YOUR PASSPORT TO

THE COLOR OF SCIENCE™

Energy
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Celebrating Diversity in Energy

The Color of Science™ is COSI's signature diversity and equity initiative which spotlights the amazing contributions to science, technology, engineering and math (STEAM), made by women and persons of color through various year-round programming. In this passport, you will explore the great diversity that exists within the life science landscape. We hope you enjoy reading these stories about some of the brilliant minds of the researchers and scientists studying ENERGY!

Dr. Frederic Bertley
COSI's President and CEO,
Founder, The Color of Science™

Jessica O. Matthews, MBA
Renewable Energy Inventor


Image Credit: IPO Education Foundation

Jessica Matthews is the founder and CEO of Uncharted Power, a tech company building easy to use and affordable access to energy. Jessica created the Soccket, a soccer ball that stores kinetic energy as it's used, and with a half-hour of play can generate enough energy to power a small LED light for 3 hours! Her team works to create cost-efficient energy for the developing world. Matthews is leading the way to address the generation, transmission and storage issues many underserved communities face.

Did you know?
Electricity travels at the speed of light – over 186,000 miles per second.

Olga González-Sanabria, PhD
Chemical Engineer


Image Credit: Wikipedia

During her career at NASA, Dr. González-Sanabria played an instrumental role in the power systems area with the development of the "Long Cycle-Life Nickel-Hydrogen Batteries". These batteries helped to enable the International Space Station power system. She retired from NASA in 2011 after 32 years of service. She is a member of Ohio Women's Hall of Fame!

Interesting Fact:
The International Space Station is entirely solar powered.

Joshua A. Frieman, PhD
Theoretical Astrophysicist

Image Credit: University of Chicago News

Dr. Frieman is known for his work studying dark energy and cosmology, and he co-founded the Dark Energy Survey experiment, a visible and near-infrared survey that aims to probe the dynamics of the expansion of the Universe and the growth of large-scale structure. In 2019, the United States Department of Energy named him a DOE Office of Science Distinguished Scientists Fellow, for his pioneering advances in the science of dark energy and cosmic acceleration.

Fun Fact:
Scientists have determined that dark energy makes up roughly 68 percent of the Universe.

Zhenan Bao, PhD
Chemical Engineer

Image Credit: Chemical and Engineering News

Dr. Bao is a professor of Chemical Engineering and Material Science and Engineering at Stanford University. Dr. Bao works to develop cutting edge flexible, stretchable electronics and energy devices. She was selected as Nature's Ten People who Mattered in 2015, as a "Master of Materials" for her work on artificial electronic skin! Dr. Bao founded the Stanford Wearable Electronics Initiate (eWEAR) in 2016, and serves as the faculty director.

Fun Fact:
Conductors are materials that can carry electricity - they conduct electricity. The opposite of a conductor is an insulator. An insulator opposes the flow of electricity.

Hemamala Karunadasa, PhD
Chemist

Image Credit: Stanford University

Dr. Karunadasa is an Associate Professor of Chemistry at Stanford University. Using the tools of synthetic chemistry, her group at Stanford designs hybrid materials that couple organic molecules with properties of inorganic solids. She works on hybrid organic – inorganic materials, for clean energy and large area lighting.

Fun Fact:
Bridgmanite is the most abundant mineral on the planet, found in Earth's lower mantle.

André Taylor, PhD
Chemical Engineer

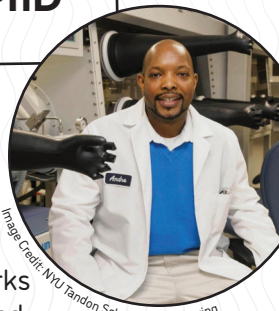

Image Credit: NYU Tandon School of Engineering

Dr. Taylor is a scientist and an Associate Professor of Chemical Engineering at the New York University Tandon School of Engineering. Dr. Taylor works on developing materials and devices for energy conversion and storage, with a focus on solar cells. He has also worked on electrochemical fuel cells and batteries. He was awarded the Presidential Early Career Award for Scientists and Engineers in 2010 and named as one of The Community of Scholars' Most Influential Black Researchers of 2020.

Did you know?
The energy from one hour of sunlight is equivalent to one year's worth of energy for the planet.

Stanley Atcitty, PhD
Engineer


Image Credit: University of Nebraska-Lincoln

Dr. Atcitty leads the power electronics subprogram as part of the DOE Energy Storage Program and has gained international recognition for its state-of-the-art research and development under his leadership. Five of his projects have won the prestigious R&D 100 award from the Research & Development magazine. He researches how power electronics are necessary for energy storage and distribution! Power electronics is using electronics to convert or control electrical energy.

Fun Fact:
Contrary to popular belief, solar panels still work on cloudy days.

Beatriz Roldán Cuenya, PhD
Physicist


Image Credit: Fritz Haber Institute

Dr. Cuenya is a director at the Fritz Haber Institute, where she heads the Department of Interface Science. She studies microscopic materials and how they could help make better alternative energy sources. Dr. Cuenya has received multiple awards for her research in chemical energy conversion.

Did you know?
Energy can be transformed from one form to another. In lightning, electric potential energy transforms into light, heat and sound energy.

Zhong Lin Wang, PhD
Physicist

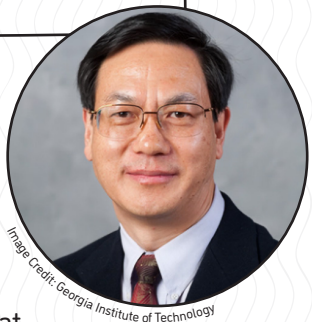
Image Credit: Georgia Institute of Technology

Dr. Wang is a physicist, materials scientist and engineer who specializes in nanotechnology and energy science.
He pioneered the field of piezotronics. Piezotronics uses the electric charge that builds up from pressure in some solid materials, called piezoelectricity.
This historical breakthrough has important applications in nanorobotics, human-electronics interface and sensors!

Interesting Fact:
Piezoelectric materials generate electric voltages when their shapes are changed.

Marcelle Soares-Santos, PhD
Physicist


Image Credit: Brandeis University

Dr. Soares-Santos is a member of the Dark Energy Survey (DES) Collaboration.
Her research focuses on uncovering the nature of the accelerated expansion of the Universe using data from the largest sky surveys ever conducted.
She had a leading role in the construction of the DES camera. She also leads a new effort in the field: the search for images of space ripples as a new method to study the future of dark energy.

Did you know?
Dark energy is believed to be the driving force behind the expansion of space.

Thomas Zacharia, PhD

Senior VP of Strategic Technology Partnerships and Public Policy at AMD

Image Credit: Oak Ridge National Labs

As the director of Oak Ridge National Lab (ORNL), Dr. Zacharia guided the application of solutions to compelling problems in science and technology, and the energy sector. He oversaw the operation of a high-power proton accelerator and a nuclear reactor and worked to showcase ORNL's strength in materials science, nuclear science, and engineering. Dr. Zacharia is now the Senior VP of Strategic Technology Partnerships and Public Policy at AMD (Advanced Micro Devices, Inc). He oversees relationships between companies and clients utilizing AI-powered products created by AMD.

Did you know?

The first solar powered satellite is still in orbit. Although it's no longer working, the first solar powered satellite is still orbiting the Earth today.

Caroline Winn

CEO of San Diego Gas & Electric (SDG&E)

Image Credit: San Diego Gas & Electric

Caroline Winn is the CEO for San Diego Gas & Electric (SDG&E). Caroline's team provides electricity, natural gas and value-added products and services. Winn is widely recognized for SDG&E's national leadership in sustainability, technology and innovation, including the company's significant safety and wildfire mitigation efforts. Caroline first joined this company as an engineer over 20 years ago, after earning her Bachelors of Electrical Engineering from California State University.

Did you know?

China is the world leader in wind energy and the United States is second.

Ugwem I. Eneyo, PhD

Co-Founder and CEO, SHYFT Power Solutions

Image Credit: Dab Conference

Dr. Eneyo co-founded SHYFT Power Solutions, an award-winning energy-tech company that is pioneering the use of software and big data to improve access to clean, reliable and affordable energy solutions in places that struggle with grid resiliency. Her studies explored how we use tech to create "grids of the future" for people in need!

Did you know?
We can get energy from trash and sewage.

Arcilia Acosta

President & CEO of CARCON

Image Credit: Communities Foundation of Texas

Arcilia Acosta is the president and CEO of CARCON Industries and Construction, a full- services construction firm, and she is also the founder and CEO of Southwestern Testing Laboratories, a geotechnical engineering and construction materials testing firm. Recently, Ms. Acosta was featured in Latino Leaders Magazine's TOP 20 Latinos in Energy issue. Ms. Acosta is a member of the National Women Energy Directors Network.

Did you know?
10 Google searches can power a 60-watt light bulb for almost 3 minutes!

Matthew N. Portis
Co-founder of SolGreen

Image Credit: AfroTech

Matthew Portis, an Akron, Ohio native, invented SolGreen, the first and only Black-owned and operated company that has invented, engineered and patented the first solar charging table or solar workstation, called the "Evodia Solar Workstation". Portis and his company invented this to meet the power and amenity needs of everyday people who are increasingly demanding of adequate seating, shelter and power to utilize cell phones, laptops, Wi-Fi, and lighting anytime and anywhere!

Did you know?
Solar energy produces no pollution when generating electricity!

FUN FACTS

WHY WE NEED DIVERSITY in STEM

STEM WORKFORCE

- 73% MALE
- 26% FEMALE

- 74% WHITE
- 7% ASIAN
- 19% ALASKA NATIVE, NATIVE AMERICAN and HAWAIIANS as well as multiple races

STEM JOBS are growing *FASTER* than any other U.S. sector

about ½ of the workforce in engineering & advanced manufacturing is approaching retirement, and the growth in the percentage of young workers is not keeping pace

WOMEN only account for **22%** of the labor force in the oil and gas sector.

BLACK WORKERS HOLD ONLY **9%** of the jobs in energy-related sectors.

among **POWER PLANT** operators

- 7% are women
- 92% are men

For more information on the Color of Science™ please visit:

cosi.org/colorofscience

#scienceisforeveryone

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to learn more about
The Color of Science™

COSI®
Center of Science and Industry