

## International Year of Light 2015 – Interview with IYL Global Secretariat Global Coordinator Prof. Niemela

The International Year of Light and Light-Based Technologies (IYL2015) was a global event in 2015 to increase the public interest and knowledge regarding optical technologies and research. Prof. Joe Niemela<sup>1</sup> is the Global Coordinator from the IYL Secretariat and was responsible for the coordination of all activities.

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**JUnQ:** In 2013, the UN proclaimed 2015 as the International Year of Light (IYL2015). What were the reasons for this decision?

**Niemela:** The UN realized the potential for increasing the quality of life in both developing and developed countries through advances in light technologies, and considering the general consensus that this would be recognized as the “century of photonics”, made the correct decision that raising awareness of the potential of light technology was both timely and important.

**JUnQ:** What were the main goals of the IYL2015? If you now look back on 2015, have the goals been achieved?

**Niemela:** The main goals were, in fact, to raise awareness of the potential of light-based sciences in addressing societal challenges in a number of areas including energy, lighting, climate change, etc., and to promote at the same time education, women’s empowerment in science, and sustainable development. Another goal was to bridge science and society. Looking back on 2015, most of these goals were achieved to an extent that we feel is convincing and impressive. Through our network of national committees we ran several thousand events, organized contests, went to schools to talk with students, and more. The key role that art and philosophy, light design and architecture played in the International Year brought a natural connection between scientific and non-scientific members of communities around the globe.

**JUnQ:** Who was/is responsible for organization and promotion of IYL2015 events?

**Niemela:** Most of the organization and promotion of the IYL2015 events happened from the bottom up, namely from the national and regional committees. Global themes were also organized and promoted by the IYL Steering Committee, including founding partners and UNESCO, but really, the emphasis was on empowering local nodes to work within their own communities. This was invaluable in building the bridges between science and society on a local level where it matters most. The Secretariat at the ICTP in

Trieste took care of the organizational tasks associated with running the Year at all the global level and coordinating actions taking place regionally around the world.

**JUnQ:** Browsing through your site, it seems you went all out to make it a global celebration of light. Did you find it difficult to disseminate the importance of this message, say in nations from Africa or some other parts of the world where science is still catching up?

**Niemela:** Certainly, in parts of the world where resources are scarce, it is more difficult to achieve the numbers and level of activities we see in economically advanced countries. While the underlying technologies are universal, specific focus and implementation is often a matter of local needs. For instance in Sweden the concern in illumination might be with smart, tunable and integrated lighting systems in schools and offices, while in the poorest villages in Africa, typically off the electricity grid, the same concern may be with replacing kerosene lamps with modern and energy efficient solid state lighting powered by small affordable solar collectors in individual homes. Both depend on the advances in LEDs that led to the 2014 Nobel Prize in Physics.

**JUnQ:** Have any of the multitudes of events in your calendar led to some new and exciting developments? Between society and research/academia or some sustainable collaboration, as regards light-driven technologies, between developing nations and industry?

**Niemela:** The events that have been held this year have brought people together that normally do not mix, for instance between scientists doing fundamental research and Vatican scholars in ‘Fiat Lux’ held at the Ateneo Pontificio in Rome this year. Or with panel discussions in Lund, Sweden, that brought scientists doing basic research and lighting engineers together with politicians, this has helped motivate a pilot project in smart lighting in one of the local schools. Photonics21, held in Brussels, is a natural meeting place between politicians, industry and academia. Other large conferences, like SPIE’s Photonics West in the US help to form bridges between research and development in

industry and in academia. In fact, even though the IYL2015 started out primarily among academics, many of the special talks connecting light sciences and development have been invitations extended by large industrial events.

**JUnQ:** For planning the events, did you distinguish between fundamental and applied science?

**Niemela:** Most events have some mix of fundamental and applied science but with a particular emphasis on one or the other. The nice thing about the International Year was that we could bring diverse groups together often. There were many artistic events, and one of the nice surprises this year was the wonderful interaction between scientists and South African light artist Marcus Neustetter at the ICTP/IYL2015 event at Fort Hare University (alma mater of Nelson Mandela) in the Eastern Cape in September. There was a real communication that occurred between people speaking very different ‘languages’.

**JUnQ:** What types of events did take place and which were the most successful ones? Is it easier to reach your audience with a topic from the field of fundamental or from applied science?

**Niemela:** It is difficult to say which events were the most successful – in terms of audience numbers there is no question that applied science events reached the largest crowds, but this is not the only measure of success. For instance, teacher training programs like the Active Learning in Optics and Photonics (ALOP) workshops reach only 30 teachers at a time but the multiplier effect can be huge as they teach their students who teach others and so on. Then there are events in which science and society come closer together. One measure of success was simply that we could measure it in so many diverse ways this year.

**JUnQ:** Public participation always factors into a successful event. How have you ensured that the events cater to the general populace as well? Also how has been the public perception to all the activities planned by IYL2015?

**Niemela:** This has been a good year in terms of public involvement – from photo contests, art displays, illumination of buildings, science café style events, public lectures at science museums, etc. We have given particular emphasis to public engagement. We have striven from the beginning

to “talk to people we normally do not talk to”, in other words to bring the fascination of light and light-based technologies to non-scientists.

**JUnQ:** Why is communication of science to the general public so important?

**Niemela:** It is extremely important for us to communicate science to the general public and to politicians for that matter. The problem is that scientists are in general not very good at it. There is no real difference between science and society even though we may talk about building bridges between them. Science is part of society and the bridges are in our own minds, to help us develop a broader vision about how we fit together and are all working together to shape the human condition. When we speak about societal challenges like energy and climate change, science alone cannot solve them. Poets and philosophers also play an indispensable role, as do people from all walks of life, because any solutions we come up should act to improve the quality of life and science by itself is neutral on that matter – the same technology that can destroy civilization can also save it. Besides this, we have become a society of specialists and there is no doubt that being able to translate into words the excitement of new discoveries– both to our fellow colleagues in other areas of science but also to non-scientists– brings a sense of joy and community.

**JUnQ:** If you look to the future: Are there any items on the agenda that will continue in 2016? Are there already plans for a next IYL or something similar?

**Niemela:** There are a number of activities that will continue as legacy actions. One of those concerns the “training of trainers” in the optical sciences in the least developed countries. We also will keep the effort up in finding ways to promote the migration of academics to industry and especially the reverse process, which is unfortunately exceedingly difficult in many industrialized countries. Given the broad applicability of light, and the fact that we are entering into a so-called “century of photonics”, there is no doubt that we will see more international years where light technologies play a key role.

**JUnQ:** Thank you very much for the interview!

—Jennifer Heidrich