



Lawrence King, Editor

STEM NEWS

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Dr. Paula Hammond Helps our Troops

Special points of interest:

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As the head of the Department of Chemical Engineering at MIT, History Maker Paula Hammond follows her calling to science to develop new technologies to save human life. Studying the dangers that American troops face on the battlefield, Hammond noted that approximately 80 percent of deaths in battle occur due to blood loss following an injury. So Hammond decided to narrow down her focus to developing products for soldiers facing such dire injuries. She discovered a polymer that she could use as a the building block for her new kind of bandage, and with that accomplishment in hand, she went even further to create a special kind of spray coating that could rapidly speed up blood clotting. The compound continues to be tested and refined to this day, but the discoveries of Hammond and her team could very well be the next step for saving the lives of soldiers in harm's way.

Professor Hammond impresses in that she was not only a gifted researcher but a gifted teacher as well. As she speaks of her research she is quick to point out that polymers are the building blocks of her research. "Polymers are the materials that I work with in all of my work. Now, these biomaterials are actually a range of things. Some of them are for drug delivery. They're materials that regulate the release of drugs, perhaps protect drugs from things in the bloodstream that you don't want to interact with your drug or protect healthy cells from drugs that may have a negative effect, until you get it to the place you want.



Other kinds of biomaterials are used to help cells grow and function, and some of those can be used for tissue engineering to help cells develop into tissues in a polymer scaffold. And some of them are used to just study cells and examine how they behave in certain environments. All of those fall under that broad category, but we do work in those areas."

NextEra Energy, a Fortune 200 company, wants to connect with African American Engineering talent. Both experienced and graduating senior should apply!

· Electrical Engineers - http://hbcuconnect.com/resumes/?cid=9&job_id=10200419

· Industrial, Mechanical, Civil Engineers - http://hbcuconnect.com/resumes/?cid=9&job_id=10200418



Reader's Comment



I am a reader of STEM News and was really stuck by the gravity of the article in the February, 2017 edition. As an educator and professional geologist and currently managing NASA STEM Program given at York College since 2005, I noticed lots of exuberance and liking for science-related contents for the participating students as early as 4th grades, particularly basic physics principles related to rocketry, robotics, machine, aerodynamics, wind turbulence, etc.

Students (K4-10) get a better understanding from hands-on, experiential learning opportunities (ELO) made available through NASA STEM contents. Teachers also modify lessons to adjust grade levels and effectively disseminate science contents using ordinary materials including paper towel, cardboard, cotton, etc. As a professional geologist, my goal is and was to provide field-based and case-study-based geoscience contents to the students to achieve maximum effectiveness and allow them to think independently or resolve issues as part of teamwork.

Nazrul Khandaker, PhD., School of Arts and Science, York College

IGT, the International Gaming Technology Corporation Awards Grant to Project STAR Program

In a Florida state-wide competition, the Project STAR proposal was selected as one of three recipients. Their project, "After School Advantage Program Grants". The grant will;

- Provide state-of-the art computers, software, and Internet access to nonprofit community agencies and public schools.
- Will create safe, fun learning opportunities for Florida's at-risk students participating in after-school programs.
- Help close the digital divide and help children from underprivileged backgrounds become well prepared for school and ultimately more competitive in tomorrow's job market.



The participating youth in Melbourne Florida will also engaged in model rockets, 3D printers, windmills; VEX robotics, solar energy projects, drones, and other STEM stuff.

Created by NASA Engineers of the National Technical Association (NTA) in volunteer service to disadvantaged communities, Project STAR was conceived as a socio-technical program to unite minorities with technology to develop computer tech skills, improve education and use as a resource tool for grassroots organizations to help resolve community-based social problems.

Project STAR learning centers serves as the hub for community improvement; involving after-school programs and scholarships for Rocket Force students for a week away at Space Camps near Marshall Space Flight Center, Alabama and Kennedy Space Center, Florida.

Eric Green, Program Director says, "*There is a great need across this country to engage minority youth into practical technical learning experiences during after school hours. There is also a great demand to fill future STEM jobs with grant funding and other resources waiting for minority organizations with the will and determination to bring it all together*".

James West is a U.S. inventor and professor who, in 1962, developed the electret transducer technology later used in 90 percent of contemporary microphones.

Jim says, *"I discovered that Johns Hopkins University was a lot like Bell Labs, where the doors were always open and we were free to collaborate with researchers in other disciplines. I like the fact that I won't be locked into one small niche here."* —**James West**

James West attended Temple University before working for Bell Labs. Along with Gerhard M. Sessler, he developed the foil electret microphone, an inexpensive, compact device that is now used in 90 percent of all contemporary microphones.

West has more than 250 patents and became a professor at Johns Hopkins University. It was because of Link Hawkins that Bell Labs recognized that genius has no color and hired scientists like Jim West and Jesse Russell, both of who have been inducted into the National Inventors Hall of Fame in 1999.



STEM NEWS reader in Ireland



"Brilliant article Mr. King, (Vol 6, Issue 1) . I am a student science and math teacher and this article optimizes what needs to be done in classrooms. It is happening and it is in the pipeline which I can proudly say we are doing in out Universities in Ireland.

I worked with Accenture Ireland during the summer as part of a teacher internship. I was one of the five first ever teachers to be taken on an internship in Ireland and it was a huge success. Our role was to see what is needed in a STEM Career and what skills are required to be successful". **Sean O'Donnell**

Mr. King here is a link to our findings:

<https://m.youtube.com/watch?v=FRTzqAXZ7dA>

THE MICHIGAN STEM PARTNERSHIP RECIEVES GRANT FROM BOSCH COMMUNITY FUND TO SUPPORT STEM EDUCATION

Gary Farina, Executive Director of the Michigan STEM Partnership and Editorial Review Board member for STEM NEWS says the Bosch Community Fund grant to be utilized for research, planning and organizational development in support of STEM education and workforce development initiatives in Michigan

February 21, 2017, Howell, MI - The Michigan STEM Partnership is pleased to announce that it has received a \$26,000.00 grant from the Bosch Community Fund. This is a 12-month planning grant to be used to further define the Partnership's opportunities to improve the evolving STEM landscape in Michigan. Information gathered through research, assessment and evaluation will be used to identify the necessary role, structure, functions and capacity needed for the Partnership to bolster STEM training and workforce development activities statewide. This approach will serve to:

Guide organizational vision and strategy

- Support the regional alignment of STEM activities
- Establish shared measurement practices
- Build positive public will and engagement
- Engage Michigan's business community
- Advocate policy
- Mobilize resources
- Drive funding initiatives

The funding will provide the Partnership with resources to research and document the evolving status of STEM in Michigan.



Walter “Link” Hawkins



A scientist and inventor who, while working at Bell Laboratories as the first African-American scientist at AT&T Bell Labs in the 1940s, made universal service possible. Hawkins developed a plastic to cover telephone wires ; a new material that was lightweight, and less expensive than the lead sheathing used at that time. He is a recipient of the National Medal of Technology and an inductee of the National Inventors Hall of Fame.

Hawkins was frequently honored as a polymer chemistry pioneer. The first African-American to become a member of the National Academy of Engineering, Hawkins also won the International Medal of the Society of Plastics. In 1992 White House ceremony, he received the National Medal of Technology from President George H. W. Bush.

Hawkins was also devoted to improving education and employment opportunities for minorities interested in pursuing careers in engineering and science, helping to establish the Bell Labs Summer Research Program for Minorities and Women.

Cooper Middle School Academy Certified STEM

Cooper Middle School in Austell Georgia became only the tenth middle school in the state to receive a STEM certification and the first in the Cobb system. Cooper Middle is a School-Wide Title I school with just under 1000, with 69% African-American and 17% Hispanic. 20% of Cooper’s kids are enrolled in the STEM program. The certification process began four years ago with collaboration in math programming with a feeder elementary school. Later it expanded to include science, a summer camp, and recruitment of two additional STEM teachers as part of the teaching core of the STEM Academy.



Dr. Kevin Daniel and Dr. Vanessa Watkins

Also present for the certification presentation were Dr. Kevin Daniel, Cobb School District Chief of Staff and Dr. Sally Creel, Supervisor STEM & Innovation for Cobb Schools, and Carol Mickus the Cooper STEM coordinator among others. Mickus shares STEM NEWS with all impacted teachers at Cooper.

Currently only 41 of all Georgia public schools have a STEM designation. The presentation was accepted by Dr. Vanessa Watkins, Principal at Cooper in behalf of the entire student body, parents, and staff.

The presentation of certification was made on March 6, 2017 by Dr. Gilda Lyons, Georgia DOE State STEM coordinator. (Below)



According to the US Census Bureau, current rates of growth show whites in the under-5 group have fallen well below 50 percent. "More so than ever, we need to recognize the importance of young minorities for the growth and vitality of our labor force and economy" according to William H. Frey, a demographer at the Brookings Institution.

Mary Lobo, Space Simulation Facility Manager



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Lobo joined NASA Glenn Research Center in 2000 as a contractor in facility test engineering. For five years she worked in Turbomachinery and Flow Physics facilities, leading buildup and testing activities.

Her mechanical engineering degree opened the door to new opportunities and she realized that she enjoyed working in STEM just as much as I enjoyed the arts.

In 2013 Lobo was hired as the Space Simulation Facility Manager where she is able to utilize the skills gained from previous work experience. For over two dozen vacuum test facilities, she coordinates test entries with internal and external customers, and is responsible for the strategic planning of the vacuum facility portfolio, ensuring the facilities are maintained and/or upgraded to support NASA’s future missions.



Minority Students are the future of STEM

The science education gaps across many of the technology clusters across America is the strongest signal that for our nation to remain competitive on the global stage, we will need to triple investment in STEM education for under-represented minorities. Without it, the long term impact will not only degrade national security, but our economic wellbeing as well.

The continued prosperity of Silicone Valley, Research Triangle, Atlanta, and other super hubs across the industrial Midwest will continually need trained and motivated students from which to hire the workforce needed for sustainability. Building the pipeline is the key to responding to their demand. Unfortunately, the scientific, engineering, and technology potential of students that comprise the majority of students on our school systems is being left untapped, with the exception of the outliers that exist in any data set.

This must change for the benefit of students as well as the firms in need of clinical technicians, data analysts, biologists, statisticians, systems engineers, etc. Our collective challenge is to attract more of these students to STEM careers and to train more teachers qualified to teach the math and science they will require because it is not science itself, but how science is taught that can make the difference.

Our network of STEM professionals, engineers, and scientists continue to report isolated examples of successful education and motivational practice that are moving minority students up the proficiency scale in math and science.