HIGH RESOLUTION INFRARED SPECTROSCOPY IN A SUPERSONIC PLANAR PLASMA

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A mass spectrometric and laser spectroscopic experiment has been performed to study high resolution infrared spectra of small cluster ions. The method is based on direct absorption of tunable diode laser radiation in an expansion cooled planar plasma. The plasma is generated by electron impact ionization of gas that is expanded supersonically through a long and narrow slit. This technique allows a fast and effective production modulation. The setup has recently been reassembled and improved in a number of aspects [1]. New results are shown for the charge transfer complex $[Ar\text{-}N_2]^+$ and the Ar-ion sandwich $N_2\text{-}Ar^+\text{-}N_2$, that were studied in detail previously [2,3].

[1] H.E. Verbraak, J. Bouwman, J. de Klerk, H. Linnartz, Int. J. Mass Spectrom., in preparation.
[2] H. Linnartz, D. Verdes, J.P. Maier, Science 297 (2002) 1166.
[3] H. Linnartz, D. Verdes, P.J. Knowles, N.M. Lakin, P. Rosmus, J.P. Maier, J. Chem. Phys. 113 (2000) 895.