

# IET Travel Award 2022 – Report

## “Connecting minds” at SPIE Photonics West 2023



Victor Ochoa-Gutierrez

University of Glasgow

Last January, as an IET International Travel Grant Winner, I travelled to San Francisco, California, USA, from January 28<sup>th</sup> to February 2<sup>nd</sup>, to attend the most important conference in the field of optics: SPIE Photonics West 2023. At this meeting, I engaged with leaders in the life sciences domain, including regulatory bodies, entrepreneurs, system integrators and academics who showcased and shared their knowledge, ideas, most recent products, and latest research results. The following report highlights my experience of the event, which has a high potential to reshape our future.

The meeting took place in two sections. First, the BiOS conference and trade show (Jan. 28-29) hosted many plenary sessions with experts on routes to improve methods and on new discoveries in optics and biophotonics. This section provided me the opportunity to present my latest scientific results that involves optics and biomedical applications. Second, the SPIE Photonics West industry trade show (Jan. 31 – Feb. 2) provided a forum for photonics companies showcasing demonstrators and tests of their latest components and systems. I am always excited and energised when others share their experiences in the field; this event lived up to my expectations.

Biomedical devices are key tools for diagnostic and healthcare decision making. In November 2020, during the Covid-19 pandemic, the Federal Drug Administration (FDA) of the USA made an official announcement that pulse oximeters were not accurate on people of colour, leading to a problem in biomedical devices that use light and optoelectronics. Science and technology are in continuous evolution, which allows the opportunity to improve this type of biomedical devices. With participation at Photonics West 2023, I showcased a new technique and initial results that together are a step towards a progressive solution. I presented a section from my PhD studies and research in the UK in the conference “Design and Quality for Biomedical Technologies XVII”, as part of the session “Oximetry: Effects of Skin Pigmentation”. The presentation, entitled “Comparison of pulse oximetry measurements between high and low skin pigmentation”, co-authored with Selene Guerrero-Zuñiga, Julien Reboud, Mauro Pazmino-Betancourth, Andrew R. Harvey and Jonathan M. Cooper, presented to stakeholders my contributions to these developments. I presented alongside renowned, including scientists at the FDA. This was a milestone in my scientific and entrepreneurial career, which was recorded and is now available online: <https://doi.org/10.1117/12.2651059/> I will always remember that there was a queue for questions.

An important event for me was “Black in Photonics Meetup: network and celebrate the people of colour in our community”, where I finally met face to face Dr. Muyinatu Bell and Dr. Jess Wade where it was raised the importance of people of colour in optics and their contributions to science and technology. The conference organisers hosted a large series of programs for under-represented groups in STEM, including people of colour.

During the industry exhibition, I had a positive, constant and vibrant participation with SPIE members, industry representatives and academics around the world by having informal conversations. I shared ideas during the multiple networking events, thus being able to increase my connections by all possible opportunity to move forward the principles and approaches of non-invasive biomedical devices. I reached main companies in the industry, regulatory agency, including, but not limited to, Hamamatsu, Ocean Insight, the FDA, and SPIE Industry program managers for future entrepreneurial competitions.

In conclusion, I shared my most recent research results from my PhD with the experts in the field and FDA attendees which encompasses with the current problem in pulse oximetry technology after combining multidisciplinary approaches establish by optics and engineering. I made a contribution to positive change in the mind-set in academia and industry towards inclusivity in research. I contributed to debates on the best way to reframe how oximetry should be perform and evaluated.

The access to this award has been a tremendous opportunity for me as an early career researcher. It provides the support to share the most recent research results among global experts in top scientific conferences and extend networking opportunities for possible future collaborations. Attending and taking part of Photonics West 2023 was an amazing and memorable occasion, it helped me to re-connect and make new global connections. I am so grateful for the IET International Travel Grant! Thank you IET!!



