KRISTER FRÖJDH

EMPLOYMENT HISTORY

PROXIMION AB

Jan 2013-current: VP R&D, project manager, and engineer. Leading the R&D into the new business area of optical sensing. Managing an R&D group of eight to ten people in optics, software, mechanics, electronics, and IT. Currently, three of these have a Ph.D. Additionally, acting as a project manager, systems architect, and software developer.

PROXIMION FIBER SYSTEMS AB

Jul 2012-Dec 2012: Chief engineer grating writing R&D.

Sep 2009-Jun 2012: R&D Manager Core Technology. Head of grating writing R&D group (12 persons). Also executed many engineering tasks in programming, analysis, and system design. Responsible for IPR.

ZARLINK

Mar 2009-Aug 2009: Research Engineer VCSEL. Development of vertical-cavity emitting laser diodes, both characterization, and modeling.

PROXIMION

Dec 2007-Feb 2009: Senior Expert. Mainly system and software development for the grating writing process.

May 2006-Nov 2007: Research Manager: Head of the Optics R&D Team. Reporting to CEO. Member of the management team. Project Manager for a software project for automation of grating writing and the industrialization of the CB product, the currently most important product for Proximion. R

Mars 2005-April 2006: Optical Engineer and Project Manager: Acted as project manager for the development of a new grating writing machine and contributed to the project with software and analog electronic design. The machine design turned out to be very successful.

OPTILLION

May 2000 — Feb 2005: Senior Expert Optoelectronics and Project Manager, Project Manager and Lead Designer of a direct modulated 10 Gbit/s 1310 nm DFB and a 1550 nm 10 Gbit/s EML from design into full-scale production Tasks included laser design, mask design, process design, and software. This also included the development of measurement set-ups for research and production test. I work. Was a contributing member of the 10 Gbit/s Ethernet standard task force. Worked with IPR strategy and management.

ERICSSON

1998 — 2000 R&D Engineer at *Ericsson Microelectronic, Optoelectronic products*. The tasks included optimization of electro absorptions modulators as well as project management of a joint project with a Chinese research institute in optimization of MBE-grown MQWs for un-cooled lasers.

1997-1998 Research Engineer at *Ericsson Fiber Optic Research Center* (FORC). Work included FTTH lasers and building practice. Hands-on experience from work in an InP semiconductor fab.

ROYAL INSTITUTE OF TECHNOLOGY (KTH), STOCKHOLM

1990-1996 Ph.D. Student at the department of optics. Developed a device simulator of MQW devices including dynamic simulation of transport properties. Performed experimental work with semiconductor characterization. 33% of the work was as a teacher in optics and other physics.

EDUCATIONAL BACKGROUND

1996 Ph.D. in Laser Physics at Royal Institute of Technology, Stockholm, Department of Optics

1990 Master of Engineering Degree in electrical engineering Royal Institute of Technology, Stockholm,

1985 Engineer Exam in medical electronics**.**

SKILLS & EXPERIENCE

- R&D manager with long experience leading highly educated, talented individuals
- R&D strategy with business development. Experience with close technical cooperation with customers in the engineering and aerospace industry.
- Cooperation with research institutes and universities
- Chief engineer with vast technical knowledge in optics, software, material, and electronics.
- Quick learner of new technologies.
- Focus on goals, results, and profitability.
- Multidisciplinary system designs with integrating software, optics, electronics, and mechanics.
- Project management: Experience in many product developments, research, and production projects
- Line Manager: 15 years of experience as a line manager over different R&D groups at two different companies. Experience includes recruitment of technical experts and as a member of the management team.
- Documentation: Efficient producer of technical documentation (specifications, report, and instructions) both for internal and external use.
- Optical communication: Extensive knowledge of dispersion compensation. Considerable experience in 10 Gbit/s transmissions, especially using EAM transmitters.
- Optical components: Design of fiber Bragg gratins, DFB-lasers, vertically cavity lasers, and optical modulators. Life test and qualification. Specifications.
- Measurements: Long experience in optical measurements including high-frequency measurement and optical vector analyzers.
- Measurement automatization: Long experience in building and programming computer-controlled measurement set-ups.
- Programming: LabVIEW, Matlab, C, C++.
- Data mining: Long experience in handling and analyzing large measurement data sets including database sources.
- Analog design. Experience with simpler analog design including simulation and schematics (using OrCAD)
- Patents: Both creating and managing.
- Languages: Swedish and English
- Teaching/presentation: Considerable experience in teaching and oral presentation.

ACHIEVEMENTS

- Contributed to the development of a new business area, sensors, which today is a major business for Proximion.
- Growth of the R&D organization
- The new generation Wistom Spetrom analyzer/WistsSense interrogator (FPGA/optical detector/high-speed ADC/software) where I was system architect, and project manager and contributed to software development and testing.
- System architect for the SKF Optomnia software.
- Two lasers from development into industrialized products including production test
- Two dispersion compensation grating products.
- One standard: IEEE 802.3ae 10Gb/s Ethernet
- One grating writing machine from development into full-scale production
- Numerous computer programs for research, production test, and data analysis
- 11 Patents

MEMBERSHIPS

- Photonic Sweden: Workgroup leader for components and systems
- Worked in the IEEE 802.3ae 10 Gbit Ethernet task force in the optical serial group.
- Member IEEE since 1988
- Member of the board of the Swedish electronics and computer engineer society SER 2005-2007

HOBBIES

I play trombone in a Big Band and sing in a choir.

FAMILY

Married with five children: born 1990 to 2006. Live in a house in Älvsjö, a suburb approx. 10 km south of Stockholm city. Born 1965 in Stockholm, Sweden

CONTACT INFORMATION

Nyckelpigsvägen 32
125 57 Älvsjö
Home: +4686475756
Mobile: +46765588440
e-mail: krister_frojdh@hotmail.com

PATENTS

11 patents in the field of optical communication and semiconductor lasers:

- **WO 00/36448** AN OPTICAL TRANSMITTER–RECEIVER MODULE
- **WO 01/52369** INTEGRATED WAVELENGTH MONITOR
- **WO 01/90794** METHOD AND DEVICE FOR PASSIVE ALIGNMENT
- **WO 02/49173** DISTRIBUTED FEEDBACK LASER WITH VARYING ELECTRICAL RESISTANCE FOR UNIFORM GAIN INSIDE THE OPTICAL WAVEGUIDE
- **WO 03/047057** METHOD AND SYSTEM FOR AN OPTICAL DEVICE
- **WO 03/034121** OPTICAL SUB-ASSEMBLY
- **WO 03/026084** COOLING OF OPTICAL TRANSMITTER MODULES
- **WO 03/032491** REDUCTION OF RINGING AND INTER-SYMBOL INTERFERENCE IN OPTICAL COMMUNICATIONS

- **WO 03/007443** MANUFACTURING SEMICONDUCTOR LASERS HAVING GRATINGS
- **WO 05/122348** WAVELENGTH STABILIZED LASER MODULE.
- **WO 05/110004** DRIVING CIRCUIT FOR ELECTRO ABSORPTION MODULATOR

PUBLICATIONS

1. S. Marcinkevicius, K. Fröjdh, and K. Naudzius, "Photoluminescence study of carrier transfer into InGaAs/GaAs quantum wells under different excitation intensities" J.. Luminescence, **54,** 89-93 (1992). (abstract)
2. K. Fröjdh, U. Olin and R. Planel, "Space-charge-induced interband optical nonlinearities in asymmetric coupled quantum wells" Optical and Quantum Electr. **26,** S565-S569 (abstract)
3. S. Marcinkevicius, K. Fröjdh, and K. Naudzius, "Photoluminescence study of carrier transfer into InGaAs/GaAs quantum wells under different excitation intensities" J.. Luminescence, 54, 89-93 (1992). (abstract)
4. K. Fröjdh, U. Olin and R. Planel, "Space-charge-induced interband optical nonlinearities in asymmetric coupled quantum wells" Optical and Quantum Electr. 26, S565-S569 (abstract)
5. K. Fröjdh, S. Marcinkevicius, U. Olin, C. Silfvenius, B. Stålnacke, and G. Landgren. “Interwell carrier transport in InGaAsP multiple quantum well laser structures. “ Appl. Phys. Lett. 69, 3695-3697 (1996).
6. S. Marcinkevicius, H. Hillmer, R. Lösch, K. Fröjdh and U. Olin: “Interwell carrier distribution in InAlGaAs quantum well laser structures. “Phys. Stat. Sol. (b) 204, 577-580 (1997).
7. S. Marcinkevicius, K. Fröjdh, H. Hillmer, R. Lösch and U. Olin: “Vertial carrier transport in InP-based quantum well laser structures.” Materials Science and Engineering B51, 30 (1998).
8. S Bischoff, J Mørk, T Franck, S D Brorson, M Hofmann, K Fröjdh, L Prip and M P Sørensen “Monolithic colliding pulse mode-locked semiconductor lasers” 1997 Quantum Semiclass. Opt. 9 655-674
9. M. Hofmann, K. Fröjdh, S. D. Brorson, and J. Mørk: "Temporal and spectral dynamics in Multiquantum well semiconductor saturable absorbers", IEEE Photon. Technol. Lett. 9, 622 (1997).
10. M. Hofmann, S. Bischoff, T. Franck, L. Prip, S.D. Brorson, J. Mørk and K. Fröjdh: "Chirp of monolithic colliding pulse mode-locked diode lasers", Appl. Phys. Lett. 70, 2514 (1997).
11. K Fröjdh "Carrier transport effects in semiconductor heterostructures for optical application" Doctoral Thesis, 1996 KTH Stockholm.
12. P. Granestrand, K. Fröjdh, O. Sahlén, B. Stoltz, J. Wallin," Gain characteristics of QW Lasers, European Conference on Optical Communication (ECOC’98), pp. 431-432, Sept. 1998.
13. Fröjdh, Krister & Öhlen, Peter. (2001). Interferometric noise, OMA and reflection specs. IEEE 2001
14. Zhang, Yong-gang & Chen, J. & Chen, Y. & Qi, Ming & Li, A. & Fröjdh, Krister & Stoltz, Bjorn. (2001). Characteristics of strain compensated 1.3 µm InAsP/InGaAsP ridge waveguide laser diodes grown by gas source MBE. Journal of Crystal Growth. 227. 329-333. 10.1016/S0022-0248(01)00715-1. 802.
15. K. Fröjdh, "New Manufacturing of Ultra-Long FBG’s (> 10 m) whilst Maintaining High-Performance Characteristics," in *Bragg Gratings, Photosensitivity, and Poling in Glass Waveguide*s, OSA Technical Digest (CD) (Optical Society of America, 2010), paper BMA1.
16. K. Fröjdh; G. Hedin; S. Helmfrid, “Strain and temperature measurement using a 9.5-m continuous chirped fiber Bragg grating with millimeter resolution” Optical Fiber Sensors Conference 2017 (OFS2017)

17. Hedin, Gunnar & Kamperman, Arnoud & Seden, Martin & Fröjdh, Krister & Pejnefors, Johan. (2016). Exporing opportunities in mold temperature monitoring utilizing fiber bragg gratings. SCANMET V Luleå (2016)

18. Seden, Martin & Yang, Hongliang Fröjdh, Krister & Pejnefors, Johan & Kamperman, Arnoud & Dekker, Edward. (2017). Securing dynamic mold flow control with FC mold and OptiMold monitor.9th ECCC European Continuous Casting Conference – ECCC 2017

19. Ozolins, Oskars & Udalcovs, Aleksejs & Pang, Xiaodan & Lin, Rui & Djupsjöbacka, Anders & Mårtensson, Jonas & Fröjdh, Krister & Gan, Lin & Tang, Ming & Fu, Songnian & Schatz, Richard & Westergren, Urban & Liu, Deming & Tong, Weijun & Chen, Jiajia & Popov, Sergei & Jacobsen, Gunnar. (2018). 112 Gbps/λ PAM4 Inter-DCI with Continuous-Fiber Bragg Grating based Dispersion Compensators. NeTh3F.3. 10.1364/NETWORKS.2018.NeTh3F.3.

20. Yang, Xiong & Lindberg, Robert & Margulis, Walter & Fröjdh, Krister & Laurell, Fredrik. (2019). Continuously tunable, narrow-linewidth laser based on a semiconductor optical amplifier and a linearly chirped fiber Bragg grating. Optics Express. 27. 14213. 10.1364/OE.27.014213.

21. Lindberg, Robert & Laurell, Fredrik & Fröjdh, Krister & Margulis, Walter. (2020). A C-cavity fiber laser employing a chirped fiber Bragg grating for electrically gated wavelength tuning. Optics Express. 10.1364/OE.383398.