



Lawrence King, Editor

# STEM NEWS

DEBLAR & Associates, Inc.

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## Meet our Editorial Review Board

We all know change is inevitable. The right type of change can create opportunity, transformation and growth. When we began publishing **STEM NEWS** in 2012, we reached out to our network composed primarily of African American engineers and scientists along with the broader community of educators in K12, and higher education administrators, department heads, and program directors engaged in STEM fields.

They have been tremendously supportive and have provided us with thoughts and suggestions concerning technology development and STEM education on matters concerning the role and need for growing our science and engineering workforce with more women and people of color have been both timely and insightful.

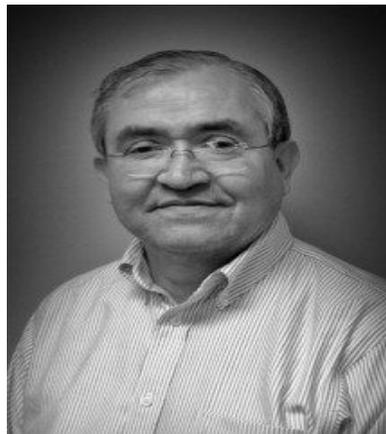
We are delighted to introduce our readers to our new Editorial Review Board, a group of talented, intelligent educators and technical professionals who have agreed to keep **STEM NEWS** pointed in the right direction so our readership across the nation and in countries abroad will grow and our articles remain interesting. This is being done to keep our focus current and content diverse. As always, we encourage and welcome comments and suggestions.

### Special points of interest:

- Inventors Hall of Fame 2017 Inductees
- Technical Workforce Involvement
- Minorities and Women in Cybersecurity

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**Dr. Roberto Ruiz, COO - ClearSign Combustion Group, Seattle Wash.**

Executive manager with more than 20 years experience in a variety of roles related to energy utilization in refining, petrochemical, synfuels, glass, metals and other industrial processes. Experience includes general management, sales, marketing, project management, research and development, business development, acquisitions, licensing and technology evaluation.

**Gary Farina - Executive Director at Michigan STEM Partnership, Howell Michigan**

Manages a statewide, non-profit public-private collaborative that includes educators, employers, policy-makers, and others addressing the current lack of Science, Technology, Engineering, and Math skills in schoolchildren and job applicants by fostering a culture of cross-disciplinary, project-based, applied learning education



**Editorial Review Board, continued**



**Dr. Darryl Lee Baynes, CEO— Interactive Science Programs, Wheeling West Virginia**

Interactive Science Programs, Inc. an educational consortium teaches STEAM related disciplines to students and educators through hands on experiments and scientific presentations. The experiments and curriculums that ISP develops allow participants to connect to the next generation science standards and common core skills.

**Sheryl Good—EPA Region 4 Environmental Scientist, Atlanta Georgia**

Sheryl Good is an Environmental Scientist at U.S. EPA, Region 4 in the Office of Environmental Justice and Sustainability. She has primary responsibility for managing the Environmental Justice Academy, which is a leadership development program for community-based leaders, and is the Coordinator for the Environmental Fundamentals Course, which is a basic course of the environmental laws and regulations, as well as environmental justice. She also has responsibility for identifying and organizing student (undergraduate and graduate) internships for the Office



**Brian K Saunders— Founder Hi5 Productions, Oakland California**

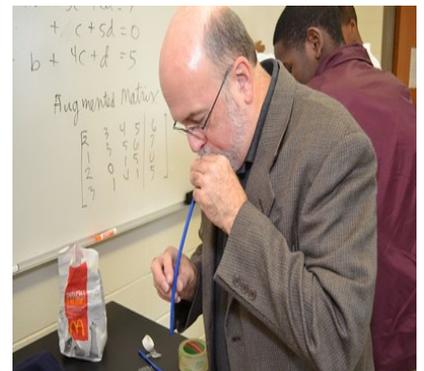


Agent Hi5 Productions is a professional digital marketing, web development, media production, and strategy consulting agency based in Oakland, CA. We offer a diverse range of services including online and video marketing, branding, lead generation, website design, and mobile app development.

Brian is also a past National Chairperson of the National Society of Black Engineers (NSBE).

**Dr. George Stickel— Stickel Learning Consultants, Kennesaw Georgia**

Stickel's experiences include educator preparation positions at the state governance level and within universities, leadership in state reform, university and school program and curriculum development, accreditation, STEM teacher and leader preparation, and science education, K-12 and higher education, cultural diversity, grants, and faculty recruitment and development.



## Editorial Review Board, continued

### Dr. Zelda Gills— Physicist Lockheed Martin Aerospace, Marietta Georgia



Dr. Gills' career at Lockheed began with engineering, prototyping and testing solutions for airborne communications, radar and defensive systems. She currently leverages expertise in systems engineering and avionics to conceptualize and mature solutions for mission system modification contracts.

Over the course of her career, she has led many multi-site/multi-disciplinary technical teams in a variety of industries including optics/ photonics, telecommunications, electronics, and avionics.

**Technical Workforce Involvement**— Many of our readers are members of technical societies and organizations. Please drop us a note and let us know what group you are a member now or have been in the past. Also, let us know how you feel about the role of engineers and scientists on some of today's pressing issues. For example, the issues of climate change, public education and health, and injustice in economic opportunity give these issues high visibility in the consciousness and public discourse of social scientists, politicians, and the host of professional technical organizations.

## Our Readership

Our largest concentration of audience segments is from San Francisco Bay area, next largest segment is people from Greater Detroit and Atlanta areas, followed by Tampa/St. Petersburg in Florida, Dallas/Fort Worth, Chicago and greater Boston Areas amounting to an estimated readership 9,000 – 12,000 professional technologists and STEM educators.



There are an abundance of STEM learning strategies being created, pursued, and refined but there remains much yet to do to address the lack of gender equality in higher education and the K12 classroom and to break the historic 5% ceiling of African Americans in our science and engineering workforce.

America's rivals around the globe will not wait for us to catch up in the race to give birth to the next scientific advancement in research, the application of technology in manufacturing, and to make breakthroughs in medicine and environmental health. Solving the problems of our unique set of sociological barriers that determine just who can do science, can move the US into a more competitive position.

Let us know what you think about these issues, **STEM NEWS**, and how we communicate with our readers.

## 45th Annual National Inventors Hall of Fame Inductees

Each year the **National Inventors Hall of Fame**, in partnership with the United States Patent and Trademark Office, recognizes a class of Inductees — whose innovations and inventions have improved the world we live in

Fifteen of the nation's brightest minds were recently inducted into the National Inventors Hall of Fame, joining more than 500 great innovators. The 2017 class of inductees includes;

The 2017 inductees to the National Inventors Hall of Fame include: Iver Anderson – Lead-Free Solder; Donald Arney – Bambi Bucket for Aerial Firefighting; Carolyn Bertozzi – Bioorthogonal Chemistry; Eli Harari – Floating Gate EEPROM and System-Flash; Marshall Jones – Industrial Lasers; Frances Ligler – Portable Optical Biosensors; Dr. Tom Leighton and Daniel Lewin (Posthumous Inductee) – Content Delivery Network; Earle Dickson (Posthumous Inductee) – Band-Aid Adhesive Bandage; Harold "Bud" Froehlich (Posthumous Inductee) – Alvin Deep-Sea Submersible; Haren Gandhi (Posthumous Inductee) – Automotive Exhaust Catalysts; Howard Head (Posthumous Inductee) – Laminate Ski; Oversized Tennis Racket; Beatrice Hicks (Posthumous Inductee) – Device for Sensing Gas Density; Dr. Allene Rosalind Jeanes (Posthumous Inductee) – Dextran Production; Xanthan Gum; and Augustine Sackett (Posthumous Inductee) – Drywall

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In addition to honoring creativity, NIHOF reaches and inspires over 125,000 youngsters annually in a range of STEM programs that fosters their imagination and innate creativity. Outreach to schools and communities especially those with high minority populations can connect thousands of others with the great minds of inventors and inspires this next generation of youthful inventors.

The National Inventors Hall of Fame accepts nominations from all sources and relies on a panel of experts in science, technology, engineering, and patents to screen, vet, and make final selections. The criterion for Induction into the Hall of Fame requires candidates to hold a United States patent that has contributed significantly to the nation's welfare and the advancement of science and useful arts.

More information in Inventors HOF at: <http://www.invent.org/>

### Minorities and Women in Tech

As we reported in **July 2017**, for all of its bravado about changing the world, the tech industry is very much a man's world. Seven out of 10 workers at major tech companies such as IBM, Google, and Facebook are men. Women comprise less than 20% of technical staff and the senior executive levels. The industry's senior executive level has a mere 2% of African American males. Silicone valley power dynamics usually fail minorities and women.

Compared to overall private industry, the high tech sector employed a larger share of whites (63.5 percent to 68.5 percent), and a smaller share of African Americans (14.4 percent to 7.4 percent), Hispanics (13.9 percent to 8 percent), and women (48 percent to 36 percent). Tech giants argue that there simply are not enough students of color, in particular black and Hispanic students, graduating with bachelor's or advanced degrees in computer science or related fields.

However, the educational pipeline is not the primary cause of the absence of people of color. The problem is likely the result of a failure to change structural and institutional dynamics and that the tech sector functioning is constrained to the bottom line and a limited time horizon.

## Minorities and Women in Cybersecurity

Women and minorities have long been undervalued in the workforce. The battle against discrimination and underrepresentation has plagued many Americans who have been forced to fight for equal pay and opportunity. Being a minority, especially as a woman, has proved to be particularly challenging within certain industries.

The fields of IT and cybersecurity are experiencing a shortage of trained professionals, as well as a lack of diversity. The 2015 population survey conducted by the United States Department of Labor revealed that only 19.7 percent of information security analyst jobs are held by women and, combined, Black/African-Americans, Asian-Americans and Hispanic/Latinos make up less than 12 percent of these positions. Even for women and minorities who work in IT-related roles, most are not being paid fairly.



Notable among African Americans addressing this issue is **Debra Plunkett**.

She was the first African-American woman to work for the National Security Agency (NSA) as the information assurance director. The extensive list of achievements and accomplishments that make up her more than 30-year career, which were highlighted by ICMCP, include working as the White House National Security Council Director to develop the national cybersecurity policies during both the Bill Clinton and George W. Bush administrations, being named a Distinguished Executive by President Barack Obama and receiving the National Intelligence's Diversity Outstanding Leadership Award.

Plunkett is not alone. The International Consortium of Minority Cybersecurity Professionals ( <https://icmcp.org/>) is addressing the lack of diversity in the cybersecurity field and attribute the overarching issue of young people living in poorer communities, comprised mainly of minorities, having limited access to education, resources and mentors. This group of minority cyber professionals have the mission to help increase awareness and improve the diversity issue.

## Merlin Theodore, new Director of Oak Ridge Carbon Fiber Technology Facility

The CFTF is supported by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy's Advanced Manufacturing Office, or AMO, and Vehicle Technologies Office, or VTO. AMO supports applied research, development, and demonstration of new materials and processes for energy efficiency in manufacturing, as well as platform technologies for the manufacturing of clean energy products. VTO supports research and development of a broad range of lightweight materials technologies to reduce vehicle weight and improve fuel economy.

Before joining the Carbon Fiber Technology Facility and SGL Automotive Carbon Fiber, Theodore worked for Bayer Pharmaceuticals, Georgia Tech, and Universal Technology Corporation, or UTC, at Wright-Patterson Air Force Base as a research scientist and laboratory manager.



She began her studies at a North Carolina junior college on a softball scholarship. She earned her B.S. in chemical engineering, M.S. in mechanical engineering, and her Ph.D. in materials science and engineering at Tuskegee."



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## Questions

What actions can educators and STEM professionals take to increase women and underrepresented minorities entering STEM learning pathways?

Can the few professional groups of minority scientists and engineers combine efforts and resources to make an impactful transformation in attracting more underrepresented persons to their fields and in improving career growth in their fields?

When will corporate recognition of America's shortage of technical talent as an economic issue translate into more than a scattered set of programs that are designed to do little more than advance the corporate brand?

Given that there are recognized cultural and systemic reasons for achievement gaps in education and in committing to a career in technology or science, can America move beyond the issues that worship and publicize “exceptionalism” and cast a broader net to attract any student with the ability to think and solve problems to a STEM career?

How would you respond to these questions?



## Provisional Credentials for STEM Teaching?

Because of the acute shortage of science, engineering, and math teachers in many school systems, will intern credentials be part of the set of remedies?

California has seen an increase in recent years in teachers with provisional credentials: 10,136 for the 2015-16 school year, more than double the number issued just four years ago, according to the California Commission on Teacher Credentialing. Of that total, 1,646 were given to new math, science, and engineering teachers in 2015-16, up from 993 in 2011-12.

Alternative routes, which are designed for people who are switching careers or are otherwise unable to take a year off work to go through a credential program, allow people to take a few short, intensive classes before becoming a salaried classroom teacher. These people work under an intern credential.

Inspiring young people—especially those who are African American and Latino just may be more effective if the individual at the head of the class has actual work experience in STEM fields and most importantly has undergraduate or graduate science/math degrees and the commitment to make a difference.

