SOCIETY FOR APPLIED SPECTROSCOPY

JULY 2024 NEWSLETTER

Update Your SAS Member Profile Today!

Remember that piece in last month's newsletter that discussed the benefits of professional societies like the Society of Applied Spectroscopy (SAS)? One key benefit of SAS is you gain access to the searchable online membership directory. This directory provides you a direct line to other professionals who use the same techniques as you or who are based in your area. It allows you to connect with peers who can offer insights, advice, and solutions to your specific challenges. However, the directory to works only if it up to date. Therefore, we are asking that all members update their profile. It is a simple process that takes just a couple of minutes, but the rewards are significant!

To update your member profile, follow the steps below.

1. Go to www.s-a-s.org
2. On the right side of the page under Quick Links, click on ***Member Home***
3. Log in with your SAS information
4. Under “Hello my name is…” click on ***My Profile***
5. Click on ***Edit Profile***
6. Edit your profile information
7. Click ***Save Profile!***

Konnor Jones, Newsletter editor

Remembering Arthur Springsteen

Arthur William Springsteen, a distinguished figure in spectroscopy, passed away on 28 May, 2024. Renowned for his expertise in spectroscopic standards, particularly in fluorescence, reflectance, and transmittance, Springsteen was instrumental in advancing this complex field. His work included the development of the Spectralon Diffuse Reflectance Material product line and numerous optical coatings and fluorescent materials. He held multiple patents and received accolades like the Photonics Spectra New Product of the Year award.

Born on 30 October,1948, in Milford, Connecticut, Springsteen's early life was shaped by his father's Navy career, leading to relocations, including a stint in Guantanamo Bay. An avid athlete, he excelled in baseball and golf, earning a scholarship to Saint Francis University, where he majored in chemistry. He continued his studies, obtaining a Master's from Marshall University and a Ph.D. from West Virginia University.

Springsteen's career spanned academia and industry, including significant roles at Labsphere, Inc., and founding Avian Technologies, LLC. His scientific output included over 30 published papers and contributions to Spectroscopy magazine. He was actively involved in professional organizations and recently contributed to NASA's Mars 2020 Perseverance Rover project. A passionate golfer and baseball enthusiast, Springsteen's legacy in the scientific community is marked by his profound expertise, innovation, and commitment to excellence. He is remembered not only for his technical contributions but also for his loyalty, friendliness, and ethical nature.

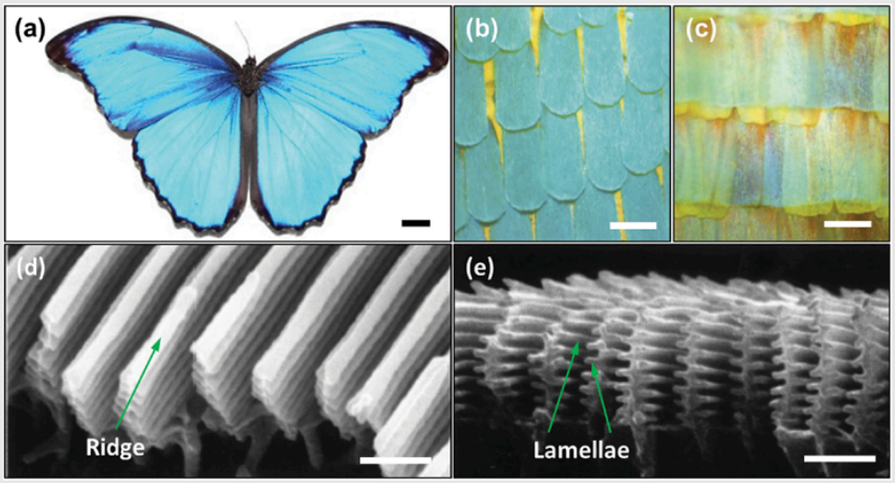
You can read more about Arthur here.

Jerome Workman

Flying spectrometers

Nature's color palette is rich and varied, relying on three primary sources: pigments, structural colors, and bioluminescence. Among these, structural color stands out. The mechanisms behind these colors are diverse, including film interference, diffraction grating, scattering, and photonic crystals.

In the heart of a tropical rainforest, where the air is thick with the symphony of nature, a flash of iridescent blue catches the eye. This dazzling spectacle belongs to the Morpho butterfly, a marvel of structural color and biological ingenuity. The Morpho butterfly's wings are not just colored but orchestrated. Unlike pigments that merely reflect light, the Morpho's blue is born from intricate microscopic structures on its scales. These structures manipulate light through multilayer interference, a process where light waves bounce off multiple layers and interfere with each other to produce vivid colors. In certain species, pigmentation enhances this effect, resulting in the butterfly's signature bright blue. It is tempting to suggest that a butterfly is a flying spectrometer.



Structure of the Morpho butterfly.
a) The Morpho butterfly. Scale bar = 1 cm.
b) The ordered arrangement of single layer of ground scales in the wing. Scale bar = 100 μm.
c) Two distinct types of scales.
d) Scanning electron microscope images of an oblique view of the male Morpho butterfly. Scale bar = 1 μm.
e) A cross-section of a ground scale of the male butterfly. Image from H. Butt, et al., Adv. Mater. 2016. 4: 497.

The Morpho butterfly's coloration is more than just beauty; it is a functional masterpiece. These colors can change through structural adjustments, aiding in camouflage, predation, communication, and mating. The iridescent blue of the Morpho, visible from great distances, plays a crucial role in mating displays and territorial signaling.

Beyond its role in nature, the Morpho butterfly has inspired scientific advancements. The unique properties of its wings hold potential for a variety of applications. Replicating the butterfly's wing structure could lead to innovations in optical sensing, imaging, and efficient photovoltaic devices. These bioinspired technologies aim to harness the butterfly's method of manipulating light, pushing the boundaries of what is possible in engineering and design.

In a world where color defines perception, the Morpho butterfly teaches us that beauty and function can intertwine in the most extraordinary ways. Its wings, delicate yet robust, not only captivate the eye but also spark the imagination, driving us to explore the endless possibilities that lie in the intersection of nature and technology.

Alejandro De La Cadena Perez Gallardo, Newsletter committee member

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Gloria Story, 2024 SAS President

Do you have something spectroscopy-related you want to discuss in the newsletter? Or something that will help our membership such as career tips or application tips? Please let us know by emailing **konnorkjones@gmail.com**