked at Sears Auto as a salesperson and as a student employee for the Financial Aid office at UND. After graduating, he was employed full time at the Financial Aid office and promoted to financial aid advisor after 6 months. Lahr found it rewarding to advise students/families in the often stressful task of figuring out how to pay for college. He held that position for a year before coming to the EERC.

Lahr met his wife of 1½ years while they both attended UND. His wife has a teaching degree in music education, and while she substitute teaches occasionally, she currently has a full-time job raising the couple's 4-month-old daughter.

Lahr and his wife enjoy cooking together, watching television, and playing cards. Lahr's hobbies are reading, bike riding, and playing poker.

Susanna Praska is a new Building Services Technician at the EERC, where she performs custodial duties to keep the offices and buildings comfortable, clean, and looking good.

Prior to her position at the University of North Dakota, Praska served as a custodian at MVW part time for 5 months.

Natives of Minot and Park River, North Dakota, respectively, Praska and her husband have lived in Grand Forks for 26 years. They have two grown children. She and her husband, who works in Altru Health Services' control room, like to spend family time by going camping, watching movies, shopping, and visiting relatives. When she's not working or spending time with her family, Praska's hobbies include sewing, baking, reading, and gardening.

Praska is a people person. "I like keeping in touch with my friends," she says.

–Sandy Van Eck

Transitions

Tera D. Buckley, Marketing Research Specialist, is now working with the renewables team within the EERC. At the present time, she will be working on the commercialization plan for the Defense Advanced Research Projects Agency project and on education and outreach activities for the National Center for Hydrogen Technology and the PCOR Partnership. Previously, Buckley worked for the EERC's Coal Ash Research Center team on related projects, which included the Coal Ash Resources Research Consortium® and other projects pertaining to coal combustion by-product management. Buckley received her B.B.A. in Marketing from the University of North Dakota.

"I am excited about the new challenges and look forward to expanding my knowledge of EERC projects," says Buckley.

Dennis Pazderic was recently hired as the Facilities Maintenance Coordinator. In his new position at the EERC, Pazderic oversees the maintenance of EERC buildings and grounds, including mechanical, electrical, and general maintenance activities; room setups and teardowns; and lawn care and snow removal. In his previous position as an EERC Technology Development Mechanic, Pazderic had extensive experience as a systems mechanic, focusing on HVAC and other mechanical systems.

"I am looking forward to the variety of tasks that this new position offers," says Pazderic. "And it is my hope that, as soon as we hire for my old position, I won't have to go up on the roof anymore."

– Trish McGuire

Patel at ACS National Meeting

Dr. Nikhil Patel, EERC Research Scientist, recently presented a paper and poster at the American Chemical Society (ACS) Spring 2008 National Meeting in New Orleans, which focused on work that Dr. Patel did at the EERC using a reactor from industrial partner Catacel Corporation. The coauthor of the paper is Dr. Sudipta Chattopadhyay, who is the principal scientist at Catacel Corporation.

The aim of Dr. Patel's work is to develop an economically justifiable distributed-scale biomass-to-liquid fuel and alcohol production system. Development of such small-scale systems is strategic to the utilization of the U.S.'s vastly distributed biomass and waste resources. The main advantages of such a system include saving costs associated with the transportation of biomass to a centralized power station and catering to the energy needs in remote areas. On-site fuel production operations utilizing such systems can provide solutions to waste disposal issues at remotely located military bases as well.

The primary focus of Dr. Patel's work at the EERC is to design, develop, and integrate enabling technologies such as a highly efficient multifuel gasifier and a liquid synthesis reactor system such that the new small-scale liquid production systems can economically compete with today's large-scale natural gas-to-liquid production units.

There were approximately 15,000 people at the ACS conference. Dr. Patel was very pleased with the interest in his presentations as well as the interest that has been expressed to him since returning to the EERC.

– Trish McGuire

Dr. Nikhil Patel (left) at the ACS National Meeting.

Holmes, Hydrogen Expert

If you were wondering about the degree of interest in hydrogen's possibilities as an energy resource, you would only have to look at Mike Holmes' recent schedule for an answer. Holmes is being called on more and more often to share his expertise in hydrogen. In addition to his role as EERC Deputy Associate Director for Research, Holmes is the director of the National Center for Hydrogen Technology (NCHT) at the EERC.

Holmes has been active in the National Hydrogen Association (NHA) for a number of years. He worked with Dan Cicero of DOE in initiating a Hydrogen-from-Coal Working Group, which officially became part of the NHA in January 2008. He attended the NHA Board of Directors spring board meeting on March 5, 2008, in Washington, D.C., where he participated in the NHA membership committee meeting held in conjunction with the board meeting. Holmes was elected to his second term as a member of the board at the NHA's 19th Annual Conference and Hydrogen Expo U.S. in Sacramento, California, March 30 – April 4.

Having attracted the attention of leaders in Washington, D.C., Holmes was asked to speak at a U.S. Senate briefing on April 16 entitled "ZERO Carbon Solutions—Hydrogen and Fuel Cells" in Washington, D.C. The NHA sponsored the briefing in cooperation with the National Carbon Management Council. Holmes spoke on "Partnerships to Deploy Low-Carbon Hydrogen Systems."

The Senate briefing explored hydrogen's premier carbon and emission benefits, the broad efforts of several key companies and research institutions partnering with DOE, a tax incentive package, and opportunities for the 110th Congress.

Holmes also presented at the DOE NCHT annual review meeting in

Continued on page 10

Pittsburgh, Pennsylvania, on April 15 and addressed the DOE National Energy Technology Laboratory H_2-from-Coal Separations Project Review Meeting in Morgantown, West Virginia, on April 29–30. Meeting participants expressed interest in testing their hydrogen separation technologies on the various hydrogen production technologies undergoing development in the NCHT program.

To cap off these intense weeks of travel, dissemination, and discussion, coming up on Holmes' agenda is to attend the 4th Annual Hydrogen Implementation Conference to be held July 22–24, 2008, in Laramie, Wyoming. Holmes will participate on the panel entitled "Hydrogen Energy: Vision and Impact." EERC Director Gerald Groenewold will present on the EERC's Hydrogen Strategic Plan at the conference.

–Sandy Van Eck

Harju Speaks at Symposium on Sustainability

John Harju, EERC Associate Director for Research, was part of the inaugural Symposium on Sustainability held at UND's Chester Fritz Auditorium April 21 and 22. The global sustainability symposium was a public forum addressing the questions and challenges facing humanity in this century as we struggle to meet our resource needs without harming the environment or compromising those resources for future generations.

The keynote address, "The Great Ocean Adventure," was delivered by famed explorer, environmentalist, and educational filmmaker Jean-Michel Cousteau, President of the Ocean Futures Society and son of famed underwater filmmaker Jacques Cousteau. The event also involved 20 speakers recognized as leaders in government, university, and nonprofit organizations for their research and/or their work to raise public awareness of sustainability issues.

Harju took part in a panel with Dr. John Watson of the Desert Research Institute's Division of Atmospheric Sciences and the Wyoming Nature Conservancy's Director of Science Dr. Joseph Kiesecker addressing "Actions to Produce a Sustainable Future." Harju's presentation discussed the PCOR Partnership, one of DOE's Carbon Sequestration Partnership Program's seven regional partnerships of state agencies, universities, and industries organized to evaluate and determine the best approaches to capturing and permanently storing CO_2. The PCOR Partnership's mission is to validate technologies and identify regional locations that could support future geological and terrestrial sequestration projects.

The event was organized by the Northern Great Plains Center for People and the Environment with University funds and a grant from NASA. Organizers hope to make the event part of an annual series.

–Sandy Van Eck

Zygarlicke, Hydrogen Group's Vice Chair

Chris Zygarlicke, EERC Deputy Associate Director for Research, was recently elected to the position of Vice Chair of the Renewable Hydrogen Working Group at the NHA's 19th Annual Conference and Hydrogen Expo U.S. in Sacramento, California, in April. The term began on April 1, 2008, and will run for 2 years.

"Over 90% of the current hydrogen production in the United States is from fossil resources. The NHA has many constituents who are gravely concerned that the future of hydrogen production must include renewable resources such as direct conversion of biomass to hydrogen or wind and solar electrolysis. My new post on the NHA Renewable Hydrogen Working Group is involved in facilitating relevant discussions and forums in renewable hydrogen," said Zygarlicke.

–Sandy Van Eck

SNAPSHOTS:

Walters Elected Chair of Local United Way

Derek Walters, EERC Communications Manager, was recently elected chair of the Board of Directors for the United Way of Grand Forks, East Grand Forks, and the surrounding area. He assumed his new duties April 1. Walters has been involved with the United Way for 6 years, serving most recently as Board of Directors Liaison and, last year, as Vice Chair of the Board.

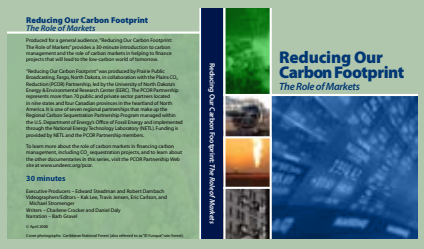
"Each board chair has a different focus; my focus will be on extending thank yous to as many people as possible. An incredible amount of work goes into this fundraising, and there are literally hundreds of volunteers in our area alone who give their time and thousands of donors who contribute at various levels," Walters says. "This money is changing lives."

In fact, "Changing Lives" was a past tagline for the national United Way, a network of over 1300 local organizations. This year, the agency's credo is "Live United," reflecting its mission to move toward a community impact model that seeks to effect long-lasting change by addressing the underlying causes of some of the problems that affect individuals and communities: healthcare, maximizing children's potential, and financial stability.

"The United Way can be a catalyst for financial stability. If you have your basic needs met—enough money to live on, child care, healthcare—then other doors are open to you," says Walters.

"That financial stability will come when we invest in our community. United Way's goal is to empower people to reach financial independence by giving them the tools and skills necessary—such as basic budgeting training—that will make the most of their income and let them start saving for a good education, better housing, and a retirement free from worry," Walters continues. "When one member of the community prospers, we all prosper."

–Sandy Van Eck



"Reducing Our Carbon Footprint: The Role of Markets"

The second in a series of five documentaries focused on carbon sequestration and global climate change and produced by the award-winning team at Prairie Public Broadcasting (PPB) in partnership with the EERC's PCOR Partnership premiered on PPB on April 17, 2008.

The 30-minute program was produced for a general audience and provides an introduction to carbon management and the role of carbon markets in helping to finance projects that lead to a low carbon world. The show includes footage and interviews from Brazil, Europe, Canada, and the United States.

"Carbon markets are an important part of addressing climate change concerns," said John Harju, EERC Associate Director for Research. "This program gives the public an idea of how markets allow money to flow from investors to a variety of projects that are going to make a difference in reducing greenhouse gas emissions."

The program will also be available in streaming format on the PCOR Partnership Web site. DVD copies may be obtained free-of-charge by contacting Stephanie Wolfe, EERC Research Specialist.

"Prairie Public suggested that more than 100,000 households in the PCOR Partnership region viewed the two broadcasts of the documentary thus far. This is in addition to many other households in other regions as the programs are also being aired in other public television markets," said Ed Steadman, Program Manager for the PCOR Partnership.

The initial program, "Nature in the Balance," has been broadcast in more that 100 public television markets nationwide, and over 1000 DVDs have been distributed to date. The third program in the series, "Terrestrial CO_2 Sequestration," is currently in production and scheduled for broadcast in the summer of 2008.

For more information on the PCOR Partnership, please visit www.undeerc.org/pcor.

–Trish McGuire

The EERC at 25 years

April 11, 1983, was a pivotal day for the EERC (then the Grand Forks Energy Technology Center [GFETC]). That was the day when the GFETC and two other federal laboratories were defederalized from DOE as part of a cost-cutting effort. Being defederalized meant that the GFETC could no longer depend on assured federal funding and direction, and ownership reverted to UND. The GFETC became a totally self-supporting, live-by-your-wits organization associated with UND. Naturally, the main challenge was changing the mindset from a federally led organization to an entrepreneurial, market-driven organization.

Immediately after defederalization, the traditional focus of the GFETC was on coal conversion, coal utilization, and coal science, and the GFETC had 121 full-time employees. In 1987, Dr. Gerald Groenewold became director, combined the GFETC staff with the staff of a research organization he had built elsewhere on campus, and changed the name to the Energy & Environmental Research Center (EERC). Under Groenewold's leadership, the EERC adopted an entrepreneurial business model focused on applied research and expanded its programs to encompass all energy technologies, except nuclear, and all the associated environmental technologies. Since 1987, the EERC has worked with more than 1000 clients (75% corporate) in all 50 states and 50 countries. The EERC now employs more than 300 people representing 120 different disciplines.

"This model for research, development, demonstration, and commercialization provides technology solutions that advance the adoption of cleaner, more efficient energy technologies that conserve natural resources, reduce reliance on foreign oil, afford greater environmental protection, and help to ensure energy security in the face of ever-increasing demand and global terrorism—all of which are backed by dollars from clients around the world," said EERC Director Gerald Groenewold. "We have seen much success in the past two decades. We feel that universities and national laboratories would benefit greatly by following the EERC's business model."

–Trish McGuire

Upcoming Events

See www.undeerc.org for more information.

BIOMASS '08 WORKSHOP
July 15–16, 2008, Grand Forks, ND

INTERNATIONAL CONFERENCE ON AIR QUALITY VIII
Mercury, Trace Elements, SO_3, Particulate Matter, and Greenhouse Gases
October 25–29, 2009, Arlington, VA

NCHT
National Center for Hydrogen Technology Demonstration Building Dedication

September 3, 2008, at the EERC

RED RIVER VALLEY RESEARCH CORRIDOR
U.S. Senator Byron L. Dorgan's Hydrogen Economy II Action Summit Through the Red River Valley Research Corridor

September 4, 2008, at the EERC

EERC EDGE

The EERC Edge is published for employees of the Energy & Environmental Research Center at the University of North Dakota. Send comments and story suggestions to Trish McGuire, Editor, (701) 777-5025 or tmcguire@undeerc.org.

Energy & Environmental Research Center
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018
(701) 777-5000
www.undeerc.org