

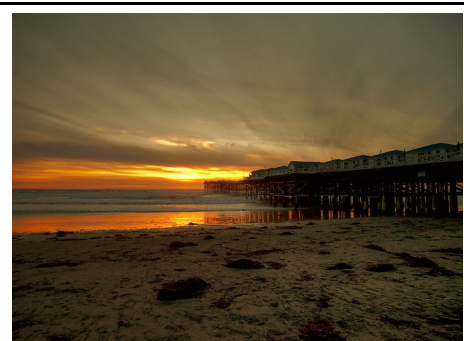
# ASP NEWS



Summer 2013

vol. 42(3)

## Dear ASP Members and Friends,



Sunset at the Crystal Pier (San Diego).

The summer council meeting was held in San Diego (site of the 2014 scientific meeting) on June 22 and

was very productive. I want to share some updates with you.

I hope that everyone had a chance to visit the American Society for Cell Biology's Declaration on Research Assessment website ([am.ascb.org/dora](http://am.ascb.org/dora)). We solicited your input about ASP being a signatory to the declaration and you gave an overwhelmingly positive response. I signed the declaration on behalf of ASP in July and I am aware that several of our ASP members signed as individuals. I believe that this is particularly important for societies such as ours who maintain a journal.

I want to make a special "Thank you" to **Alec Greer** and **Kim Samkoe** (co-chairs of the membership committee) and **Theo Theodossiou** (chair of the strategic planning committee) who have been working with me to develop joint membership agreements with the Photomedicine Society and the Inter-American Photochemical Society. We will send out a group email with details once everything is finalized.

**David Sliney** and I are attending the International Congress on Photosynthesis in St. Louis, MO next week ([pages.wustl.edu/ps2013](http://pages.wustl.edu/ps2013)). The ASP will have a booth in the Exhibitor's area

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where David will hand out membership information and talk to interested parties. We have also agreed to have flyers to promote the 16<sup>th</sup> International Congress on Photobiology which will be held in Cordoba, Argentina in the autumn of 2014. Finally, ASP is sponsoring the Carotenoids Symposium at the meeting.

If you haven't visited Photobiological Sciences Online lately, take a minute to go to the website ([www.photobiology.info](http://www.photobiology.info)). **Kendric Smith**, the webmaster, tells me that he has just posted a completely revised module on Bioluminescence by **Bruce Branchini**. The site is full of good resources.

I want to express my sincere appreciation to the council members who "retired" during the summer council meeting and welcome our new council members who began their terms during the council meeting. You can find a full listing of council members and committee membership on the website. I will be updating the committee memberships shortly.

**-Beth Gaillard, ASP President**

# Tests



Reprinted with permission from **Randall Monroe**, [www.xkcd.com](http://www.xkcd.com). Randall also added this note "In fact, one of the boxes is full of *Staphylococcus*, but the wrapping paper is coated in *E. coli*, so it's an understandable mistake."

## Newly Elected Councilors

**Nihal Ahmad**

**Frances Noonan**

**David Kessel**

**Yu-Ying He**

**Johnathan F. Lovell**

## Letter from the Editor

Are you getting ready for San Diego in 2014? The Chairs of the 37<sup>th</sup> Meeting of the ASP (**Tayyaba Hasan** and **David Mitchell**) have already been working on a line up of speakers, and a web site for the meeting should be up soon. The scheduled symposia include Light and Biology in Extreme Environments, Optogenetics, and Magnetic Fields and Photochemistry. There will also be many great networking events, including the ASP-ESP Symposium, and an NIH Grant Writing Workshop. And don't forget that San Diego is a great place to visit, with the beautiful Crystal Pier, Presidio Park, and enough breweries and brewpubs to thoroughly slake your thirst.

There is also time to register for the 15<sup>th</sup> Congress of the ESP, to be held from September 2-6, 2013 in Liège, Belgium. For more info, look at their website: [www.liege2013.photobiology.eu](http://www.liege2013.photobiology.eu). The organizers have scheduled symposia on Photodynamic Therapy, UV Damage to Biomolecules, DNA Repair, and many other topics. Liège itself is a beautiful ancient city in Wallonia that was founded in Roman times, and currently has clubs in *Le Carré* (the Square) that stay open all night.

Lastly, I would like to say *Adieu, Auf Wiedersehen, Adios, Sayonara, and Namaste* to all of you, because this is my last issue as editor of your Newsletter. I am particularly grateful to **Woody Hastings**, who brought me aboard in 2001. My best wishes for your future endeavors in photobiology.

## ASP News

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[www.photobiology.org](http://www.photobiology.org)

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# Notes on ASP History

## San Antonio 1991

### 19th Annual Meeting of ASP



Michelene Mathews-Roth addressing the ASP.

The Society gathered in San Antonio on June 22-26 for the 19th annual meeting, in good weather. San A can anticipate temperatures in the high 90s in June, or even in the 100s, but not this time. **John**

**Hearst** was Program Chair and **Mickey Mathews-Roth** was President. It all began with a 'School Lecture on Photochemistry of Nucleic acids (**Jean Cadet**). Hot topics were Photosynthesis, Photomedicine, Nucleic acid photochemistry and repair, and Techniques in Photophysics and Photochemistry. The Society President, Dr. Mathews-Roth delivered an address on Carotenoid Pigments on Tuesday and the Past President **Tom Coohill** assisted in handing out awards.



Tom Coohill handing out one of many awards.

The School Lectures began at 8 AM; no great struggle for those of us from the East where this corresponds to 10 AM, but perhaps more of an ordeal for the Californians and

perhaps even the Texans. I did note a dearth of participants from the West Coast on opening day, but they did tend to appear on subsequent mornings.

The Hilton is located on the Riverwalk, a collection of canals on which flat-bottom boats carry passengers around a collection of hotels, restaurants, shops, and eventually leading to an immense shopping center that has only expanded through the years. I recall seeing one session chair listening to a Central American band at that Center at 1:30 PM one afternoon and had to remind him that he was due back at the Hilton in 30 min to

open his session. The only other marginally adverse event occurred when the hotel management had to ask for less noise during one of the receptions. It was all handled tolerably well.

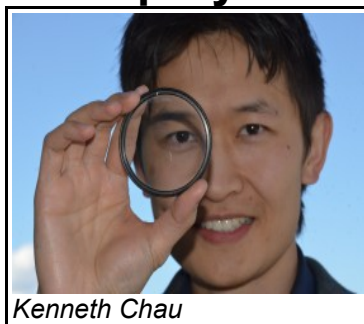


The Riverwalk in San Antonio.

The photographs show President Roth at the Business Meeting, discussing the State of the Society, Tom Coohill delivering an award, and some of the boats that navigate the Riverwalk.

-David Kessel, ASP Historian

## Engineer Helps Pioneer Flat Spray-on Optical Lens



Kenneth Chau

A team of researchers, including a University of British Columbia engineer, have made a breakthrough utilizing spray-on technology that

could revolutionize the way optical lenses are made and used.

**Kenneth Chau**, an assistant professor in the School of Engineering at UBC's Okanagan campus, worked with principal investigator **Henri Lezec** and colleagues **Ting Xu**, **Amit Agrawal**, and **Maxim Abashin** at the National Institute of Standards and Technology in Maryland on the development of a flat lens. Their work is published in the May 23 issue of the journal *Nature*.

Nearly all lenses – whether in an eye, a camera, or a microscope – are presently curved, which limits the aperture, or amount of light that enters.

“The idea of a flat lens goes way back to the



1960s when a Russian physicist came up with the theory,” Chau says. “The challenge is that there are no naturally occurring materials to make that type of flat lens. Through trial and error, and years of research, we have come up with a fairly simple recipe for a spray-on material that can act as that flat lens.”

Xu T, Agrawal A, Abashin M, Chau KJ, Lezec HJ (2013) All-angle negative refraction and active flat lensing of ultraviolet light. *Nature*. 497, 470–474.

The research team has developed a substance that can be affixed to surfaces like a glass slide and turn them into flat lenses for ultraviolet light imaging of small objects like biological specimens.

“Curved lenses always have a limited aperture,” he explains. “With a flat lens, suddenly you can make lenses with an arbitrary aperture size – perhaps as big as a football field.”

While the spray-on, flat lens represents a significant advancement in technology, it is only an important first step, Chau says.

“This is the closest validation we have of the original flat lens theory,” he says. “The recipe, now that we’ve got it working, is simple and cost-effective. Our next step is to extrapolate this technique further, explore the effect to the fullest, and advance it as far as we can take it.”

The technology could change the way imaging devices like cameras and scanners are designed.

-reprinted with permission from Patty Wellborn (University of British Columbia)

## Dual-action Compound Kills Cancer Cells, Stops Them from Spreading

Scientists are reporting development and successful lab tests on the first potential drug to pack a lethal one-two punch against melanoma skin cancer cells. Hit number one destroys cells in the main tumor, and the second hit blocks the spread of the cancer to other sites in the body, according to their report in the journal *ACS Chemical Biology*.

Vummidi BR, Noreen F, Alzeer J, Moelling K, Luedtke NW (2013) Photodynamic Agents with Anti-metastatic Activities. *ACS Chem Biol* May 28. PMID: 23672401

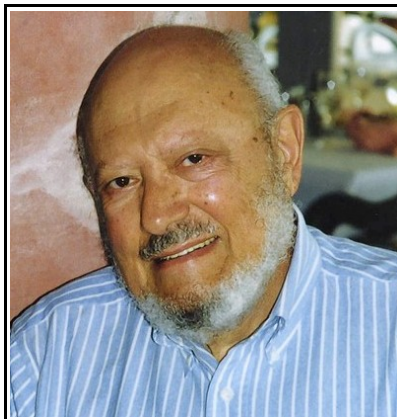
**Nathan Luedtke** and colleagues explain that the spread of melanoma and other forms of cancer beyond the original location (metastasis) makes melanoma such a serious disease. Photodynamic therapy (PDT), which involves administering a drug that kills cancer cells when exposed to light, already is available. But PDT works only on the main tumor and has other drawbacks. Luedtke’s team set out to find an improved approach to PDT.

The scientists describe successful tests in laboratory mice of one compound that they synthesized. This agent not only killed melanoma cells, but also stopped them from metastasizing by blocking a key signal inside the tumor cells. The compound “provides the first example of a preclinical candidate possessing both of these properties,” the scientists state.

-reprinted with permission from Michael Woods (American Chemical Society)

## Howard H. Seliger, RIP

Former ASP President Died on Dec 20, 2012



Howard Seliger, an expert on bioluminescence, a retired professor at Johns Hopkins University, and a former ASP President (1980-1981), died on December 20,

2012 at the age of 88.

Below, we have reprinted an excerpted version of an article about Dr. Seliger that was originally published in the *The Johns Hopkins Gazette* in 1998. The complete text is also available on the Johns Hopkins web site: [jhu.edu/~gazette/janmar98/jan1298/12selig.html](http://jhu.edu/~gazette/janmar98/jan1298/12selig.html)

As a boy growing up in a poor family on the Lower East Side of Manhattan during the 1930s, Howard Seliger looked forward to summer camp in rural New Jersey. The free camp, operated by a private settlement house, offered city kids their first exposure to nature. "I saw fireflies and I was fascinated by them," recalls Seliger. Many years later, he would revisit his boyhood fancy for fireflies. After establishing himself as a nuclear physicist, Seliger took his career in an entirely new direction. He came to Johns Hopkins in 1958 for a one-year Guggenheim Fellowship to study bioluminescence. He never left.

In addition to his ongoing research, Seliger teaches a freshman seminar called "Light and Life", he presents a series of lectures about bioluminescence in an advanced biochemistry course, and he offers a course in radiobiology. But his Johns Hopkins career began as a temporary experiment. As a Guggenheim fellow, Seliger joined a group of scientists headed by William McElroy, a biochemist who was an expert on bioluminescence and chairman of the Biology Department from 1956 to 1969.

Since those early days at Hopkins, his research interests have extended from physics to oceanography, ecology, and the origins of the first forms of life. Seliger's training as a physicist enabled him to analyze the fundamental workings of bioluminescence. Using spectroscopy, he probed the living light shows displayed by various species of fireflies and



*Photinus pyralis*

microscopic aquatic algae called phytoplankton. The team of Hopkins scientists studied many of the roughly 200 species of fireflies in Jamaica and Maryland. Scientists had known that fireflies recognize members of their own species by the pattern in which they flash light. What appears to the human eye as one long flash is actually a series of very rapid signals emitted in a specific pattern characteristic of only one species.

Amid the seemingly random flashing of numerous fireflies on a summer evening, individual males and females of the same species are actually using a sort of Morse code to signal each other. So Seliger built an instrument he called a "firefly gun," which measured the firefly flash patterns as they occur in nature. "The reason to develop this firefly gun was that if you capture a firefly and put it in a bottle, it will be nervous and it won't emit its natural flash patterns," he says. The scientists used the gun in the field to identify the flash patterns of certain species. Then they captured the insects, identified them and brought them back to the laboratory, where they could conduct detailed experiments on their bioluminescence.

Their spectral analyses led to the surprising revelation that different species of fireflies emit their own specific colors. But that finding puzzled scientists; if certain insect species only recognize each other by their respective flash patterns, why should it matter what color light they emit? Seliger's research revealed the answer. Depending on the environment and time of day in which a firefly comes out, certain colors will be easier to see. Over the course of evolution, the insects developed their own hues of bioluminescence, optimizing their sensitivity to detect one another's flashes. "We could actually look at a firefly's bioluminescence and tell you what time of day it became active," he says.

In the work for which he is perhaps best known, Seliger's firefly research helped other scientists harness bioluminescent molecules to identify key sections of DNA for genetic studies. He also used such fluorescent molecules to probe carcinogenic compounds in cigarette smoke. He was able to see which potentially carcinogenic compounds became most dangerous by measuring the low-intensity light produced as the compounds reacted with enzymes inside cells.

When he shall die,  
Take him and cut him out in little stars,  
And he will make the face of heaven so fine  
That all the world will be in love with night  
And pay no worship to the garish sun.

**William Shakespeare, *Romeo and Juliet***

# Photobiology Events



## Aug 11-16, 2013

16<sup>th</sup> International Congress on Photosynthesis  
St. Louis, MO (USA)  
Web site: [www.ps16stlouis.wustl.edu](http://www.ps16stlouis.wustl.edu)

## Sept 1-4, 2013

Plants for a Greening Economy  
Porto Heli, Peloponnese (Greece)  
Web site: [www.epsoweb.org/7th-epso-conference-1-4-september-2013-greece](http://www.epsoweb.org/7th-epso-conference-1-4-september-2013-greece)

## Sep 2-6, 2013

ESP 2013  
Liège (Belgium)  
Web site: [www.liege2013.photobiology.eu](http://www.liege2013.photobiology.eu)

## Sep 8-12, 2013

IEEE Photonics Conference (IPC) 2013  
Seattle, WA (USA)  
Web site: [www.ipc-ieee.org](http://www.ipc-ieee.org)

## Sep 11-15, 2013

ICPPTO  
Wuhan, China  
Web site: [ictpo2013.hzau.edu.cn](http://ictpo2013.hzau.edu.cn)

## Nov 10-13, 2013

6<sup>th</sup> Asia and Oceania Conference on  
Photobiology  
Sydney (Australia)  
Web site: [www.aocp2013.org.au](http://www.aocp2013.org.au)

## Dec 4-7, 2013

Plant Genomes & Biotechnology: From Genes to  
Networks  
Cold Spring Harbor, NY (USA)  
Web site:  
[meetings.cshl.edu/meetings/2013/plants13.shtml](http://meetings.cshl.edu/meetings/2013/plants13.shtml)

## Feb 6-9, 2014

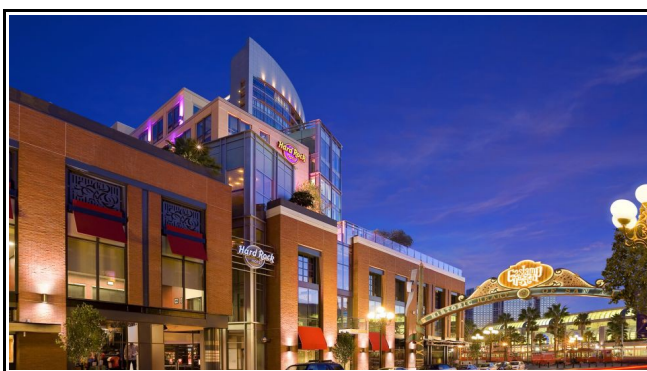
Molecules and Materials for Artificial  
Photosynthesis  
Cancun, Quintana Roo (Mexico)  
Web site: [www.fusion-conferences.com/conference6.php](http://www.fusion-conferences.com/conference6.php)

## Apr 14-17, 2014

SPIE Photonics Europe 2014  
Brussels, Belgium  
Web site: [www.spie.org/x12290.xml](http://www.spie.org/x12290.xml)

## Apr 15-17, 2014

NIWA UV Workshop  
Auckland, New Zealand  
Web site: [www.niwa.co.nz/atmosphere/uv-ozone/uv-science-workshops/2014-uv-workshop](http://www.niwa.co.nz/atmosphere/uv-ozone/uv-science-workshops/2014-uv-workshop)



## June 14-18, 2014 ASP Biennial Meeting Hard Rock Hotel, San Diego CA

## Aug 10-14, 2014

22<sup>nd</sup> IUPAC International Conference on Physical  
Organic Chemistry  
Ottawa (Canada)  
Web site:  
[events.science.uottawa.ca/icpoc22/welcome.html](http://events.science.uottawa.ca/icpoc22/welcome.html)

## Sep 8-12, 2014

16<sup>th</sup> International Congress on Photobiology  
Universidad Nacional de Cordoba (Argentina)  
Web site: [www.photobiology2014.com.ar](http://www.photobiology2014.com.ar)

## Other Event Calendars

SPIE Events: [spie.org/x1375.xml](http://spie.org/x1375.xml)  
Plant Biology Events: [aspb.org/calendar](http://aspb.org/calendar)  
Chemistry Events: [www.chemistry.org](http://www.chemistry.org)  
Gordon Research Conferences: [www.grc.org](http://www.grc.org)  
Nature Events Directory:  
[www.nature.com/natureevents/science](http://www.nature.com/natureevents/science)





# ESP2013

15th Congress of the  
European Society for Photobiology  
September 2 - 6, 2013  
Palais des Congrès, Liège (Belgium)

[www.liege2013.photobiology.eu](http://www.liege2013.photobiology.eu)

Chairs: Evelyne Sage (ESP President), Jacques Piette (Local Chair)

## MAIN TOPICS

- Photodynamic therapy, from photochemistry and photophysics to drug delivery and nanotechnologies
- Environmental and antimicrobial applications of photosensitised processes
- UV damage to biomolecules



- DNA repair – skin cancer
- UV and melanoma
- Photoresponses in skin cells



- UVR sources and VitD

- Photoimmunology
- Photoprotection
- Photomedicine



- Optogenetics
- Visual pigments
- Circadian rhythms
- Photoreceptors in plant and microorganisms
- UV and climate change on plants
- Ultrafast photochemistry, photophysics and spectroscopy
- High resolution fluorescent imaging
- Solar energy, fuel for the future



**Please circulate**

*Posters  
Symposia  
Plenary lectures  
Keynote lectures  
Young Investigator Award lecture*





# 37<sup>th</sup> Meeting of The American Society for Photobiology (ASP 2014)

[www.photobiology.org](http://www.photobiology.org)



June 14–19, 2014

Hard Rock Hotel, San Diego, California

Chairs:



**Tayyaba Hasan**

Massachusetts General Hospital  
Harvard Medical School

**David Mitchell**

U of Texas MD Anderson  
Cancer Center



## ***Topics include***

Light and Biology in Extreme Environments  
Magnetic Field Effects and Photochemistry  
Artificial Tanning: Risks and Benefits  
Enabling Photobiology in the Dark  
UVA, Sunscreens, and Melanoma  
DNA Damage and Repair  
Optomechanical Effects  
Stem Cell Photobiology  
Photodynamic Therapy  
Nanotechnology  
Optogenetics

## ***Networking Events***

Mentoring Lunch  
ASP-ESP Symposium  
Posters, Prizes, Reception  
NIH Grant Writing Workshop  
Associate Member Travel Awards  
Banquet, Entertainment, and Awards

***Enjoy San Diego Attractions,  
the Famous San Diego Zoo, and SeaWorld***



# American Society for Photobiology



*Lux et Vita* since 1972

The American Society for Photobiology promotes research in photobiology, integration of different photobiology disciplines, dissemination of photobiology knowledge, and provides information on photobiological aspects of national and international issues.

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## Membership type:

\$45/yr Associate Member (student/post-doc; online access to *Photochem Photobiol*)

\$120/yr Member (online access to *Photochem Photobiol*)

\$228/2-yrs Member (online access to *Photochem Photobiol*)

\$160/yr Member (printed version and online access to *Photochem Photobiol*)

\$308/2-yrs Member (printed version and online access to *Photochem Photobiol*)

\$40/yr Emeritus (printed version and online access to *Photochem Photobiol*)

\$0/yr Emeritus (online access to *Photochem Photobiol*)

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