



Cosmic
Background
Explorer



GooddardView

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Mikulski Congratulates Nobel Prize Winner at Goddard

From the Office of Senator Barbara Mikulski



Senator Barbara A. Mikulski (D-Md.) congratulated NASA Goddard Space Flight Center civil servant scientist, and project scientist on the Cosmic Background Explorer (COBE), Dr. John Mather for receiving the highest honor in the world of science—the Nobel Prize.

Photo credit: Jay Friedlander
Caption: Dr. Mather accepting his accolades

COBE was built entirely at Goddard in Greenbelt, Md. This is the first Nobel Prize for an in-house NASA satellite and for a civil servant at NASA. Dr. Mather has devoted his entire scientific career, the past 10 years, on the James Webb Space Telescope. Senator Mikulski's letter of congratulations to Dr. Mather is below:

Dear Dr. Mather:

It is an honor and a pleasure to add my voice to the chorus of congratulations on the occasion of your receipt of the 2006 Nobel Prize in Physics from the Royal Swedish Academy of Sciences for your work at NASA's Goddard Space Flight Center. I know that you share this much coveted award with your friend and colleague, Dr. George F. Smoot of the Lawrence Berkeley National Laboratory. Together you enhanced and defined the Big Bang theory moving us "light years" ahead in our comprehension of the origin of the universe.

You know that I am a Goddard cheerleader. I am really thrilled that your pioneering advances came as a result of your work at the world-class Goddard Space Flight Center with data obtained from the Cosmic Background Explorer (COBE) Mission. Your team's research into cosmic radiation not only concretized Big Bang, but it also created the discipline of precision cosmology, which permits us to use microwave background radiation to describe the infancy of the universe.

Science is about exploration, discovery, and innovation. Goddard is all about innovation. It is an incubator for new ideas and new technologies. The future of our economy and our nation will depend upon our ability to innovate and to win market share. The new ideas and new technologies, which you and your collaborators at Goddard advance, will create the jobs of tomorrow for Maryland and for America. NASA is too important to Maryland, too important to America and too important to the world. Dr. Mather, you are an American hero. The people of the United States are grateful for your service to science and to your nation. Enjoy the limelight you so richly deserve. Best wishes for the continued success I know will be yours. ■

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Cover caption: Dr. John C. Mather

Photo Credit: Pat Izzo

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NASA Scientist John C. Mather Wins 2006 Nobel Physics Prize

By Dewayne Washington and Susan Hendrix



Photo credit: Jay Friedlander

Caption: Attendees raise their glasses in the Building 8 Auditorium in honor of Dr. Mather and the COBE Team's achievement.

The Nobel Prize Committee announced Tuesday, October 10, that NASA scientist and Goddard Fellow Dr. John C. Mather is this year's recipient of the Nobel Prize for Physics.

Mather is currently serving as Senior Project Scientist for NASA's James Webb Space Telescope program and shares the prize with George Smoot of the Lawrence Berkeley National Laboratory in Berkeley, Calif. They received the award for their work that helped cement the Big Bang theory of the universe and deepened our understanding of the origin of stars and galaxies.

"I was thrilled and amazed when I found out we won the Nobel Prize," Mather said. "The dedicated and talented women and men of the COBE team collaborated to produce the science results being recognized. This is truly such a rare and special honor."

Mather and Smoot's work was based on measurements performed with NASA's Cosmic Background Explorer (COBE) satellite, launched in 1989. Together, the scientists could observe the universe in its early stages about 380,000 years after it was born. Ripples in the light they detected helped demonstrate how galaxies came together over time.

NASA Administrator Michael Griffin said, "I am thrilled to hear that Dr. John Mather has been selected to receive the Nobel Prize in Physics. John would be a world-class scientist no matter where he had chosen to spend his career, but we at NASA are enormously proud that he has chosen to spend it with us."

Dr. Ed Weiler, the Director of NASA's Goddard Space Flight Center, added, "This is a tremendous accomplishment for John and for the COBE team. It is also important to note that COBE was built entirely 'in-house,' and the fact that a NASA civil servant has won the biggest science award possible demonstrates that world-class research is happening here at NASA."

COBE was built at Goddard to measure microwave and infrared light from the early universe. COBE determined that the cosmic microwave background, which is essentially the afterglow of the Big Bang, has a temperature of approximately minus 455 degrees Fahrenheit. This observation matched the predictions of the hot Big Bang theory and indicated that nearly all of the radiant energy of the universe was released within the first year after the Big Bang.

Also, COBE discovered slight temperature variations of approximately 10 parts per million in this relatively uniform light. These variations pointed to density differences which, through gravity over the course of billions of years, gave rise to the stars, galaxies, and hierarchical structure we see today.

Steven Hawking, a decade ago, independent of the COBE team, called these variations "the most important discovery of the century, if not of all time." Alfred Nobel, the wealthy Swedish industrialist who endowed the prizes, left guidelines in his will for the selection committee which cited "the prize should be given to those who shall have conferred the greatest benefit on mankind" and "have made the most important discovery or invention within the field of physics."

The 2006 Nobel Laureates will gather in Stockholm on Dec. 10 to receive their Nobel Prize Medal, diploma, and monetary award from King Carl Gustav XVI of Sweden.

For information about NASA and Agency programs, visit:

<http://www.nasa.gov/home> ■

NASA Scientist Wins “Service to America Medal”

By Nancy Pekar and Nicole Quenelle



Photo credit: NASA

Caption: Dr. Norden Huang

NASA is pleased to announce that one of its most dedicated scientists—Dr. Norden Huang—has won one of the prestigious “Service to America” medals for 2006 from the Partnership for Public Service. Presented at a black-tie ceremony in Washington, D.C., the awards pay tribute to America’s dedicated Federal workforce, highlighting those who have made significant contributions to our country.

“The innovative work done by Huang has produced benefits both here on Earth by helping to improve existing technologies and applications, as well as contributed to the continuing exploration of our universe,” said Dr. Edward J. Weiler, Director of NASA’s Goddard Space Flight Center.

Winners of the Service to America medals (Sammies) were chosen based on their commitment and innovation, as well as the impact of their work on addressing the needs of the Nation. The selection committee included CNN anchor Wolf Blitzer, Stanford University President Dr. John L. Hennessy, Southwest Airlines Chairman Herb Kelleher, AOL Vice Chairman Ted Leonis, and Annenberg Foundation Executive Director Dr. Gail C. Levin.

While working in the field of oceanography at NASA’s Goddard Space Flight Center, Huang developed what is considered to be one of the most important discoveries in the field of applied mathematics in NASA history: the Hilbert-Huang Transform (HHT) technology.

HHT is a revolutionary, adaptive set of signal-analysis algorithms. Unlike precursor technologies, HHT provides an effective method for analyzing nonlinear and nonstationary signals (such as those occurring in natural phenomena) while improving the accuracy of linear and stationary signal analysis.

Although this type of technology might not be easy for the average person to understand, its value is easily grasped. Within NASA, HHT has aided aircraft design, testing of the tiles that insulate the Space Shuttle, and the search for planets and black holes. Outside of NASA, the technology has wide-ranging applications:

- Federal investigative organizations are working to incorporate HHT into systems to analyze speech patterns and identify individuals in recordings in forensic examinations.
- The Navy is using HHT in its research to improve submarine design and to more easily identify and locate different types of submarines.
- The Federal Highway Administration used HHT in highway design and engineering studies. [See story on Page 6]
- Researchers at Johns Hopkins University’s Bloomberg School of Public Health and Harvard Medical School’s Beth Israel Deaconess Medical Center are using HHT to understand biomedical and physiological phenomena, enabling a better understanding of avian flu, Dengue Fever, strokes, and sleep apnea.
- Recently licensed by BCG Wireless, HHT is helping improve signal reception capability in radio frequency (RF) communication devices, such as RFID chips and cell phone communication systems.

“I am so pleased to receive this award,” said Huang, who hails from Hubei, China and is now with the Research Center for Data Analysis at National Central University in Taiwan. “I’m particularly grateful to the Office of Technology Transfer at NASA Goddard for seeing the potential for my technology. I had no idea how many applications use signal analysis, and I have greatly enjoyed seeing HHT make advancements in so many areas.” ■

NASA's EOS Receives 2006 Space Systems Award

By Steve Cole

NASA's Earth Observing System (EOS) Program, the world's most advanced and comprehensive capability to measure global climate change, will receive the American Institute of Aeronautics and Astronautics Space Systems Award.

The annual award is presented in recognition of "outstanding achievements in the architecture, analysis, design, and implementation of space systems." EOS Senior Project Scientist Michael King accepted the award on behalf of the EOS Program Team on September 20 at the Institute's annual Space Conference and Exhibit in San Jose, California.

"As the first global environmental monitoring system, EOS is being used by citizens, governments, applications communities, and scientists worldwide. The long and challenging development of this space-based observing system and the implementation of an open scientific data policy was the work of a large number of individuals," said King, an atmospheric scientist at Goddard.

NASA has studied the Earth and its changing environment since the Agency was formed in 1958. In 1991, NASA launched a more comprehensive program to study the Earth as an integrated system. EOS is composed of a series of Earth-observing satellites, an advanced data system, and teams of scientists who study the data.

Terra, the first dedicated EOS satellite, was launched in December 1999. NASA recently completed deployment of the first series of EOS satellites. Over the coming decade, NASA will work with its research partners analyzing EOS data to characterize, understand, and predict variability and trends in Earth's system. NASA pioneers new global environmental observations and research and works with other Federal agencies to improve the operational services they provide to the Nation, including weather forecasting, climate prediction, natural hazard assessment, and environmental management.

The American Institute of Aeronautics and Astronautics is the world's largest professional society devoted to the progress of engineering and science in aviation, space, and defense. The Institute's Space Systems Award has been given to several NASA programs in recent years, including the New Millennium Deep Space One Team (2002), the NASA-Industry-Partners International Space Station Team (2001), the Chandra X-Ray Observatory Team (2000), and the Landsat Project Government Industry Team (1999). ■

Goddard Technology Wins 2006 R&D 100 Award

By Nancy Pekar

R&D Magazine's annual R&D 100 award recognizes the top 100 most innovative and technologically significant new products on the market. Called the "Oscars of invention" by the *Chicago Tribune*, the R&D 100 awards are awarded to technologies with "demonstrable technological significance compared with competing products and technologies."

NASA Goddard Space Flight Center's conformal robotic gripper does just that and as a result, has won a spot as one of the top 100 most unique, innovative, and noteworthy technologies for 2006.

The technology is a unique gripping mechanism that has the potential to revolutionize robotics by eliminating the need for specialized end effectors and grippers. End effectors are typically designed for very specific tasks and therefore tend to be limited in the range of objects they can accommodate. The gripper's innovative design uses arrays of pins that gently conform to any object's shape, then lock into position for an extremely secure, yet gentle hold—even against significant external force or torque. This enables the conformal gripper to grasp and manipulate objects of varying size and shape, securely holding an object's position for repair, machining, or assembly.

"It is a true honor to have this technology recognized by *R&D*, and I appreciate the efforts of everyone who supported and assisted in its development," said Inventor John Vranish, retired emeritus. Mr. Vranish also stated that continual refinements will be made to simplify operation, lower mass, and lower manufacturing costs for the gripper technology.

The conformal gripper was originally designed for use in NASA's lunar robotics missions. By using this new gripper, spacecraft carrying robots to the Moon, Mars, or to repair the Hubble Space Telescope will no longer require multiple end effectors. The conformal gripper will be the only end effector needed, drastically cutting down on the robot's mass and making space robotic activities safer and more capable.

In addition to the space industry, the gripper has applications in manufacturing and other industries that rely on robots to use tools and manipulate objects. This conformal gripper will enable superior, affordable, and more productive small batch manufacturing, which is the production of 50 or 100 items. Typically, manufacturing small quantities means automation is not possible and the manufacturing of these parts must involve major human participation, which increases costs.

Continued on Page 10

Final Instrument for GLAST Mission Arrives in Arizona

By Susan Hendrix

After a multiday cross-country journey aboard a specially equipped truck, the Large Area Telescope (LAT)—primary instrument for NASA's Gamma-ray Large Area Space Telescope, or GLAST, arrived at the spacecraft contractor's space systems facility in Gilbert, Arizona on September 18.



Caption: General Dynamics engineers prepare to remove the LAT from its shipping container after its arrival at the contractor's space systems facility in Gilbert, Arizona.

In the coming weeks, engineers at General Dynamics will begin integrating the LAT into the spacecraft.

"We're extremely pleased with our progress towards launch," said GLAST Project Scientist Steve Ritz at NASA Goddard Space Flight Center. The LAT recently completed four months of environmental testing on September 8 at the Naval Research Laboratory in Washington. This test program is performed to ensure that the instrument will withstand the rigors of launch, as well as the environment of space. The project conducted a very successful pre-ship review meeting at the Naval Research Center on September 15.

"Integrating more than 70 boxes into the LAT instrument was a huge endeavor, made possible by a highly accomplished and incredibly dedicated team," said Goddard Project Manager Kevin Grady. "Hardware was assembled from all parts of the globe to create this magnificent instrument."

GLAST will be able to detect light billions of times more energetic than what our eyes can see or what optical telescopes can detect. Key targets include powerful particle jets emanating from enormous black holes, and possibly the theorized collisions of dark matter particles.

"GLAST is a remarkable undertaking; a partnership between astronomers and physicists," said Peter Michelson, GLAST Principal Investigator at Stanford University in California. "We are eagerly anticipating a new understanding of the connections between the large and small, between the most energetic phenomena in the universe and the subatomic world."

Unlike visible light, gamma rays are too energetic to be focused by traditional telescope mirrors onto a detector so the LAT will use detectors that convert incoming gamma rays into electrons and their antimatter partners, called positrons. This technique, a change of light into matter as described by Einstein's equation $E=mc^2$, is called 'pair conversion,' and will allow scientists to track the direction of gamma rays and measure their energy.

The secondary instrument for GLAST—the GLAST Burst Monitor, or GBM—was integrated into the spacecraft earlier this summer.

NASA Goddard manages the GLAST mission. The LAT was built with significant contributions from NASA, the U.S. Department of Energy, and foreign collaborators.

The Stanford Linear Accelerator Center (a DOE Office of Science national laboratory) manages the LAT with collaborators at Goddard; University of California, Santa Cruz; University of Washington; Ohio State University; U.S. Naval Research Laboratory; and institutions in France, Italy, Japan, and Sweden. NASA Marshall Space Flight Center, Huntsville, Ala., manages the GLAST Burst Monitor with a collaborator in Germany. General Dynamics is responsible for spacecraft and instrument integration, and Sonoma State University manages education and public outreach efforts for the project.

GLAST is scheduled to launch next fall from Cape Canaveral Air Force Station, Fla., aboard a Boeing Delta II rocket.

For more information about each instrument and the overall mission objectives please visit: <http://glast.gsfc.nasa.gov/> ■

Goddard's HHT Helps Scientists Analyze Highway and Bridge Safety

By Nicole Quenelle

A three-year agreement with Turner-Fairbank Highway Research Center (TFHRC) has enabled scientists to learn how to apply NASA Goddard Space Flight Center's Hilbert-Huang Transform (HHT) technology to analyses of traffic flow data, wind, and traffic interaction with bridges, and damage detection in pavement and bridges. These analyses are the basis of TFHRC's Digital Highway Measurement (DHM) Project and are the first steps in a dramatic shift in the way state departments of transportation will be able to improve the safety and performance of the Nation's highway infrastructure.

Benefits of Technology Transfer

- TFHRC gained the ability to measure highway design performance, rate of deterioration, and remaining life, helping to improve the performance of future highway and bridge construction.
- TFHRC is able to use its research findings to improve future highway safety and contribute to improved quality of life.
- The agreement enhanced NASA's strategic technology objectives, providing Goddard with the ability to make refinements to HHT technology.
- Stability analyses developed using HHT on vibration measurements at TFHRC are being used to benefit NASA research as well, particularly aero-elastic flight data at NASA Dryden Research Center.

On the Record

"HHT has tremendously far-reaching applications. Goddard's work with TFHRC is just another example of how useful this technology can be to so many research fields," said Monica Montague, Goddard Office of Technology Transfer (OTT).

About Turner-Fairbank Highway Research Center

As part of the Federal Highway Administration based in McLean, Va., TFHRC conducts research and development related to new highway technologies for the world highway community. TFHRC's research provides solutions to complex technical problems to enhance the safety and reliability of the U.S. highway transportation system.

Technology Origins

A revolutionary, adaptive set of signal-analysis algorithms, HHT was developed as a part of NASA's oceanography research and was later applied to analysis of wing-flutter tests and the next generation of aircraft design at NASA Dryden Flight Center.

The technology has also contributed to Shuttle mission safety by testing the tiles that insulate the Shuttle in space for the Shuttle Return to Flight Project following the *Columbia* accident.

Finding a New Use

Dr. Norden Huang began developing HHT in 1995. Unlike precursor technologies, HHT provides an effective method for analyzing nonlinear and nonstationary signals while improving the accuracy of linear—and stationary—signal analysis. Because analytical measurements within many areas of science benefit from a quantitative measurement of nonlinear data, HHT is widely applicable to a broad range of fields, including medicine, electronics, the environment, and business. HHT is ideal for structural engineering analyses at TFHRC.

The Transfer Process

Signed on January 17, 2003, the Space Act Agreement (SAA) between TFHRC and Goddard was negotiated and administered by the Office of Technology Transfer. Initial contact was made at a seminar attended by Dr. Huang. Officials from TFHRC began discussions with Huang about the potential use of HHT in highway research, leading to a formal agreement. During the course of the three-year agreement, TFHRC scientists have collaborated directly with Huang to build an operational model of HHT for their own analyses and to build a knowledge base for using the HHT algorithms within their own staff, working toward the successful DHM project. The resulting DHM van collects and analyzes critical highway safety data, which can lead researchers to better bridge and highway safety, design, and construction.

Looking Ahead

Having successfully built an internal research team skilled in HHT, TFHRC is interested in continuing research with Goddard to address other highway and safety areas. A new agreement may be considered for ongoing collaboration.

If you would like additional information about Goddard's technology transfer opportunities, please contact: Office of Technology Transfer/NASA Goddard Space Flight Center at: techtransfer@gsfc.nasa.gov or visit: <http://techtransfer.gsfc.nasa.gov> ■

Did You Know?

Ingestible Toothpaste:

A consultant to NASA developed a foamless toothpaste for the zero-gravity environment of space. Because it could be swallowed, it was useful as a first toothpaste for children.

Soil Conservation Road is Complete!

By Trusilla Steele

The Soil Conservation Road Realignment is complete. The new roads and gates are the first steps in our Facilities Master Plan project to make our Center more unified, safe, and secure. In the future, we will build a new Exploration Sciences Building (ESB) and new internal roads that will ease traveling in and around the Center.

Listed below are the changes:

- A new intersection with a traffic signal at the beginning of the new Soil Conservation Road (North of the Center).
- The existing access road to the Visitor Center is closed and will be replaced by WMAP Road*. The bus stop currently near Building 17 will be moved to this road.
- The realigned Soil Conservation Road is now accessible from Good Luck Road.
- The gates near Buildings 17 and 32 have been removed and the new South gate will replace them on ICESaT Road* (former section of Soil Conservation Road).
- A section of Hubble Road* (formerly Soil Conservation Road) south of the Building 16W loading dock has been taken out of service; eliminating passage through the Center in preparation for the ESB.
- The North gate near Buildings 10 and 16W is now in service.
- All new gates are for badged employees only. Visitors will continue to access the Center from the Main Gate through normal security procedures. All truck deliveries shall be made from the north via Hubble Road.

Please use caution when driving in and around the Center, as we all adapt to the changes.

Please visit: <http://gsfc-aphrodite.gsfc.nasa.gov/220/closings.htm> for further information and a map.

If you have questions, please call Kim Toufectis at 6-9952.

*Indicates new road name ■

NASA Solicitation & Proposal Integrated Review and Evaluation System

Supporting research in science and technology is an important part of NASA's overall mission. NASA solicits this research through the release of various research announcements in a wide range of science and technology disciplines. NASA uses a peer-review process to evaluate and select research proposals submitted in response to these research announcements. Researchers can help NASA achieve national research objectives by submitting research proposals and conducting awarded research. This site facilitates the search for NASA research opportunities.

For more information, please visit: <https://nspires.nasaprs.com>

Solicitations:

Hubble Space Telescope – Cycle 16 Call for Proposals

Released: 2006-10-13

Proposal Due: 2007-01-26

NASA ARMD Research Opportunities in Aeronautics (ROA) NRA

Released: 2006-05-24

Proposal Due: 2007-08-24

Rossi X-ray Timing Explorer Guest Observer Program – Cycle 12

Released: 2006-10-2

Proposal Due: 2007-01-26

Research Opportunities in Space and Earth Sciences – ROSES 2006

Released: 2006-01-22

Proposal Due: See Announcement ■

Goddard Reduces Electric Consumption by 15 Percent

By Barry Green

NASA's Goddard Space Flight Center (GSFC) has reduced electric consumption by 15 percent from fiscal years (FY) 2002 to 2005. This has been a result of installing energy efficient equipment and implementing process improvements, such as cycling air-conditioning systems during off-hours, participating in load shedding days, and having an increasing number of employees actively change their energy use habits.

GSFC has completed many successful energy and water saving projects that have resulted in huge savings. By using alternative fuels, GSFC avoided \$4.5 million in utility costs from FY 2003 to 2005. By installing energy efficient lighting systems and motor upgrades, an additional \$329K is being avoided annually. Installation of automatic faucets, low-flow toilets, and urinals in restrooms has produced significant water reductions.

In addition, two ground water wells that provide replacement water at the power plant, offsets over 70 million gallons of water a year from the local utility company. Even so, utility rates have increased so much that Goddard's utilities (electric, natural gas, landfill gas, oil, and water) rose by an additional \$6 million within the last two years!

New Energy Mandates

The latest Energy Bill mandates further reduction of energy use by all Federal agencies; Goddard must reduce its energy use by 20 percent over the next 10 years. As you can see, there's still room for more energy conservation.

Join the Energy Team and Begin Saving a Little More Today

Everyone has the power to help cut Goddard's utility costs and contribute to the mandated energy reduction goal. You can help:

- Reduce use of space heaters. If a room is cold, call x6-5555 and a technician will come to adjust the temperature.
- Identify opportunities to turn off more air-conditioning units when not needed.
- Program computer monitors to shut down if dormant for 15 minutes and have the system hibernate or sleep after 30 minutes.
- To program these features on your PC, click on Start, Control Panel, and

then Power Options. For Macs or other platforms, contact your information technology professional.

- Turn off all nonessential computers when not needed.
- Turn off office, break room, and conference room lights when not needed.
- Watch for our e-mail messages of Gold Days, and help to cut energy consumption on those critical "peak usage" days. Remember, any reduction will make a difference.

If you have suggestions on how to save energy or water, please contact Goddard's Energy Manager, Barry Green at Barry.Green@nasa.gov ■



IV&V's A Day in the Park Event a Success!

By Donna Ozburn

The NASA Independent Verification & Validation (IV&V) Facility, in collaboration with the West Virginia High Technology Consortium Foundation held its seventh annual educational event called "Day in The Park" at the I-79 Technology Park in Fairmont, W.Va., September 19. At this event, approximately 900 seventh graders from North Central West Virginia participated in hands-on activities and visited with representatives of various technical fields. "Day in The Park" encourages students to pursue careers in science, technology, engineering, and math.

Dr. Charles Camarda, a NASA astronaut, talked to the students. Selected as an astronaut candidate by NASA in April 1996, Camarda reported to the NASA Johnson Space Center in August 1996. He completed two years of training and evaluation, qualified for flight assignment as a mission specialist, and was initially assigned technical duties in the Astronaut Office Spacecraft Systems/Operations Branch. Subsequently, he served on the Expedition-8 back-up crew. Camarda flew as the Mission Specialist-5 on the Return to Flight mission STS-114 *Discovery* (July 26–August 9, 2005), and has logged over 333 hours in space. He also served as Director of Engineering at Johnson Space Center. Camarda is currently assigned to the NASA Engineering and Safety Center (NESC). Through the NESC, Camarda uses his technical expertise to evaluate problems and supplement safety and engineering activities for Agency programs.

In addition, "Space Race," an interactive science show with exploding balloons and hair-raising experiments was presented. A demonstration of BomBots, remote controlled vehicles that can be driven toward roadside bombs so soldiers can detonate them; and a forensic demonstration were part of the day.

For further information, please contact Donna Ozburn at (304) 367-8234 or donna.s.ozburn@nasa.gov. ■

Goddard Technology Wins 2006 R&D 100 Award

Continued from Page 5

On the surgical front, robots are assisting doctors in delicate surgery that yields more accuracy with less cutting and speedier recovery times. Precision, miniature conformal grippers can secure and operate simple tools with a sense of location, touch, and feel comparable to a human hand and in some respects, superior.

Other potential uses are in search-and-recovery activities in inhospitable environments, such as rescue missions where it is unsafe for humans to move about or with bomb detection and disposal.

"We are extremely pleased that Mr. Vranish's conformal robotic gripper technology was selected for this award," said Nona Cheeks, Chief of Goddard's Office of Technology Transfer. "His innovative ideas and tremendous dedication to continually improving the technology will undoubtedly revolutionize robotics in all fields."

About the Awards

The first R&D 100 Awards were awarded in 1963. Many entries over the years have become household names, including Polacolor film (1963), the flashcube (1965), the automated teller machine (1973), the halogen lamp (1974), the fax machine (1975), the liquid crystal display (1980), the printer (1986), the Kodak Photo CD (1991), the Nicoderm antismoking patch (1992), Taxol anticancer drug (1993), lab on a chip (1996), and HDTV (1998).

One hundred winners that exemplify the best new technologies are chosen from an international pool of contestants from universities, private corporations, and government labs.

Winners of the 2006 R&D 100 Awards appear in this month's issue of *R&D Magazine*. ■

Goddard Scientist Revisits Howard University Hallways

By Dewayne Washington

As the 2006 fall school year began, Goddard's Dr. Beth Brown again found herself walking the halls of her alma mater, Howard University, in Washington, D.C. The scientist with the Astrophysics Science Division is 1 of 11 recipients of this year's NASA Administrator's Fellowship Program.

Brown has been added to the faculty listing at the university this year. Along with being a co-teacher for an introductory astronomy course, Brown is developing research collaboration. "I was absolutely thrilled when I learned I had been awarded this honor," Brown said. "I am looking forward to this opportunity to give back to the students while enhancing my professional development.

For the Roanoke, Va., native, this honor is in recognition of her drive for academic excellence. She was the valedictorian in high school and graduated Summa Cum Laude with a Bachelor of Science degree in Astrophysics from Howard University.

Brown is the first African-American woman to obtain a doctorate from the University of Michigan's Department of Astronomy. She has also been recognized as one of the Women of NASA, an interactive project designed to encourage young women to pursue careers in math, science, and technology by providing role models of outstanding women within NASA.



Caption: Dr. Beth Brown

Brown started her NASA career at Goddard in 1998 as a Research Associate for the National Research Council, and joined the National Space Science Data Center in 2001. In 2005, she relocated to the X-ray Astrophysics Laboratory providing science support.

Brown has developed a reputation for outstanding work in public outreach support, traveling around the country spreading her enthusiasm about working within the astrophysics world.

Brown's interaction with university staff and students will help them better understand how NASA does its science. In return, Brown's interactions will also enable NASA to expand its working relationship with the university.

For Brown, it is an opportunity to enhance her technical and managerial skills for future NASA science and technology goals.

Brown says she became interested in the program after several conversations with Dr. Nick White, Goddard's Astrophysics Science Division director. "I feel like he is directly responsible for me being awarded the fellowship," said Brown. "Teaching and conducting seminars will give me valuable experience in effectively communicating science to the general public."

NASA started the fellowship program nine years ago to ensure the strength of the Nation's scientific and technical workforce. The program is designed to enhance the professional development of NASA employees and faculty of minority-serving institutions. The program strives to increase the capability of minority institutions to respond to NASA's research, development, and education needs.

There have been 71 fellows selected since the program's inception in 1997. Previous participants have been instrumental in securing individual and institutional research awards, mentoring students to pursue NASA-related research, and encouraging graduates to pursue a career at a NASA Center.

The program is managed and administered by the United Negro College Fund Special Programs Corporation in Fairfax, Va., for NASA's Office of Education.

For information about the program visit:

<http://www.uncfsp.org/divstNAFPinst.aspx> ■

Employee Spotlight:

Hispanic Advisory Committee for Employees

By Alana Little



Photo credit: Debora McCallum

Caption: Danielle Areco and Carlos Pabon entertained the crowd with Latin dance moves at the Hispanic Heritage Month Celebration.

On October 12, in honor of Hispanic Heritage Month, the Hispanic Advisory Committee for Employees (HACE) invited the Center out for a luncheon at the Barney and Bea Recreation Center. HACE also presented a cultural Hispanic dance exhibition featuring Danielle Areco and Carlos Pabon of Art In Motion Entertainment. The duo provided lessons in the “Casino Rueda” and received much audience participation. They then put on an exotic demonstration of the Mambo, Cha-Cha, and Rumba. After the exhibition, attendees were treated to a traditional Hispanic lunch of pollo y carne guisada (Stew Chicken and Beef), rice, platanos fritos, frijoles, guacamole, and chicharrones.

To learn more about the HACE, please visit: <http://eeo.gsfc.nasa.gov/hace/charter.html> ■