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Community

Female power in visual and physiological optics: both EOS student awards go to women

Recognizing the best student presentations held at the 6th EOS Topical Meeting on Visual and Physiological Optics (EMVPO 2012) in Dublin, Ireland, the conference chair Brian Vohnsen from University College Dublin (IE) presented the Springer Awards for Students to two junior female researchers – a notable exception in a male-dominated field.

EMVPO 2012 Student Oral Presentation Award
Zuzanna Blaszczak, Cambridge University, Cambridge (UK)
'Light focusing by photoreceptor cell nuclei'

The inverted retina of vertebrates poses an interesting challenge from an optical point of view. But it also surprises with remarkable solutions. The author presented the lens-like behavior of rod nuclei of nocturnal animals. This behavior is an evolutionary advantage that helps incident light propagate through the thick outer nuclear layer.

Photoreceptor cell nuclei in the retina show species specific chromatin distributions. Specifically, nocturnal animals invert the conventional nuclear architecture in their rods. Inversion of nuclear architecture leads to a change in refractive index distribution. It is reasonable to suspect that this has an effect on optical properties of the nucleus. The author showed experimentally using wide field microscopy and through computer simulations that this difference in nuclear architecture does indeed have a pronounced effect on light transmission properties of the nuclei. Inverted nuclei of nocturnal animals were found to act like converging lenses able to effectively focus light and reduce lateral scatter. Conventional nuclei found in diurnal animals showed reduced focusing ability, with an effective focal length twice that of inverted nuclei and a near field light distribution more reminiscent of diffraction from a slit.

EMVPO 2012 Student Poster Presentation Award
Kaiva Luse, University of Latvia, Riga (LV)
'Printed test plates for color discrimination threshold determination'

Color deficiency tests are widely used to diagnose type and severity of color vision deficiencies. Among the most frequently used are pseudoisochromatic test plates. For best efficiency of color vision deficiency diagnosis, correct color representation is essential. Previous studies have shown that printing technology impacts color display accuracy of the test plates, resulting in a wide distribution of color coordinates along the desired points on the confusion lines in CIE color space diagrams.

The aim of the research is to study availability of different color print technologies (three layer photographic process, tint printing) for creation of color vision test plates, for an accurate diagnosis and grading of color vision anomaly.

EOS Conferences at the World of Photonics Congress 2013

For many years, EOS has been one of the partners organizing the World of Photonics Congress (WoP Congress 2013) which is held in conjunction with LASER: World of Photonics, the international trade fair for optical technologies including components, systems, and applications. During next year's congress, EOS will again be covering two conference topics: Manufacturing of Optical Components (EOSMOC 2013) and Optofluidics (EOSOF 2013).

EOSMOC 2013 will once more highlight significant technology trends, emerging technologies, and associated prospective developments. All aspects of optics fabrication and testing, ranging from micro to large-scale optics and from high value one-off to mass produced components will be of interest for the third conference.

The topics to be addressed will be:

- High-volume manufacturing of optical components.
- Latest advances in freeform optics.
- Micro-optics and structured surfaces.
- Precise optics fabrication.
- Testing for fabrication and assembly.

In 2011, the first EOSOF conference was a great success with participation from leaders in the optofluidics community from around the world. This second conference will build on that momentum, involving experts from industrial and academic research sectors, and explore the latest developments in the field of optofluidics, while addressing specific application areas, such as reconfigurable photonics, energy applications of optofluidics, novel display technologies, and biomedical optofluidics.

Submissions are encouraged in the following areas:

- Photonic actuation of microfluidics.
- Optofluidic drug delivery.
- High resolution in-chip lensless microscopy.
- Optical and photonic tweezers.
- Optofluidic lenses and solar collectors.
- Microfluidic lasers.
- Fluid-fluid waveguides and microfluidically tuned optical fibers.
- High sensitivity biomolecular sensor platforms.
- Fluid displays and paper.
- Optofluidic photobioreactors and photocatalytic reactors.
- Optofluidic water purification.
- Upscaling optofluidic technology.

The call for papers is available on the EOS website. The submission deadline for both conferences is 16 January, 2013.

For more information, please visit: www.myeos.org.