



Svenska OptikSällskapet
Swedish Optical Society
the Swedish Branch of the European Optical Society



Vad händer i Stockholm inom **optiken**?

Välkommen på ett **kvällsseminarium** under ca. en timmes tid

Torsdagen den 30 oktober 17.30 – 18.30

**KTH-Kista, Isafjordsgatan 22, Electrum
plan 3, section C, FMI seminar room**

***Henry Radamson, Docent, Integrated devices and circuits Division, ICT School
Group IV materials for Infra-red detection***

It has been a large interest for industrial applications of group IV materials for optoelectronic application due to the low cost and feasibility. Unfortunately, all elements in group-IV: diamond, silicon, and germanium have indirect band gap. Composed materials based on these elements e.g. SiGeC systems demonstrate also indirect-gap semiconductors.

There are some theoretical studies about the band diagram of Sn-based group-IV materials which show these layers have direct bandgap properties. As an example, the band gap of the GeSn alloy is believed to demonstrate an indirect-to-direct transition, for Sn contents above 14%. The range of energy band for GeSn layers varies from 0.81 eV for pure Ge down to 0.08 eV for α -Sn. The exact reason for a direct bandgap in GeSn alloy system relates to the induced strain by Sn in Ge matrix. Alloying with another element in group IV e.g. Si will compensate the strain and the ternary Sn-Ge-Si system creates the possibility for an advanced bandgap engineering of group-IV materials. The estimated electron mobility in SnGeSi layer is $4000\text{cm}^2/\text{Vs}$ which makes SnGeSi layers an exceptional candidate for high mobility transistors as well as THz detection.

Sergei Popov, Docent, Optics Division, ICT School

"SNOMing" the liquids: application of near-field microscopy for liquid media

Only a bit more than one decade has required to turn the scanning near-field optical microscopy from sophisticated and somehow exotic research approach into commercial systems. This high-resolving technique is capable to provide a bunch of information about nano-world objects: topographic relief, optical spectra and intensity, simultaneously. Indeed "all-in-one" research tool designed to operate in normal conditions: first of all, at room temperature and normal ambient. Although strong efforts to explore alive "creatures" of the nano-world, such as biological cells, viruses etc., have been pushed from the very beginning of the "SNOM"-era, there are still plenty of challenges and puzzles for application of the SNOM technique in bio-physics and organic chemistry.

följt av

OPTOPUB 18.30 –20.00

för alla som vill prata optik och fotonik eller annat

***OBS!! Alla som föranmält sig bjuds på mat av:
ADOPT, Linné center i Modern Optik och Fotonik.***

Viktigt: Föranmälan till sergeip@kth.se för mat!!!

Senast måndag 29/9 före kl.15:00 !!!

*Sergei Popov
Ari T. Friberg*

Saulius Marcinkevicius