

Activities of the Swissphotonics National Fiber Lab for 2014 / 2015

The activity of SNFL is centered towards coordinating and incentivating the activities of the 5 partner Labs to improve and open their offer towards industry.

The only industrial fiber production tower in Switzerland owned by Silitec SA was definitively closed in the course of the passed year. This has dramatically influenced the basis for common application oriented projects in the field of optical fibers. The technology for producing fibers with claddings derived from granulated silica has been transferred to Nextrom Rosendahl (a company that is part of the Knill group). However the ability to draw optical fibers in Switzerland has been preserved by maintaining two drawing towers in academia for fiber prototypes: one at EPFL for drawing fibers from low melting glasses up to 600°C resp. up to 1200°C, the other one at the University of Bern for drawing standard and microstructured fibers at up to 2000°C.

BUAS and UniBE (Romano/Ryser) have invested in the improvement of the capstan and fiber winding unit to improve the drawing stability to better match standards with their silica fibers. This part of the work has been completed. At present they are working on improving the x-y positioning and coating unit of the tower. This work will be completed by the end of January 2016. It is financed by the Canton Bern through the annual investment Budget of the Applied Fiber Technology (AFT) group at BUAS (Prof. Romano).

In a common CTI project (CTI 17133.1) BUAS and IAP are improving their ability to produce complex fiber preforms by the granulated silica method.

Another common CTI project (17956.2) is being started; its goal is to bring a pulsed fiber laser emitting in the yellow wavelength range to industrial maturity for ophthalmology.

Both groups are working on enhancing their equipment for fiber handling and characterisation to better serve the industrial community. A 2D one-shot CCD camera based index imaging apparatus has reached calibration phase; a scanning version with higher precision (10⁻⁴) is already functional.

To determine the losses of active fibers non-destructively an ultrashort pulsed high resolution variant of the OTDR measurement principle has been realized.

Work carried out for companies in the fiber field amounts to 180kFr. for these 2 groups. It includes the companies Kinegram, Econimo Drive AG, and a company in the EU.

We support companies by offering them our technical capabilities and equipment as long as it is not offered commercially by other companies. We have about 6 requests per year.

EPFL-GFO (Luc Thevenaz). Activity report can be found on: <http://gfo.epfl.ch/>

EPFL-FIMAP (Fabien Sorin): Activity report can be found on: <http://fimap.epfl.ch/>

NTB (Markus Michler):

CTI projects acquired during the last 12 months in the field of optical fibers;

NTB we are currently working on the WaveMux project, where we design, fabricate and characterize single mode polymer waveguides switches for routing applications. The goal of the project is to realize an integrated optical switch for camera switching applications (Neutrik AG, vario-optics ag).

A new project in the field of fiber/waveguide optics is currently discussed with Huber+Suhner → CTI project planned for beginning of 2016.

Project work carried out for companies (names are not necessarily needed);

CTI-innovation cheque: some smaller work was done for EMC Electronic Media Communication SA in Ticino. We were doing a feasibility study (KomPass) for the realization of an integrated or hybrid (fiber lens system) waveguide splitter for WDM applications in FTTH (fiber to the home) TV applications. The work was just finished – a further project was not yet discussed.

Support of SME's (e.g. : consulting or access to own equipment)

For the demonstration of a new fiber connector concept, we supported an industrial partner with our fiber splicer equipment. It was not used for splicing, but for fiber end face modification. By applying the arc of the splicer to the fiber facet, the sharp edges after cleaving could be smoothed for easy insertion of the fiber in a special ferrule system.

SNFL will organize its yearly Swissphotonics workshop in Burgdorf on November 17. It will address High Brightness lightsources for future applications and put the focus on the opportunities for Swiss photonic companies.