



**INTERNATIONAL
YEAR OF LIGHT
2015**



NNV session during Physics@Veldhoven 2015

Date: 20 January 2015

Title: Light and lighting for society

Chair of the session: Johan Klootwijk (Philips Research)

Abstracts

The United Nations has proclaimed 2015 the International Year of Light and Light-based Technologies. The NNV considers it a great opportunity to highlight this proclamation at Physics@Veldhoven with a focus session devoted to the importance of light and lighting for societies and our daily life. Light has become a significant tool in industrial applications; lighting is vital for societies and economies in particular those of developing countries and is integrated in the design of smart cities and infrastructures; the cycle of light and darkness influences our biological clock. These aspects will be highlighted by three speakers from academia and industry. Ample room will be available for discussion.

Title: Lighting for developing societies

Speaker: Nick Kelso, Philips

Nick Kelso will present how the Philips Africa Innovation Hub develops innovative applications for the African market. In particular, he will present in more detail two examples: the innovative LifeLight range solar-lamps for consumers and the Community Life Centre, a modular solution for large-scale lighting based on solar energy. Business models required to successfully market these products will be presented.

Title: Intelligent lighting

Speaker: Emile Aarts, Intelligent Lighting Institute, Technical University Eindhoven

Over the past centuries mankind has created extensive artificial environments in which we live, work, rest, and recreate. Many of these environments have contributed to our social wellbeing, but along the way we lost the use of natural (day)light, thus falling short on the beneficial qualities that can go with it. It is our vision that by using digital LED technology we can re-create the world's view on natural light in all domains of our daily life, such as healthcare, well-being, safety, and sustainability. This vision drives the research programs of the Intelligent Lighting Institute (ILI) of the Eindhoven University of Technology. The ILI programs relate to Light for Health and Wellbeing, Outdoor lighting, Light Interaction, and Extreme Lighting Experiences. ILI investigates intelligent lighting solutions with a scientific and application-based

approach towards all human-centric aspects of light and lighting. We apply a multidisciplinary and multifunctional approach that is concept driven and evidence based and that applies human centric real-life test beds. The presentation will review recent work of the Intelligent Lighting Institute addressing all relevant aspects our human-centric approach. Special emphasis will be put on the challenges that we have come across while working in a multi-stakeholder setting, e.g., in healthcare institutions, university campuses, and cities.

Title: Application of light in industry: optical lithography

Speaker: Jos Benschop, AMSL, NNV leerstoel Industriële Natuurkunde, Twente University

Moore's Law dictates that every 18 months the number of transistors on an integrated chip doubles. This is first and foremost enabled by optical lithography printing ever smaller transistors on an integrated circuit by a combination of wavelength transitions and increased numerical aperture. The latest transition from 193nm wavelength (Ar laser) immersion lithography to 13.5nm EUV lithography brings unprecedented challenges to source and optics. After a short introduction on IC's and optical lithography, past present and future of optical lithography will be discussed.

Panel discussion about the importance of light and lighting for society

Chair of the panel discussion: Kobus Kuipers, Amolf, Chair International Year of Light 2015 NL

Speakers will form the panel.

Practical information:

Focus session F07 NNV session: light and lighting for society

Date: Tuesday, 20 January 2015

Time: 11:10-13:10

Room: 63-64

For information on Physics@FOMVeldhoven 2015:

<http://www.fom.nl/live/agenda/physicsatFOM/information.pag>