

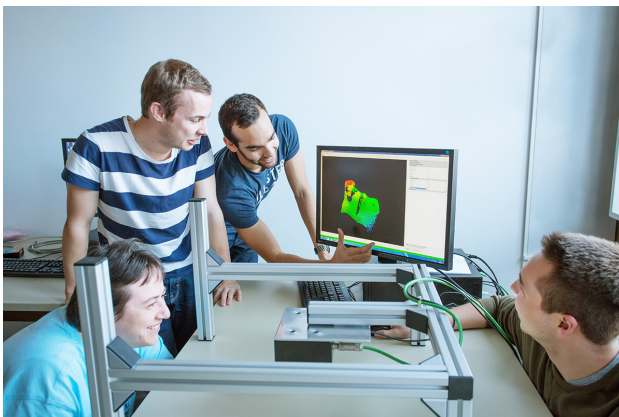
English translation of our article in the «Bündner Woche», July 31, 2019, p. 25

Research in Graubünden

Photonics - What is it?

How light particles inspire technological progress

Light-based technologies are used in many everyday objects. Nevertheless, the underlying science, photonics, is largely unknown to most people. Hannes Merbold, Professor of Optoelectronics and Head of Research at the Institute of Photonics and ICT at the HTW Chur, explains what is meant by the “study of light particles”: “Photonics is a branch of physics that deals with the generation, recognition and manipulation of light. In photonic devices, such as the laser scanner at the supermarket checkout, the information is carried by light particles. The smartphone even contains an entire zoo of photonic components. These include the LED torch, a camera, face and fingerprint recognition, and the display.”



Photonics Studierende der HTW Chur experimentieren mit einem Streifenlichtprojektaufbau zur optischen Vermessung von 3D-Oberflächenformen. Bild: HTW Chur

The Swiss photonics industry generated a turnover of four billion Swiss francs in 2017. The annual growth rate is between six and eight percent. The region between Bonaduz and Lake Constance is considered the center of the Swiss photonics industry and is also known as Photonics Valley. In order to meet the great demand for qualified engineers, the HTW Chur launched the Photonics Bachelor's degree course in autumn 2016, the only one of its kind in Switzerland. Students learn the basics of optics, laser technology and optical measurement and sensor technology, as well as mathematics, physics, electronics and construction.

The practice-oriented curriculum enables direct interaction with companies. “More than thirty-five industrial partners support our program of study, for example with excursions, lecturers, lecturers as part of lecture series and suggestions for topics for bachelor's or semester theses,” explains Merbold. Accordingly, the career opportunities are excellent: “On our notice board, the job offers hang on top of each other,” Merbold is pleased to report. Student numbers are developing well, nonetheless he is committed to getting schoolchildren enthusiastic about mathematics, computer science, natural sciences and technology (MINT*) at an early age. The HTW Chur participates in the MINT Academy, an initiative of the technology companies Hamilton and O8Eins, in the field of natural sciences. Since 2018, the weekly support program has been offering primary school students between the ages of nine and twelve a playful approach to MINT subjects. “We see a lot of potential in girls in particular and hope to increase the proportion of women among both students and lecturers in the medium to long term,” emphasizes Merbold.

The next event in the Wissenschaftscafé Graubünden series will focus on training in STEM subjects. What should it look like in order to meet the challenges of the future? “STEM - Fit for a World in Transition” (MINT - Fit für die Zukunft”), Thursday, 29.08.2019, 19.30 to 21.00, KaffeeKlatsch am Platz, Davos. Language: German.

* The English term for MINT subjects is STEM (Science, Technology, Engineering, and Mathematics).

The Expert



Hannes Merbold

In 2017 Hannes Merbold realized both his dreams of living in the mountains and an academic career. Since then he has been Professor of Optoelectronics and Head of Research at the Institute of Photonics and ICT at HTW Chur. Prior to this, the native German developed optical sensors for the technology company ABB, for which he partly worked in Silicon Valley. He studied physics in Freiburg (D), Sydney, and Copenhagen and completed his doctoral thesis at the Institute of Physics at the University of Bern in 2011. Please direct your questions on this topic to the experts at info@graduateschool.ch by August 7.

Bachelor Photonics: www.htwchur.ch/photonics

MINT Academy: www.mint-academy.ch

Wissenschaftscafé: www.academiaractica.ch/veranstaltungen

Find out more about research in Graubünden: www.academiaractica.ch, www.graduateschool.ch.

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