

# Diversitywatch

INDUSTRY WATCH

## Moving the Numbers

What must be done to prepare African Americans for opportunities in STEM fields

RAMSEY SMITH, PH.D., IS A SPACE SCIENTIST at NASA's Goddard Space Flight Center in Greenbelt, Maryland, whose duties include monitoring the atmosphere of solar planets, mainly Mars and Jupiter. Excited about his work, Smith, 31, only wishes more African Americans could experience the opportunities of such a dynamic field.

Although African Americans have made history-making contributions in the areas of science, technology, engineering, and mathematics (STEM), the talent pool of black professionals in these industries is extremely small. This concern has recently drawn more attention as President Barack Obama declares his desire to renew the country's status as a world leader in science and technology innovation. In April, Obama pledged to devote more than 3% of the nation's gross domestic product toward research and development in science and technology.

"We need to place a great deal of focus on developing that hidden talent and potential that exists in the underrepresented minority community," comments Irving Pressley McPhail, Ph.D., executive vice president and chief operating officer of National Action Council for Minorities in Engineering Inc. "This is necessary so that our communities can be equal and powerful participants in the national effort in trying to draw a more robust STEM agenda for the United States."

According to a January report by the National Science Foundation, an independent federal agency that promotes and supports the fields of fundamental science and engineering, underrepresented minorities (blacks, Hispanics, Native Americans, etc.) made up 10% of all scientists and engineers in business or industry in 2006.

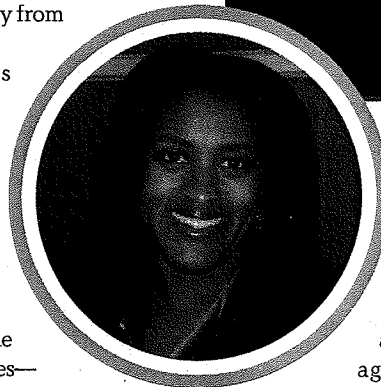
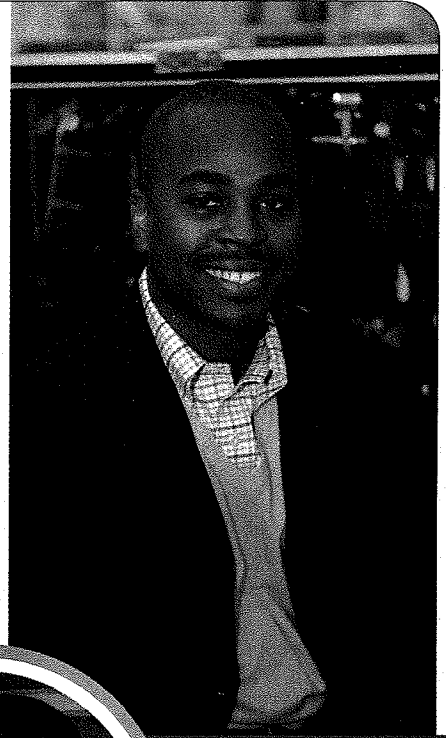
The lack of black professionals entering the STEM workforce can be traced back to lecture halls. According to the

NSF, out of whites, Asians, Hispanics, and blacks, blacks had the lowest enrollment numbers in undergraduate engineering programs between 1995 and 2006. They were preceded by whites, Asians, and Hispanics, respectively. Similarly, subsequent to whites, Asians/Pacific Islanders, and Hispanics, respectively, blacks received the fewest bachelor's degrees in engineering between 1997 and 2006. And in nine years, that number increased only slightly from 3,077 to 3,186.

However, blacks receive their bachelor's degrees from undergraduate science programs at slightly higher numbers than Hispanics. And since 1997, blacks have been on a steady incline in earning these degrees—from 26,748 to 36,223.

Low numbers for enrollment in STEM programs extend even further back to the low percentage of minority high school youth graduating with appropriate math and science training. LaMont Toliver, director of the Meyerhoff Scholars Program at the University of Maryland, Baltimore County, a program geared toward high school seniors with an interest in pursuing degrees in STEM fields, believes exposure to STEM studies needs to happen much earlier than high school.

"We are continually counting on people coming out of high school and we really need to be proactive about kindergarten to grade 12 students," he says. "By the time students are in 10th, 11th, and 12th grade, they have already created a mind-set that they do not want to do math or science or that they cannot. And by then it could be too late."



SMITH (ABOVE) AND PAYLOR ENCOURAGE MORE BLACKS TO WORK IN STEM FIELDS.

Experts agree that at the elementary age, many children are deterred from pursuing an education in the fields of science and math for a variety of reasons that include lack of exposure, subpar student-teacher engagement, nonexistent school system support, and no access to working industry professionals as role models.

There is another major barrier for students: money. Because it can take up to five or six years to complete a bachelor's degree in STEM studies, the extended college program may be too costly for some. There is also the perception for minority students that entry-level positions in law and business offer better financial rewards. However, STEM industries actually offer higher starting salaries than non-STEM fields and will provide sustainable opportunities for career growth in the future.

The Bureau of Labor Statistics estimates that employment in science >

and engineering is expected to grow 70% faster than the overall growth for all occupations. However, Bayer Corp.'s 13th science education survey, conducted in 2008, found that out of 100 STEM executives surveyed, 80% report that their companies face challenges hiring adequate numbers of women and minorities for STEM positions. The executives attribute this problem to the limited number of qualified applicants for these positions; difficulty in identifying, locating, and recruiting qualified candidates; and trouble attracting candidates due to the company's location.

degree but does not have a network of advocates nor relationships within top STEM organizations," says Matthews. "I think developing these relationships through mentorship and internship opportunities will improve the selection decisions on this talent pool. The challenge lies in having top STEM organizations value the importance of advocating for African American high-performing STEM students."

According to the Bayer Corp. survey, 71% of STEM executives reported having specific programs in place to recruit women and minority STEM workers, as

at Whitman, Requardt and Associates L.L.P., an engineering, architectural, and planning firm headquartered in Baltimore, is worried about the pipeline, as she notices a lack of African American representation in management positions. "There are a lot of meetings that I go to where I'm the only woman and the only black person," explains Paylor.

Blacks and Hispanics have the same number of managers in science and engineering occupations, at 11,000, yet lag behind the number of whites as managers at 191,000 and Asians at 25,000. Experts suggest that those currently in

## Looking for STEM Opportunities?

Resource List for Educational and Training Programs:

■ **ExxonMobil Bernard Harris Summer Science Camp—[www.theharrisfoundation.org/programs/summersciencencamp/index.htm](http://www.theharrisfoundation.org/programs/summersciencencamp/index.htm)**

A free academic program for students entering grades six, seven or eight in the upcoming fall that focuses on STEM. The camp is designed to support historically underserved and underrepresented students with limited opportunities. Check out the site to see which university is in your area.

■ **NASA's Motivating Undergraduates in Science and Technology (MUST)—[www.uncfsp.org/spknowledge/default.aspx?page=program.view&areaid=1&contentid=346&typeid=must](http://www.uncfsp.org/spknowledge/default.aspx?page=program.view&areaid=1&contentid=346&typeid=must)**

This program awards scholarships and internships to undergraduate students pursuing STEM degrees. Scholarships can go up to \$10,000. Students can also receive year-round tutoring and mentoring. Scholarships and internships are renewable for up to three years contingent on academic requirements.

■ **National Society of Black Engineers (NSBE)—**

**<http://national.nsbe.org/Programs/tabid/81/Default.aspx>**

NSBE offers a range of programs and scholarships for collegiate-level students and pre-college youth. The Pre-College Initiative program is designed to stimulate interest in STEM and encourage students in kindergarten to grade 12 to attend college and pursue technical degrees. NSBE can also assist pre-college students in establishing their own NSBE Jr. chapter.

■ **University of Maryland, Baltimore County's Meyerhoff Scholars Program—[www.umbc.edu/meyerhoff/index.html](http://www.umbc.edu/meyerhoff/index.html)**

This program is open to prospective undergraduate students of all backgrounds who plan to pursue doctoral studies in the sciences or engineering and who are interested in the advancement of minorities in those fields.

■ **Junior Engineering Technical Society (JETS)—[www.jets.org/index.cfm](http://www.jets.org/index.cfm)**

JETS offers programs and resources that let students explore and experience engineering firsthand. JETS provides student competitions, assessment tools, and career exploration materials. Other programs through JETS include UNITE, a program funded by the U.S. Army Research Office and targeted toward high school students to help prepare them for college through summer classes.

You can also contact the nearest community college, college, or university and ask if they provide any summer classes or training programs for middle and high school students.

Unfortunately for black students currently pursuing science and math careers, old issues that continue to challenge diversity in the workplace can derail candidates as they pursue these opportunities. Mabel Jones Matthews, Ph.D., manager of the higher education outcome program for NASA, says the problem for recent graduates is that while they may have the right academic credentials, they are still not being selected by top organizations. "Often the high-performing minority student graduates with the needed

opposed to only 18% of emerging STEM companies that claim to have similar programs. Among the executives with programs in place, 58% say they recruit from historically black colleges and universities or the Seven Sister schools (seven liberal arts women's colleges in the Northeast U.S.). Companies that recruit minorities include Lockheed Martin, Microsoft, Google, IBM, ExxonMobil, General Electric, and oil and pharmaceutical organizations.

While recruiting is a major concern, Monica Paylor, a geotechnical engineer

the industry can assist with increasing numbers by going into schools and talking to students, as well as allowing students to shadow them at work.

"As a black scientist you're not just working to push the envelope of knowledge for science, sometimes we have a responsibility to do that and look at how we're representing ourselves in our organization because there are only a few of us," says Smith. "You have to realize that you may be a trailblazer for someone else."

—Brittany Hutson