

KN5 Mass spectrometry with light: processes and results

Juergen Grotemeyer¹

Institute for Physical Chemistry, Christian Albrechts University at Kiel, Kiel, Germany

Multi photon ionization, Laser Desorption, MATI Spectroscopy, MALDI Processes

Different processes leading to the ionization of molecules through absorption of photons are presented.

Laser activation of molecules plays an important role in modern mass spectrometry. Especially the methods of Matrix Assisted Laser Desorption Ionisation (MALDI) as well as Resonant Enhanced Multi Photon Ionisation (ReMPI) have attracted considerable interest in recent years. In this lecture results from different experiments concerning the desorption as well as the ionization process are presented [1,2].

Beside the direct investigation of desorption processes, also the ionization in MALDI have been investigated by means of supersonic expansion and multi photon ionization. Here the general question whether neutral cluster formation could be a source for the ion formation in MALDI will be addressed. The results will be discussed with respect to the underlying elementary photo physical processes. Furthermore some new information about the ionic states of different matrices and small peptides will be presented showing the importance for highly excited neutral states in the ion formation.

[1] C. Weickhardt, F. Moritz, J. Grotemeyer, *Mass Spectrom.Rev.* 15, 139 (1996)

[2] J. Grotemeyer; *Encyclopedia of Mass Spectrometry* (M.L. Gross & R.M. Caprioli Eds.) , pp 258-264 Vol. 6 (2007).