

Project name: **Study of oxidation processes in GaAs (111) A and B type crystals**

Beamtime Report

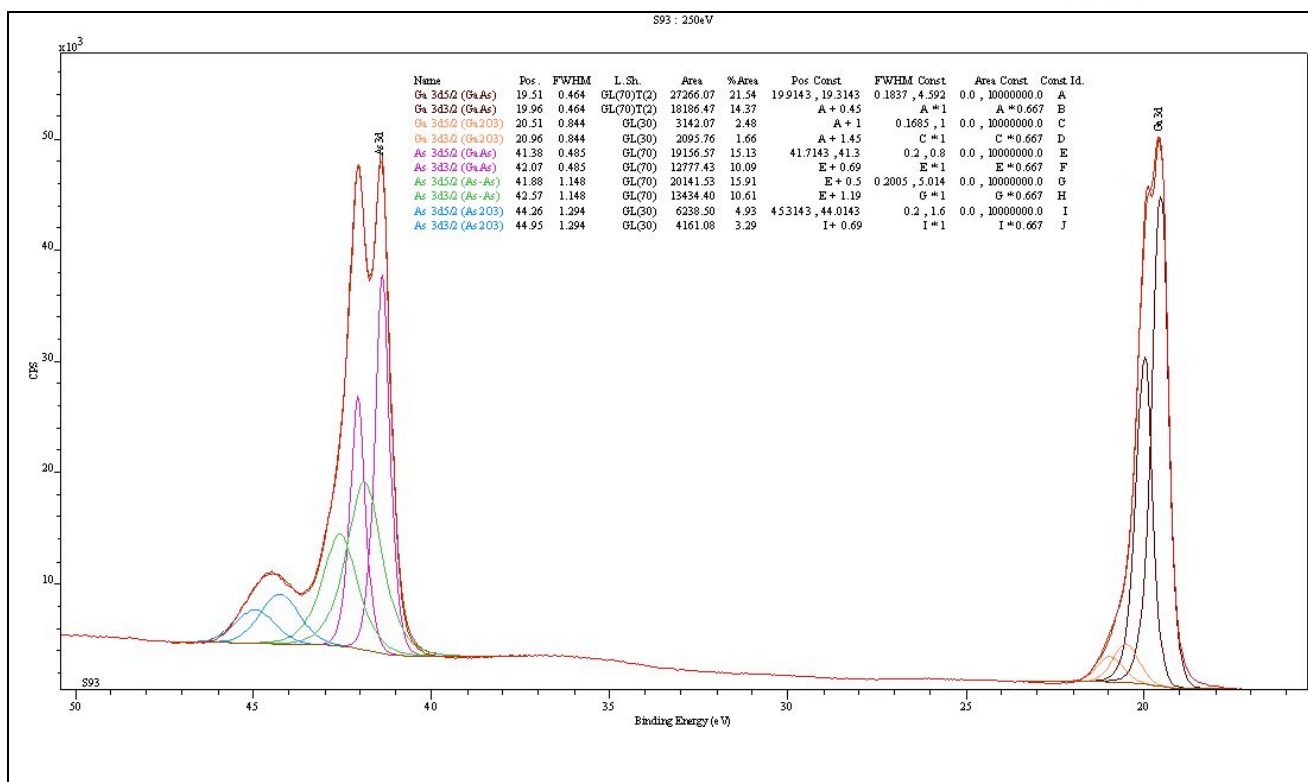
02.09.2013 - 06.09.2013 *(Date of the report to be added)*

General information

Name of the rapporteur	Name of the rapporteur's organisation
Ergo Nõmmiste, Jaak Anton	Institute of Physics, Univ. of Tartu, Clifton
Type of research (nanotechnology/health care/chemistry etc.)	Name of the research facility
Semiconductors	Beamline I311 - XPS
Date of the measurement, duration	Location of the event
2.-6.09.2013	MAX-lab, Lund University
Facility personnel participating in the measurement	
Karina Schulte (Beamline manager I311)	

Description of the project

Research description (short summary as written in the application)
The objectives of the experiment were set by Estonian semiconductor technology development company Clifton AS with the Institute of Physics of Tartu University. Dynamics of changes on etched (111)A and (111)B types GaAs samples' surfaces depending on the time the surface is exposed to open air were investigated.
Summary of activities (experiments performed, beamtime used, preliminary overview of results, next steps and other relevant information)
Three samples of GaAs (111)A and four samples of GaAs (111)B with the dimensions 1x2 cm ² were exposed to open air about 5, 10, 20, 30 minutes after etching and before XPS measurements. The spectra at binding energy range 0-1496,6eV were studied. To get the information about depth profile of oxidation process, different excitation energies are used. Totally 7 different samples were studied, special attention have been paid to the Ga and As 3d photoelectron lines and convolution of these photolines dependence on excitation photon energy. In future we would like to investigate oxidation dynamics at GaAs samples with smaller air exposure times in order to further enhance our knowledge The example of fitted 3d photoelectron spectrum of Ga and As is described on figure below. The sample was GaAs (111) A type exposed in air 10 min. and excitation photon energy was 250 eV.



How would you describe cooperation and assistance from industrial liaison officers and national contact points while preparing and carrying out the research at large scale facilities?

The cooperation was very efficient, friendly and helpful both in the preparatory phase and during the experiment and data analyses.

Other personal remarks

The project gives to development company extremely good possibility to use valuable knowledge and equipment.

Annexes

Annexes

(list of annexes; meeting minutes, graphical illustrations, tables and other supplementary data)