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REFERENCE: Short Term Scientific Mission, ESF
Beneficiary: Paulo LIMA-O-VIEIRA, New University of Lisbon
Host: Dr. Bratislav Marinkovic, Belgrade
Period: from 10/04/2006 to 12/04/2006 Place: Belgrade – Serbia & Montenegro
Reference code: EIPAM - 964

SCIENTIFIC REPORT

PURPOSE OF VISIT

This purpose of the visit was to establish a joint research collaboration work between the Centre for Atomic and Subatomic Physics, Laboratory for Atomic Collisions Processes, Institute of Physics, Belgrade and the Atomic and Molecular Collisions Laboratory, *Departamento de Fisica, Universidade Nova de Lisboa*, Portugal. The high resolution VUV photo-absorption measurements of biomolecules have been recently obtained by my research group at the UV1 beam line at the ASTRID facility, University of Aarhus, Denmark. The complementary and additional information to these studies can be performed by Electron Energy Loss Spectroscopy technique. The Belgrade group has a long proved experience on these studies and also has a proved experience in the study of electron scattering processes by studying the electronic state spectroscopy of valence shell.

DESCRIPTION OF THE WORK CARRIED OUT DURING THE VISIT

During my visit to Dr. Marinkovic's laboratory, I had a chance to see the EELS machine where electronic state spectroscopy experiments of several targets with the special attention to biomolecules (e.g., amino-acids) in order to understand the structural and chemical modification of these systems during irradiation can be performed. Due to my scientific activity during the last 5 years on mass spectrometry and related VUV techniques, this visit have ensured that it will be very useful to achieve the next objectives of our research groups which are connected with the study of the inelastic scattering of electrons by molecules of biological interest. I also had a chance to present a seminar on "**Electron and photon induced damage in the biomolecular environment**" to researchers at the Institute of Physics and also to discuss some recent progresses on electron and photon interactions with biological relevant molecules.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

- We will run joint complementary studies on high resolution valence shell EELS for several biological interest compounds (e.g., pyrimidine, 1,2-pentadiene, ...) at pseudo-optical conditions;

FUTURE COLLABORATION WITH HOST INSTITUTIONS

Joint collaboration is ongoing with the host institution and is planned for the near future the study of the electronic state spectroscopy of several other biomolecules. Student exchanges has also been discussed and are planned in the near future as far as post-graduate students are concerned.

PROJECTED PUBLICATIONS/ARTICLES RESULTING OR TO RESULT FROM THE STSM

At this moment we are preparing what will turn up into several joint publications to be submitted to international journals.

Dr. Paulo Limao-Vieira

Lisbon, April 17th 2006.

CONFIRMATION BY THE HOST INSTITUTE OF THE SUCCESSFUL EXECUTION OF THE MISSION

The visit of Dr. Paulo Limao-Vieira was underdone with success and according to the planned activities.



Dr. Bratislav Marinkovic

Belgrade, April 17th 2006.