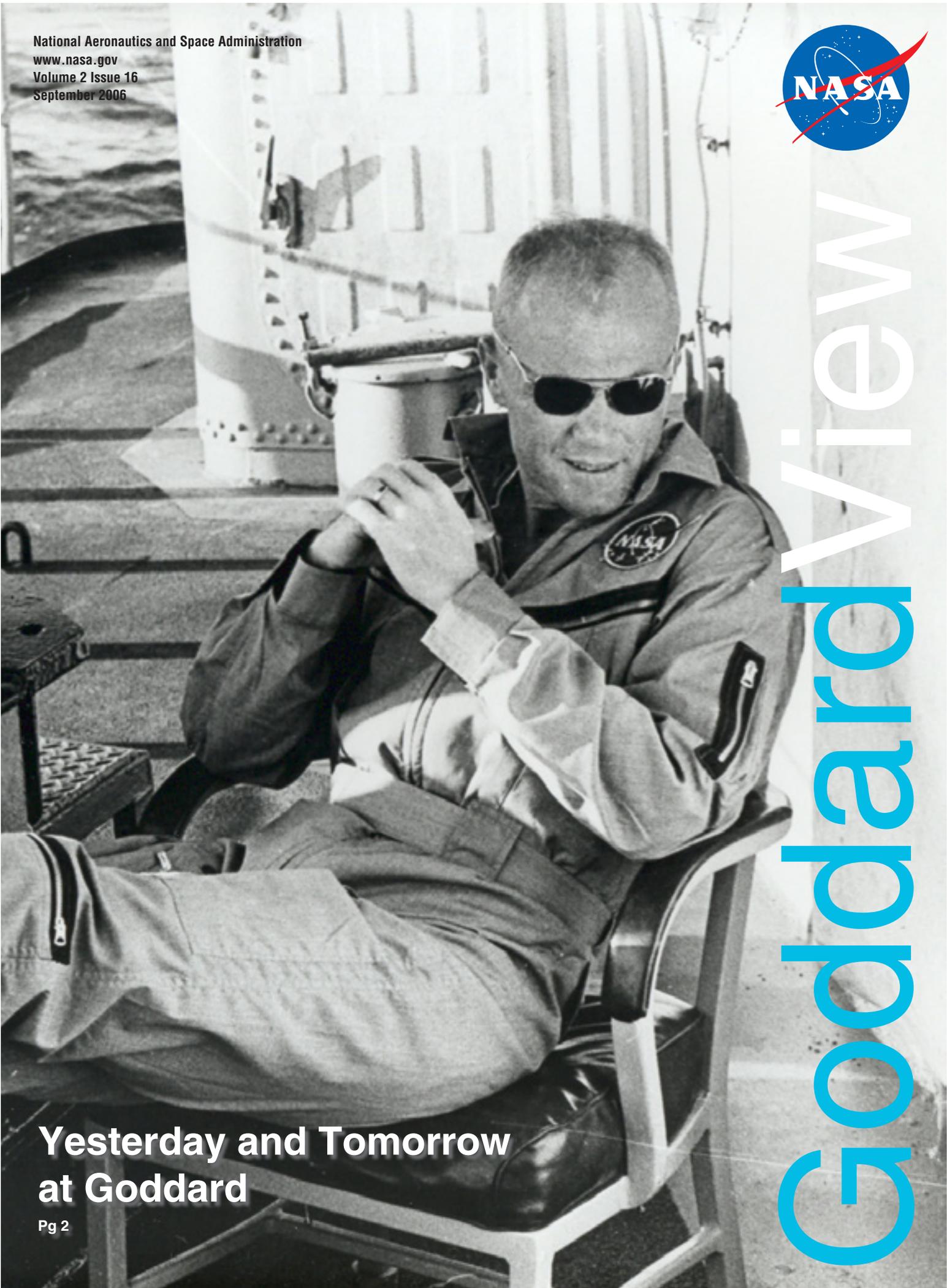


National Aeronautics and Space Administration  
www.nasa.gov  
Volume 2 Issue 16  
September 2006



# Goddard View

**Yesterday and Tomorrow  
at Goddard**

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## Yesterday and Tomorrow at Goddard

By Nick Clooney



Caption: Nick Clooney .

Tuesday, Nina and I negotiated very tight security to enter the Goddard Space Flight Center in Greenbelt, Md.

Specifically, our goal was to navigate our way to a flight control room to use as a backdrop. We are in the final stages of editing our "Moments That Changed Us" TV special on American Life TV about John Glenn's first orbital flight on February 20, 1962.

Photo Credit: TIMMS

We thought it would be appropriate to tape my few introductory and closing remarks in a place similar to those that tracked his epic journey.

As it happens, this Center was dedicated that same year, 1962. It is named for Robert Hutchings Goddard, the American who, more than any other individual, gave birth to space flight.

In fact, back in the 1920s, Goddard launched a successful liquid fuel rocket. In the years that followed, Goddard devised ways to burn that fuel in a continuous flow rather than just one big blast. He developed means to actually steer the ascent rather than just climb into the atmosphere and beyond willy-nilly. He was the one who found a way to use a parachute on re-entry. As years went by, he even invented serial rocket stages as a method for getting a spacecraft to the moon.

All of this was before World War II. In the early days, the general public, if they knew of Professor Goddard at all, thought of him as just another wild-eyed crackpot talking of Moon landings and interplanetary travel. However, those who understood his work knew better. He was decades ahead of others in his field. Many in this country tried to interest American business and, particularly, American military in the possibilities of Robert Goddard's experiments. Business could not see any profit in his work. Some in the military were very interested, but could not get even minimal appropriations out of an isolationist, anti-military and anti-government administration and Congress.

Unfortunately, there were others who were interested. Nazi Germany took Goddard's work and sent their war-making machine into overdrive.

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Cover Caption: Astronaut John Glenn relaxes aboard the *USS Noa* after being recovered from the Atlantic Ocean near Grand Turk Island, where his capsule landed at the end of his historic *Mercury* flight. Glenn became the first American to orbit the Earth on February 20, 1962 in his *Friendship 7* capsule.

Photo Credit: NASA

## GoddardView Info

*Goddard View* is an official publication of the Goddard Space Flight Center. It is published biweekly by the Office of Public Affairs in the interest of Goddard employees, contractors, and retirees. A PDF version is available online at:

<http://www.nasa.gov/centers/goddard/news/index.html>

**Managing Editor:** Trusilla Steele

**Editor:** Alana Little

**Deadlines:** News items and brief announcements for publication in the *Goddard View* must be received by noon of the 1st and 3rd Wednesdays of the month. You may submit contributions to the editor via e-mail at [alittle@pop100.gsfc.nasa.gov](mailto:alittle@pop100.gsfc.nasa.gov). Ideas for new stories are welcome, but will be published as space allows. All submissions are subject to editing.

## Goddard Technology Wins 2006 R&D 100 Award

By Lee Ann Obringer



Caption: Image of a Conformal Gripper.

*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 50–100 items.

Typically, manufacturing small quantities means automation is not possible and the manufacturing of these parts must involve major human participation, which increases costs. The conformal gripper's agility and dexterity enable it to use simple tools with superior results, making it possible to automate tasks for small batch manufacturing without the high cost of custom end effectors.

On the surgical front, robots are assisting doctors in delicate surgery, which 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—and in some respects superior—to a human hand.

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 for bomb detection and disposal.



Caption: Mr. John Vranish

"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). Winners of the 2006 *R&D* 100 Awards will be published in the September issue of *R&D*. ■

## NASA PREP Inspires Seniors for Next Step

By Dwayne Washington

Alumni, family members, and friends were in attendance as members of the 2006 NASA Pre-College Minority Engineering Program (PREP) class at Capital College received completion certificates during a closing ceremony on August 3. Also in attendance were Dillard Menchan, Deputy Chief for Education at Goddard, and Dr. Dan Krieger, a long time Goddard supporter of the program. Both formerly worked within the Goddard Equal Employment Opportunity office which operated the program for many years.

The six-week program was fully funded by NASA and provided classroom instruction in college study and computer skills, engineering, mathematics, and English.

**“Over the years, the skills and attitudes instilled by this program have enabled high school students to adjust to college life and succeed in their rigorous academic programs,” said Dr. Michael Wood, school president. “It opens their minds to career opportunities and exciting life’s work. NASA PREP graduates have become student leaders, as well as leading professionals.”**

Since 1992, Capitol College has been the recipient of NASA PREP funding, which is open to graduating seniors who have been accepted to an accredited college and plan to pursue a degree in the engineering or computer science fields.

**“We were like separate islands when we first met, but by the end of the six weeks we formed a continent,” said Christian Allen, NASA PREP student 2006. “I found while working as a team here that some people have strengths that could balance with someone’s weaknesses, and together we were more efficient. This program taught me the value of team work.”**

The students were also provided housing, text books, tuition, a stipend, and a mentor. Their curriculum included field trips to local employers, cultural enrichment trips, and a visit to Goddard. “This has been a rewarding experience for all involved over the years,” said Menchan. “I have truly enjoyed being involved with this worthwhile endeavor.” ■

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## Yesterday and Tomorrow at Goddard

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Within a few years, they developed both the V-1 and V-2 rockets, which would cause great havoc and many deaths in the last two years of World War II.

When Nina and I walked into that control room named for Robert Goddard a few days ago, it was like walking into a movie set. The feeling was no doubt enhanced by the lights and camera set up by American Life TV, but the setting was familiar to us, though we had never been in this kind of facility before. There were six rows of connected desks, each station with its own set of monitors. All of them faced a huge screen taking up much of the front wall, with subsidiary screens to either side.

In honor of our visit, they [Goddard producers] had put up a large still picture of John Glenn in his *Mercury* flight suit.

Nick Clooney is the father of the famous actor George Clooney.

This column was reprinted with permission from *The Cincinnati Post* 08-25-06. ■