



Published on *Horizon 2020* (<https://ec.europa.eu/programmes/horizon2020>)

Photonics

Photonics is the science and technology of light. It deals with generating, guiding, manipulating, amplifying and detecting light.



More than meets the eye

Photonics is behind many innovations which have helped to transform our lives in the last few years. Lasers, optical fibres, cameras in our phones, LED lighting in our cars, homes, computer screens & TVs are just a few examples of how photonics has changed technology and affected our daily lives. As a result of the potential photonics has to enhance innovation across several industries, it is included in Europe's Key Enabling Technologies (KETs) of the 21st Century.

Europe's position

Europe's photonics industry is strong (e.g. in laser-based manufacturing, medical photonics, sensing, lighting) and has the possibility to exploit new emerging market opportunities.

For example, medical photonics research and innovation is leading towards the development of easy to use, low cost screening methods that can be carried out at a general doctors premises or even at home. These photonic point of care technologies can provide a risk assessment of age and life-style related diseases within a few minutes.

Another example of photonics technology is the development of Light emitting diodes (LED) originally used as back lighting in car displays, traffic lights and TV displays but now finding their way into street lights and general light bulbs in the home. A European multinational company has just launched, April 2015, an LED light bulb in the U.S. which costs \$5 but with an overall energy efficiency of 30 %, six times that of the old recently phased out incandescent lamps and the LED lamp also lasts ten times longer at 10,000 hours . General lighting accounts for a significant share of worldwide energy consumption at over 2600 TWh or 19% of electricity production in 2006 so the very significant energy efficiency and lifetime gains of LEDs will contribute to a significant reduction in energy demands.

Source URL: <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/photonics>