Photonic technologies are very important and everywhere!

www.day-of-photonics.org
Photon originates from the Greek language, *phōt* = light.

- Lasers
- Lenses
- Mirrors
- Optics
- Fibers

*Photonics involves the creation, use, and modification of light.*
Far-reaching photonics

Photonics permeates almost every sphere of science and society. International Innovation highlights some of the broad applications of photonics technology.

THE POWER OF LIGHT: defining photonics

Photonics is the technology of using, producing or modifying light. This includes light emission, transmission, detection, amplification and detection by lasers and other light sources, optical components and instruments, fibre optics, electro-optical instrumentation, related hardware and electronics, and sophisticated systems.

Photons use photons—the fundamental particles of light—in the same way that electricity uses electrons, and is likely to be as important for technological development in the 21st Century as electricity was in the 20th Century. The range of photonics applications extends from energy generation to communications and information processing.

AGRICULTURE
- Photons can accelerate or slow the growth of tomatoes depending on market demand
- The wavelength of light can be tuned to modify the taste of vegetables

PHOTOVOLTAIC
- Photovoltaic film coating ordinary windows can convert them into solar panels
- Camels with solar-paneling can carry medicines across the desert while keeping it refrigerated

RESEARCH
- Specially shaped, high purity glass in telescopes can enable us to look into Space at distances up to 50 billion light years
- Photons can be used to transmit data through fibre optics, providing super-fast internet access

COMMUNICATION
- A laser can cut many materials very precisely including metal, plastic, textiles and paper
- 3D printing can add layers of melted material to create any shape

INDUSTRY AND MANUFACTURING
- Fibre optics and lasers can be used to detect cancer, and for operations and endoscopy
- Laser eye surgery can eliminate the need for glasses or contact lenses
- A smartphone app can measure a heartbeat from a finger placed in front of the camera

DAY OF PHOTONICS:
21 October 2014

The European Photonics Industry Consortium is coordinating a ‘Day of Photonics’ to promote and encourage the photonics industry through educational and informative events.

The European Photonics Industry Consortium (EPIC) have chosen 21 October as the day to celebrate photonics as it is the date that, in 1963, the General Conference of Weights and Measures adopted the value of 9,192,631,770 seconds for the speed of light. On the anniversary of the occasion, EPIC and its members will host Europe-wide events that encompass numerous demonstrations of the impact of photonics on day-to-day lives. They will involve outreach activities to the general public, public authorities, students, investors and other stakeholders. The events will communicate the pervasiveness and importance of photonics applications and illustrate why the EU classified photonics as a ‘key enabling technology’. They will also stress why public authorities will benefit from supporting this emerging industry for Europe’s growth and competitiveness.

European Photonics Industry Consortium

EPIC promotes the sustainable development of organisations working in the field of photonics in Europe. The consortium’s members encompass the entire value chain from LED lighting, photovoltaic solar energy, photonics integrated circuits, optical components, lasers, sensors, imaging, displays, projectors, fibre optics and other photonics-related technologies. EPIC fosters a vibrant photonics ecosystem by maintaining a strong network and acting as a catalyst and facilitator for technological and commercial advancement.

www.day-of-photonics.org
Some examples of applications ...
• Display and miniature projectors (GPS, television, cinema), cameras
• Telecommunication (internet) optical fiber communications
• Did you know: Light travels 10 times the speed that electricity does, internet data transmitted photonically can travel long distances in a fraction of the time.
Entertainment

• Light shows in parties and monuments decorative lighting
• Consumer electronics, displays in smart phone, CD and DVD
• Did you know: Thin and flexible displays could be incorporated into your magazine!
• Photovoltaic solar panels transform light into electricity and provides power in remote areas.
• Fibers are used for sensing in the oil & gas industry.
• Energy efficient lighting (LED).
• Did you know: You can shoot a laser beam to a solar cell on a flying drone to recharge it!
Transport (cars, trains, planes)

- Manufacturing includes laser systems used in welding, cutting, marking
- Sensors, heads-up display, lighting
- Did you know: Laser head-light on a car can reach as far as 600 meters!
• Analysis of bacteria and life-science applications
• Imaging of cancerous tumour cells
• Laser eye surgery, tattoo removal, endoscopy, health monitoring
• Did you know: Sensors can analyze sugar levels in the blood through the skin!
Lasers can cut, weld, and mark many materials such as plastic, textile, metal
3D printing involves lasers
Cameras are used for machine vision inspection
Did you know: A high-power laser is capable of cutting through 8 centimeters of steel!
Security, defense, rescue

- Night vision devices, mine laying and detection, photonic gyroscopes, chemical detection
- Textiles with displays for firemen and carpets in hotels in case of fire
- Did you know: It is possible to identify at a distance if a driver has been drinking alcohol!
Agriculture

• Soil analysis, crop analysis
• In-door farming, controling vegetable speed growth and influence raspberry taste with light
• Did you know: Drones mounted with a camera can analyse the soil for precision agriculture!
• Laser imaging techniques are used for the detection of forgeries
• LED technology reduces UV and IR, is more energy efficient, and improves colour rendering
• Did you know: The Sistine Chapel uses latest LED illumination systems developed for art.
2015 INTERNATIONAL YEAR OF LIGHT AND LIGHT-BASED TECHNOLOGIES

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www.light2015.org

EVENT CALENDAR

Opening Ceremony - 19-20 January 2015
Women In Science
Study After Sunset
IYL2015 Photo Contest

Aug 12. 8th International Conference on Photonics and Applications
Da Nang City, Vietnam

Aug 17. SPIE Optics & Photonics
San Diego, United States

Sep 1. 2nd International Symposium on Optics and its Applications
Yerevan-Ashtarak, Armenia