UNIVERZITET U BEOGRADU
INSTITUT ZA FIZIKU BEOGRAD

Laboratory for Atomic Collision Processes

SEMINAR PROJEKTA #OI 171020

LABORATORIJA ZA FIZIKU ATOMSKIH SUDARNIH PROCESA

"DISCO: a UV beamline for biological imaging, mass spectrometry and circular dichroism at synchrotron SOLEIL"

Dr Alexandre Giuliani
Synchrotron SOLEIL and INRA, France

DISCO is a VUV to visible beamline of phase 2. First users were received in september 2009. Three endstations are operated around a common scientific topic : Biomolecular investigations, with special emphasis on proteins, particularly membrane proteins:

A circular dichroism endstation in the VUV range which opens new fields in the investigation of biological molecules, with, in particular, the possibility to follow rapid kinetics such as proteins folding and unfolding in real time,.

An endstation for mass spectrometry of non-soluble molecules based on VUV photoionization with new opportunities for proteomics and photochemistry of hydrophobic molcules.

An imaging endstation for biological (living cells) and material applications with new possibilities of excitation and detection, also allowing biomedical investigation of normal and tumoral tissues moreover, new paradigms in autofluorescence diagnosis appear and "abandonned" molecules that fluoresce only in the UV can be used as probes.

Two endstations are always working in parallel, the imaging one and SRCD or APEX.

Material sciences Microscopic Analysis defaults inside optical materials ; prebiotics and fossils inclusions topology inside geological materials.

Biochemistry Proteins and DNA structures and dynamics ; sugar structures ; Mass spectrometry of proteins

Biology , Biomedics Imaging biochemical reactions inside individual cells with fluorescent proteins; Autofluorescence of tumoral cells and tissues; Study of drug distribution inside human tissues without additional labelling ; diagnosis of hydrophobic molecules

Recent papers from DISCO: http://www.synchrotron-soleil.fr/Recherche/Bibliotheque/DocumentationScientifique/DISCO