PHOTONICS AS AN INDUSTRY SECTOR

Within a few decades, the term photonics has developed from a technical term, used in research, to an industry term that encompasses all technical applications of light.

- **Photonic** (German)
- **Fotónica** (Spanish)
- **Фотоника** (Russian)
- **Photonique** (French)
- **フォトニクス** (Japanese)
- **光子学** (Chinese)
- **Fotonica** (Italian)
- **Fotônica** (Portuguese)
- **포토닉스** (Korean)
- **Photonics** (English)

From the 1960s:
- Photons are researched as an alternative to electrons for circuitry tasks. The term Photonics is coined in connection with this.
- Invention of the laser

Leading US industry magazine changes its name from Optical Spectra to Photonics Spectra

Within a few decades, the term photonics has developed from a technical term, used in research, to an industry term that encompasses all technical applications of light.

1960
- Photons are researched as an alternative to electrons for circuitry tasks. The term Photonics is coined in connection with this.

1965
- Foundation of the European photonics community Photonics21
- European Commission defines photonics as key technology

1970
- French Photonique
- Spanish Fotónica
- Chinese 光电
- Italian Fotonica
- Korean 광전기학
- German Photonik
- English Photonics

1975
- In the context of the high-tech strategy for Germany, photonics replaces the term of “optical technologies” which had been used so far

1980
- Leading German industry magazine changes its name from LaserOpto to Photonik

1985
- Foundation of the American National Photonics Initiative to promote photonics in the US

1990
- Public Private Partnership between European Commission and European photonics industry

1995
- Photonics21 Roadmap as strategy for European photonics in the years 2014-2020
Photonics is a global industry today. This graphic shows the strongest market segments in each region.

**Global market share in the market segment**
(information in %)
To emphasize regional strengths, only market shares of more than 10% are shown.

**Market segments**
- production technology
- image processing & metrology
- security & defense technology
Photonics is a global industry today. This graphic shows the strongest market segments in each region.

**Market segments:**
- Medical technology & life science
- Information technology
- Communication technology
- Displays
- Light sources
- Photovoltaics

**Regional market shares:**
- To emphasize regional strengths, only market shares of more than 10% are shown.

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Nobel laureates with a connection to photonics since the invention of the laser in 1960

**NUMBER OF LAUREATES**
by country at the time of the award ceremony

- Charles H. Townes (US)
- Nicolay G. Basov (SU)
- Aleksandr M. Prokhorov (SU)
- quantum electronics for the construction of the maser and laser
- Alfred Kastler (FR)
- optical pumping
- Dennis Gabor (GB)
- holography
- Nicolaas Bloembergen (US)
- Arthur L. Schawlow (US)
- laser spectroscopy
- Ernst Ruska (DE)
- electron microscope
- Steven Chu (US)
- Claude Cohen-Tannoudji (FR)
- William D. Phillips (US)
- cooling and capturing of atoms with laser beams
- Roy Jay Glauber (US)
- quantum optics
- Charles Kuen Kao (GB)
- communication via glass fibers
- Willard Boyle (US)
- George Elwood Smith (US)
- CCD Sensors
- Sergei Haroche (FR)
- David J. Wineland (US)
- quantum optics, laser cooling and frequency standards
- Isamu Akasaki (JP)
- Hiroshi Amano (JP)
- Shuji Nakamura (US)
- blue LEDs
- Eric Betzig (US)
- William E. Moerner (US)
- Stefan W. Hell (DE)
- super-resolved fluorescence microscopy

**RESEARCH & ECONOMY**

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Norway (NO)
Japan (JP)
Germany (DE)
France (FR)
Great Britain (GB)
Russia (RU)
United States (US)

**Nobel laureates with award-winning research projects**

- Alfred Kastler (FR)
- optical pumping
- Dennis Gabor (GB)
- holography
- Charles H. Townes (US)
- Nicolay G. Basov (SU)
- Aleksandr M. Prokhorov (SU)
- quantum electronics for the construction of the maser and laser
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The highest density of photonics professionals are found in Europe and East Asia.
PHOTONICS SCHOOLS

Business-oriented social media reveal where photonics-savvy professionals got their education.

A selection of great places to study photonics

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ECONOMIC IMPACT OF PHOTONICS

Data suggests that there were approximately 2.32 million jobs in photonics in 2015.


Photonics marketplace from components to enabled services

Market by country share of market in %

18 Japan
18 Korea
17 USA
16 Taiwan
15 Europe
12 China
4 other