

ICO - International Commission for Optics

Activities' Report - Year 2019

Delegate: Paolo De Natale

1. Introduction

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2. Main activities carried on by ICO during 2019 relevant for Italy and for CNR

Among the most important events, the 2019 ICTP Winter College was on “Applications of Optics and Photonics in Food Science”. The aim of the Winter College is to offer Ph.D. students and other emerging researchers broad training in the innovative applications of optics and photonics in food and agriculture. Deriving impact through research, development and entrepreneurship in this sector will be explored.

Improving food, from production to processing, is one of the most important and successful contributions of modern optical and photonic innovations. Optical sensing and spectroscopy discoveries have provided huge advances in all areas, from identifying nutritional components, to uncovering contamination by adulterants and pathogens. Tailored light and light-based technologies also are used to better grow plants, purify water, kill pathogens, hatch eggs, and sort sperm and oocytes for herd control. The keen interest in photonics for food and agriculture is global and rapidly growing – a future with smart optics and photonics will succeed in feeding the world's people sustainably. In addition to lectures, there have been tutorials and hands-on activities.

Italy and CNR were represented also in the Board of Directors:

Directors: Sarun Sumriddetchkajorn (NECTEC, Thailand), Anna Grazia Mignani (IFAC-CNR, Italy), Cather Simpson (U. Auckland, New Zealand); Local Organiser: Joseph Niemela.

Another very significant event was the 2019 International Day of Light, an official UNESCO event. It was celebrated at ICTP in Trieste. ICO was involved in the opening session for a welcome given by Roberta Ramponi (CNR director of IFN) as ICO President.

3. Activities carried on by Italian delegate within the Union during 2019 and impact on the Italian scientific community

It is several years ICO is working towards acquiring the status of Union, and the Italian delegate (PDN) has taken part since the beginning to this debate, crucial for ICO future.

In 2019, ICO contacted the governance of ISC (International Science Council) and that to move forward to become a Union, and thus a full Member of ISC (with voting rights).

After these contacts, the conclusion was that ICO will cooperate on actions related to the physical aspects of optics and photonics (e.g. event organization, outreach activities, actions to promote gender balance, etc.) whilst maintaining the present IUPAP prize in Optics.

In parallel, discussion on the future configuration of ICO as Union is going to be started internally. Preliminary contacts were established with the International Commission on Illumination (CIE) and ICO representatives were invited to their annual symposium. ICO will probably define a list of main topics that could correspond to an equivalent number of future commissions thus providing a structure to the future Union. This list could include general scientific and technical topics (e.g. Physics, Engineering, Material Science) as well as application oriented topics (e.g. Life science, Cultural Heritage, Lighting, Environment, Industrial production)

4. Evaluation of the participation in terms of benefits and membership cost

There are many truly international activities and the Italian (and CNR) contributions is always significant, providing a world-wide audience. Italy and CNR are represented in ICO at the maximum level, being the CNR colleague Prof. Roberta Ramponi ICO President.

5. Evaluation of Italians' attendance and how to improve interest and involvement

As explained above, Italian scientists are already co-organizing key events, like the ICTP Winter College in Optics. Organizing ICO-related events more often in Italy could improve interest and, probably, involvement at all levels.

6. Italian experts with important roles within the Union or within related Commissions and Programs (if known)

Roberta Ramponi (Roberta.ramponi@cnr.it) – ICO President

Paolo De Natale

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