



WHITE PAPER

PHOTONICS

SWITZERLAND

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Swissmem Fachgruppe Photonics

Projektleitung

Swissmem Fachgruppe Photonics

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Goals

- Information and sensibilisation on photonics as a "key enabling technology" to foster :
 - the further development of existing expertise and technologies to the benefit of industry
 - exploitation of the above-average growth potential of photonics technologies
 - strengthening of Switzerland as a production location for industry
 - innovation - mainly in SMEs
 - creation of best conditions for photonic-based companies to keep-up with international competitors

Photonics...

- controlling light
- interfacing to other parts (eg. electrical or mechanical) of complex systems("machines")
- is a "key enabling technology"
- is part of virtually every modern machine
- has yet to be established as a discipline (in university-level teaching)
- *is a very old technology :-)*

Photonics is a very old discipline...



Light source
(arrives collimated
to the Earth)

Scanning and
focussing unit

Materials
processing target



Intelligent
control system

Syracuse, Sicily sieged by the Romans
(214 BC) .

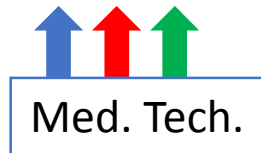
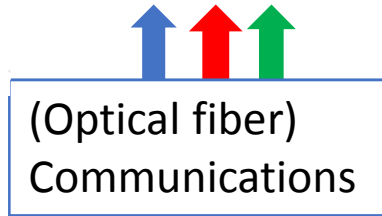
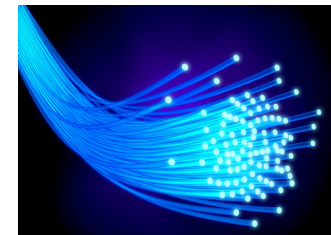
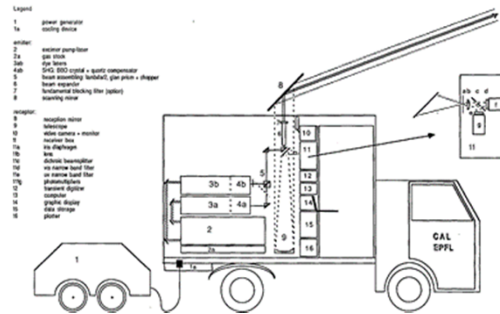
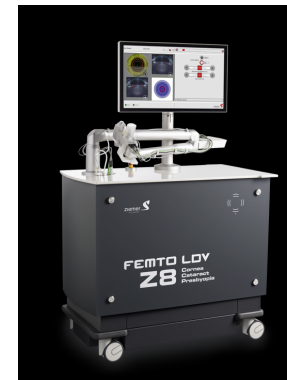
Archimedes inflamed their ships with
sunlight reflected and directed by
curved shields.

Photonics is a very modern discipline...

2000	Schores Aljorow	Optoelektronik
	Herbert Kroemer	
	Jack Kilby	Entwicklung des integrierten Schaltkreises
2005	Roy Jay Glauber	optical coherence
	John Lewis Hall	opt. Spektroskopie, Frequenzkamm
	Theodor Hänsch	
2009	Charles Kuen Kao	opt. Glasfaser
	Willard Boyle	„für die Erfindung des CCD-Sensors“
	George Elwood Smith	
2010	Andre Geim	Graphen
	Konstantin Novoselov	
2012	Serge Haroche	Manipulation von Quantensystemen
	David Wineland	
2014	Isamu Akasaki	Blaue dioden
	Hiroshi Amano	
	Shuji Nakamura	
2018	Arthur Ashkin	Laserphysik
	Gérard Mourou	
	Donna Strickland	

2018





Photonics

El. Engineering

Mech. Engineering

Intermediate results

- White Paper has been presented to the Bundesrat. As a consequence photonics has been included in the "Impulse Program on Digitalization" starting 2019.
- More on that and building of consortia at the Swissphotonics Workshop on

**Photonics in Industrial Production
Burgdorf, BFH, November 28, 2018**

(after the General Assembly)