



Thursday December 9, 2010

## Abstracts of the Presentations at LaserFest 50 Years

### Kista - Lecture 1:

#### *From Holography to Relativity*

**Lecturer:** Nils Abramson, Professor emeritus, KTH

**Abstract:** In 1968 the Laser Group, Holovision, was started, at the Department of Industrial Production and Metrology, KTH. It produced a large number of holographic deformation and vibration analyses for the Swedish Industry. The holodiagram was used to simplify the evaluation of the fringes in holographic interferometry. Later on, using this diagram, we were the first in the world to introduce "Light in Flight Recordings by Holography". Finally, we have started to use our diagrams to visualize Einstein's Theory of Relativity.

### Kista - Lecture 2:

#### *50 Years of Military Laser Research at the Swedish Defense Research Agency (FOI)*

**Lecturer:** Ove Steinvall, PhD, Research Director, FOI

**Abstract:** Shortly after the invention of the laser in 1960, FOA (now FOI) started studying lasers for military applications. Examples of activities at FOI from the early 60 's till today will be given. Early projects involved building lasers and investigating the potential of the laser for use in range finding, weapons and weapon guidance, holography, optical signal processing, free space laser communication, fiber optic communication, atmospheric lidars and others. More recent studies involve fiber optic sensing, laser imaging, laser mapping and depth sounding, detection of dangerous substances (CBE = Chemical, Biological agents and Explosives), lasers for optical countermeasures and laser protection.

### Kista - Lecture 3:

#### *Tunable Semiconductor Lasers in Sweden: from Research to Volume Production*

**Lecturer:** Björn Broberg, PhD, Up-start coach and private investor. Co-founder of Altitun AB and Syntune AB

**Abstract:** There has been research on tunable semiconductor lasers in Sweden for more than 20 years. This research has led to commercial exploitation which has been through boom and bust cycles. The talk will give examples of previous research efforts in research institutes (IM/IMC/Acreo) and at KTH, and the commercial exploitation of this research in the companies Altitun/ADC and Syntune/Svedice/Ignis.



## AlbaNova - Colloquium:

### *The Laser - the First 50 Years*

**Lecturer:** Sune Svanberg, Professor, LTH and Lund Laser Centre

**Abstract:** The laser has now been around for 50 years - and the "solution looking for a problem" has proven its immense usefulness in numerous fields. The talk will give a historical background and illustrates some powerful applications in basic science, diagnostics, metrology, industry and medicine.

## AlbaNova - Lecture 4:

### *Nonlinear Optics – A Science Born with Lasers*

**Lecturer:** Valdas Pasiskevicius, Professor, KTH

**Abstract:** Nonlinear optics has been possible by the invention of the laser 50 years ago, and since then both technologies have evolved together complementing and enabling each other. In this talk I will attempt to briefly overview the historic development of second-order nonlinear materials and try to discern the trends which might dominate the developments in the future.

## AlbaNova - Lecture 5:

### *Lasers Enlightening Biotechnology*

**Lecturer:** Jonas Hellström, PhD, Chief Technology Officer, Cobolt AB

**Abstract:** In the talk, I will present Cobolt's lasers and some applications in which they are currently used, e.g., laser-induced fluorescence applications (confocal microscopy, flow cytometry, bioscanners), optical measurements (Raman spectroscopy and holography) and possibly, if time allows, some more.

## AlbaNova - Lecture 6:

### *Lasers in Metrology – and How the Laser helped Building Trimble*

**Lecturer:** Mikael Nordenfelt, Technical Expert, Trimble AB

**Abstract:** This presentation will tell the story of how the laser lay the foundation on which the company Geotronics was built. It will describe how the company and its optical technology has evolved from the first electronic distance meter back in the 50's, all the way through the first "one man station", the acquisition from Trimble in 2001 on to the highly advanced instrument of present date. The presentation will contain both a brief description of Trimble and a short walkthrough of all the optical sensors used in most modern instruments.

## AlbaNova - Lecture 7:

### *Lasers Writing our Displays, Circuit Boards, Package Interconnects and Chips*

**Lecturer:** Tord Karlin, PhD, Technology Development Manager, Micronic-Mydata AB

**Abstract:** Almost every computer and TV display in the world today is produced using masks written by a laser writer from Sweden. The special properties of the laser enables high-precision and high-production-rate microlithography. Displays, circuit boards, package interconnects and electronic chips of today can all benefit from the invention of the laser half a century ago.