



Member of



# Photonics at the University of Eastern Finland: Five Decades of Shining Light – 1970-2020

**Future is Made in Finland, Episode III: Join the revolution of light and image, October 28, 2020**

*Professor Jyrki Saarinen, Head of the Institute of Photonics, UEF*

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# Why photonics – the science and technology of light?

- Key enabling science and technology of the 21st century
- Flagship position with leading impact for global challenges and Finnish economy
- Highest number of photonics companies per capita in Europe
- Photonics Survey in Finland (2020) – expected growth:
  - Revenue +29,0% per year
  - Personnel +31,2% per year





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|               |                             |               |
|---------------|-----------------------------|---------------|
| <b>15,500</b> | <b>15,400</b>               | <b>2,500</b>  |
| STUDENTS      | ADULT EDUCATION<br>STUDENTS | STAFF MEMBERS |

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**13**  
FIELDS OF STUDY

**300**  
*In top 300 in several  
discipline-specific  
international rankings*

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combines photonics  
research at

- Department of Physics and Mathematics
- Department of Chemistry
- School of Computing
- Department of Environmental and Biological Sciences
- Department of Applied Physics
- SIB Labs

# From 1970's to 2020



- Holography
- Holographic interferometry
- Optical materials



- 3D printed optics
- Biological and environmental applications of photonics
- Nanocarbon photonics
- Fundamental properties of light (electromagnetic coherence and polarization theories, and light-matter interaction)
- Integrated optics
- Micro-optics and nano photonics
- Optical imaging (medical)
- Optical materials
- Spectral color research

# Staff

Headcount 117

- 20 professors & research directors
- 12 adjunct and emeritus professors
- 9 visiting professors and postdocs
- 21 senior scientists
- 51 junior scientists
- 4 admin

+ ca. 60 MSc students

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|                              |  |
|------------------------------|--|
| <b>Bednarik</b> , Roman      | Medical technologies                         |
| <b>Friberg</b> , Ari T.      | Optical physics                              |
| <b>Hakala</b> , Tommi        | Nano-optics                                  |
| <b>Hauta-Kasari</b> , Markku | Computational spectral imaging               |
| <b>Keinänen</b> , Markku     | Biophotonics                                 |
| <b>Koshevoy</b> , Igor       | Inorganic and organometallic chemistry       |
| <b>Kuittinen</b> , Markku    | Micro- and nanophotonics                     |
| <b>Kuzhir</b> , Polina       | THz optoelectronics                          |
| <b>Linnolahti</b> , Mikko    | Computational chemistry                      |
| <b>Obraztsov</b> , Alexander | Material sciences                            |
| <b>Oksanen</b> , Elina       | Plant biology and biotechnology              |
| <b>Roussey</b> , Matthieu    | Experimental photonics                       |
| <b>Saarinen</b> , Jarkko J.  | Nanoparticle chemistry                       |
| <b>Saarinen</b> , Jyrki      | Photonics applications and commercialization |
| <b>Setälä</b> , Tero         | Electromagnetic coherence                    |
| <b>Suvanto</b> , Mika        | Materials chemistry                          |
| <b>Svirko</b> , Yuri         | Nonlinear optics                             |
| <b>Tarvainen</b> , Tarja     | Biomedical optical imaging                   |
| <b>Turunen</b> , Jari        | Fundamental photonics                        |
| <b>Vahimaa</b> , Pasi        | Micro-optics and nanophotonics               |



[Check virtual tour in UEF's cleanroom facilities](#)



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# MSc education

- International Master's Degree Programme in Photonics, est. 2010
  - [www.uef.fi/masterphotonics](http://www.uef.fi/masterphotonics)
- Erasmus+ Master's Degree Programmes:
  - Photonics for Security, Reliability and Safety, PSRS
  - Computational Color and Spectral Imaging, COSI
  - (between Europe and Japan) Imaging and Light in Extended Reality, IMLEX
- Erasmus+ Programme – Mobility agreement
  - Friedrich-Schiller Universität Jena
- Double degree programme:
  - ITMO, St. Petersburg, Russia <http://en.ifmo.ru/>



FRIEDRICH-SCHILLER-  
UNIVERSITÄT  
JENA



# PhD education

- included in the Doctoral Programme in Science, Technology and Computing (SCITECO)
  - <http://www3.uef.fi/en/web/dpsciteco>
- Double degree with Beijing Institute of Technology, China
  - <http://english.bit.edu.cn/>
- 7-10 PhDs in photonics annually





# Statistics of MSc and PhD graduates



Over half of MSc's  
continue to PhD  
studies



20% of MSc's already  
working in industry  
60% of PhD's



40% of foreign  
MSc's stayed in  
Finland  
60% of PhD's

# Ecosystem on photonics



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HyacinthLux Oy Vlabor Photonics Oy

# UEF // PHOTONICS

Light for the Benefit of Mankind



[uef.fi/photonics](https://uef.fi/photonics)

