Wednesday, 17th October 2012
12.00h CIC Energigune
Seminar room 1

Host:
Dr. Alexandr Bondarchuk

Seminar: "Materials characterization by secondary ion mass spectrometry"

Speaker:
Dr. Alexander Tolstoguzov
http://scholar.google.com/citations?user=bb70WNIAAAAJ

From:
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This seminar aims to introduce analytical facilities of CeFITec, mainly, an upgraded time-of-flight secondary ion mass spectrometer TOF-SIMS VG Ionex IX23LS [1] and briefly presents recent author's activity in the field of material characterization by SIMS including the study of nanocrystalline hydrogenated silicon (nc-Si:H) thin films for solar cell application and ion-induced surface modification of magnetically operated contacts. Another topic, which will be covered, is a comparative sputter depth profiling of [60 (0.3 nm B4C/ 2.6 nm Mo/ 4.07 nm Si)] and [60 (2.92 nm Mo/ 4.05 nm Si)] stacks deposited on Si (111). Two up-to-date secondary ion mass spectrometers (TOF.SIMS-5 by IONTOF and CAMECA IMS7f), the pulsed RF glow discharge optical emission spectrometer GD-Profiler 2 by Horiba Jobin Yvon, and the home-built TOF-LEIS-SIMS have been involved in these round-robin experiments. The influence of primary ion-beam species, crater geometry, atomic mixing and matrix (ionization) effects on the sputter depth profiling of ultra-thin multilayers is discussed in the terms of depth resolution, modulation factor and rapidity of analysis. The pros and cons of each instrumental approach are summarized.

[1] C. A. A. Ghumman, A. M. C. Moutinho, A. Santos, O. M. N. D. Teodoro, A. Tolstogouzov, An upgraded TOF-SIMS VG Ionex IX23LS: Study on the negative secondary ion emission of III-V compound semiconductors with prior neutral cesium deposition, Appl. Surf. Sci. 258 (2012) 2490.