



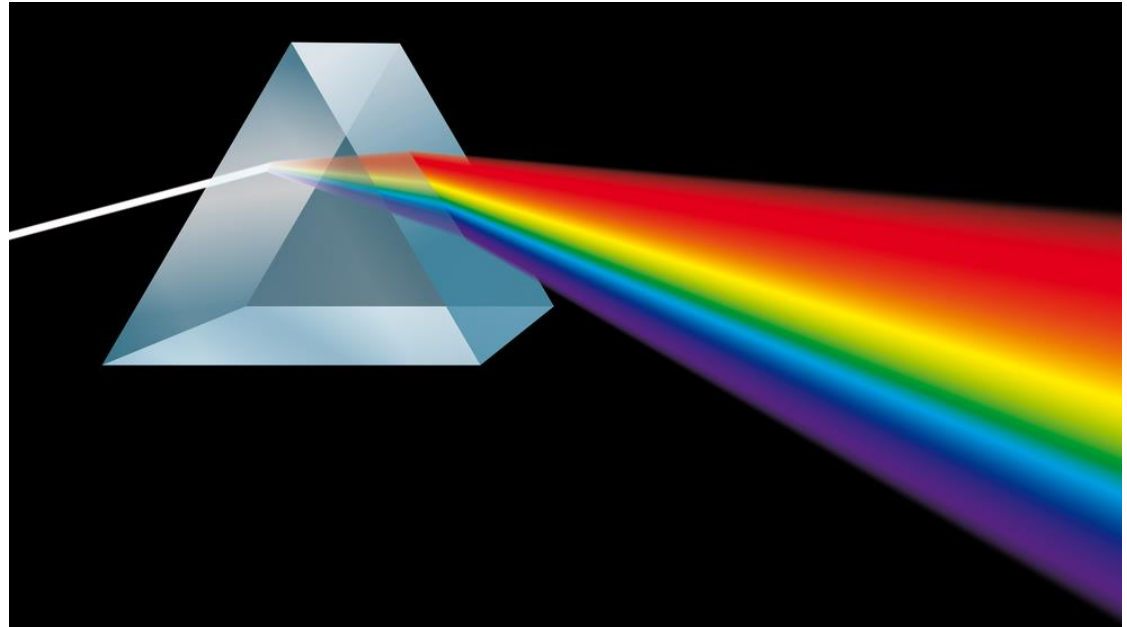
DAY OF
PHOTONICS
21 OCTOBER 2014

www.day-of-photonics.org

***Photonic technologies are very
important and everywhere!***

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, deflection, 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.

Photonics uses 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.

HEALTH



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

AGRICULTURE



Photonics can accelerate or slow down 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-panelling 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

COMMUNICATION



Photonics can be used to transmit data through fibre optics, providing super-fast internet access

INDUSTRY AND MANUFACTURING



A laser can cut many materials very precisely including metal, plastic, textile and paper. This technology is used in many industrial activities from car manufacturing to producing small components for luxury watches



3D printing can add layers of melted material to create any shape. A laser melts and deposit metal or harden powder. It is very useful for prototyping in industry

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 1983, the General Conference of Weights and Measures adopted the value of 299,792,458 km/s 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 EC 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 photonic-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.



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Some examples of applications ...



Communication



- 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!*

Energy



- 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)



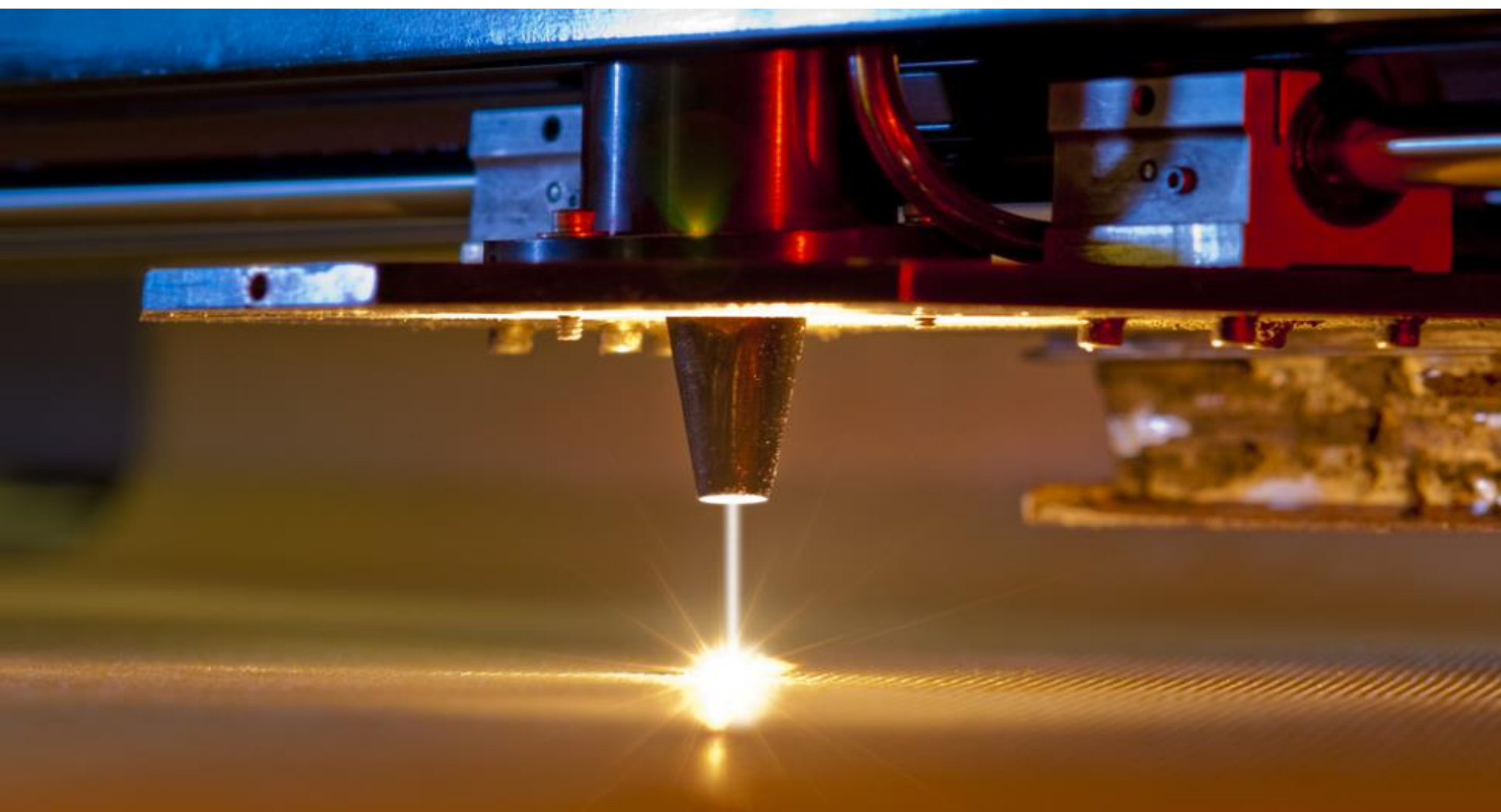
- Manufacturing includes laser systems used in welding, cutting, marking
- Sensors, heads-up display, lighting
- *Did you know: Laser head-light on a car can reach as far as 600 meters!*

Health



- 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!*

Manufacturing



- 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, controlling vegetable speed growth and influence raspberry taste with light
- *Did you know: Drones mounted with a camera can analyse the soil for precision agriculture!*

Arts



- 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.*