



Scientific Report after completing the Short Term Mission

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The scientific mission has been carried out from 11/04/2010 to 17/04/2010 at Dr. Kopyra's group, at the Department of Chemistry of the University of Podlasie, Siedlce, Poland. The initial intention of this collaborative work was to investigate the mechanism of fragmentation of methionine induced by low energy (< 10 eV) electrons impact in the gas phase. However, in the meantime, we have decided to postpone the study of this amino acid, but instead, we were interested in glycine-betaine. Indeed, within the last decade a large number of investigations have been undertaken to identify the fragmentation pathways induced by low energy electrons to various amino-acids in the gas phase. These works aim to collect information to understand at the molecular level the effect of high energy particles to biological systems. However the amino acids produced in the gas phase are found in a canonical structure while in the more realistic situation they are found in a zwitterion, or twin-ion, form. Up to now there is no investigation on the dissociation of such a molecular system by low energy electrons.

Betaine-Glycine, or *N,N,N-trimethylglycine*, adopts naturally a zwitterionic structure in the gas phase. Thus, the objective of the investigation of this molecular system becomes two-fold: to complete the description of the mechanisms of dissociation of amino-acids in their natural medium, and the first investigation of interaction of electron with such an untypical molecular structure (zwitterion).

The scientific mission has been completed successfully. The collected data will be presented at the next ECCL meeting (WG1) in Madrid–Spain. Furthermore, unexpected circumstances (dust particles from islandic volcano blast) lead to the cancellation of my return flight on the 17/04. Therefore, I had no other choice than to prolong my stay for 4 days, before having an other mean back. We took up profit of this to prepare an article from the obtained results.

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