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## My Scientific Report of Short Term Scientific Mission, COST P9

I was visiting the laboratory from 07 June till 18 June 2004 at Freie Universität Berlin – Institut fuer Chemie under the supervision of Prof. E. Illenberger. During my staying there I performed experiments concerning electron attachment and ionization of formic acid and propanoic acid clusters.

The motivation for such investigations is related to processes in the interstellar medium and also to the initial reaction relevant in radiation damage. Organic acids are components of biomolecules and can thereby serve as model system for properties of larger and more complex amino acids, or proteins, with respect to their behavior during exposure to high energy radiation.

The experiment was performed in the crossed electron-cluster beam arrangement, where an electron beam was generated by trochoidal electron monochromator and clusters were produced by adiabatic expansion of organic acids seeded in Ar an 80  $\mu\text{m}$  nozzle.

In the case of propanoic acid clusters  $(\text{C}_3\text{H}_6\text{O}_2)_n$ , negative ion mass spectra obtained from an expansion of organic acids seeded in Ar (1:200) at a stagnation pressure of 1 bar and at the electron energy of 1.1 eV showed the size distribution of cluster in the range up to  $n=6$ , where monomers and dimers have not been observed. A variety of fragments ions  $((\text{C}_3\text{H}_6\text{O}_2)_n - m(\text{CH}_2))$ , where  $m=1, \dots, 2n$  were detected arising from dissociative electron attachment to a cluster. The most abundant fragment ion was when two molecules of  $\text{CH}_2$  were removed from the cluster. Additionally, the ion yields of product ions were recorded as a function of electron energy, with low energy resonances located neat 0.5-1.5 eV. In order to have a full picture of an electron interaction with organic acid clusters the experiments with positive ions was performed, but these studies are still in progress.

During my short term visit in Berlin laboratory I could carry out the measurements and also get acquainted with new experimental methods.

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