



## 2015 WORLD PHOTONICS FORUM

*Lighting Up the Future*

Annual Symposium of the  
**Fitzpatrick Institute for Photonics**  
Duke University, Durham, NC 27708, USA  
March 9-10, 2015

### Background

On 20 December 2013, The United Nations (UN) General Assembly 68th Session proclaimed 2015 as **THE INTERNATIONAL YEAR OF LIGHT (IYL 2015)**. Supported by 100 partners from more than 85 countries, the “*International Year of Light is a global initiative highlighting to the citizens of the world the importance of light and light-based technologies in their lives, for their futures, and for the development of society*” [<http://www.light2015.org/Home.html>].

The significance and impact of *photonics*, the science and technology involving interactions between light and matter, was underlined more than a decade ago in a 1998 report on “*Harnessing Light: Optical Science and Engineering for the 21st Century*” from the National Research Council of the U.S. National Academy of Sciences (NAS), which concluded that photonics will be a fundamental enabling technology for next-generation developments in science, technology, and medicine. In 2013 the U.S. NAS Committee released a follow-up landmark report discussing the current state of optical sciences and goals for the future: *Optics & Photonics: Essential Technologies for Our Nation*. The new NAS study has identified the technological and economic opportunities that photonics has enabled, evaluated important trends in market needs, discussed areas where progress in photonics innovation has translated into economic benefits, and made recommendations for future research and policies that are intended to advance the optics and photonics discipline.

### Forum on Light-Based Technologies and their Global Societal Impacts

We are witnessing a very exciting period in the history of photonic science because there is an epochal convergence of many revolutions from the 20th century, such as the quantum revolution, the technology revolution and the genomics revolution. Riding on the crest of this convergence, light-based technologies influence our lives today in new ways that we could never have imagined just a decade ago. As we move into the next century, light will play an even more significant role, triggering a revolution in global photonic communications linking our entire planet, creating nanoscale biosensors to unveil the inner world of the human cell, developing cost-effective medical cures for global health, inventing new energy sources, and galvanizing human exploration at the frontiers of the universe.

On the forefront of the IYL2015 celebration, the main goal of the 2015 World Photonics Forum (WPF) is to provide a platform for international researchers in science, technology, art, and the humanities, and global leaders in management, policy and industry to discuss the challenges, contribution and potential of photonics-related activities and technologies in the next century. These distinguished guests will provide their views, discuss and anticipate how *photonics will play a critical role by contributing key revolutionary and breakthrough technologies, and how these critical enabling technologies are at the heart of the scientific convergence that will define research progress in the 21st century*. The WPF will include several panels on critical and strategic topics of photonics:

- (a) Fundamental Breakthroughs in Light-based Science Technology (basic research and applied technologies, convergence the *New Light Age* where photons replace electrons, etc.)
- (b) Light-based Technologies and Societal Impact and Human Development (education, arts, humanities, happiness, entertainment industries, next-generation global transportation, etc.)
- (c) Light-based Technologies on Global Economic Development (global health, global interconnectivity, renewable energies, the reshaping of geopolitics and global economics, etc.)