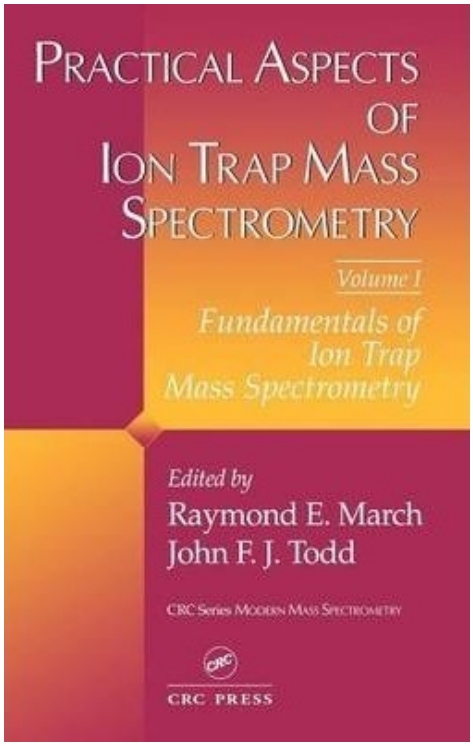

Practical Aspects of Ion Trap Mass Spectrometry: Volume 1

Edited by Raymond E. March, Edited by John F. J. Todd

Fundamentals of Ion Trap Mass Spectrometry presents an account of the development and theory of the quadrupole ion trap and its utilization as an ion storage device, a reactor for ion/molecular reactions, and a mass spectrometer. It also expands the appreciation of ion traps from that of a unique arrangement of electrodes of hyperbolic form (and having a pure quadrupole field) to a series of ion traps having fields with hexapole and octopole components and introduces the practical ion trapping device in which electrode spacing has been increased. The fundamentals of ion trap are covered in four chapters, beginning with the origin of the ion trap, its development and operating principles, and improvements in performance. The second part focuses on the environment within the ion trap -- the movement of ions within the trap -- and how this movement is modified by repeated collisions of the ions with buffer gas atoms of helium, and on the collisions of ions with molecules that lead to chemical change. The critical role of collisions in focusing the ion cloud for subsequent operations is emphasized. This important reference presents a coherent picture of the present status of research in the ion trapping field to facilitate the entree of potential ion trappers and provide a backdrop for ion trap research and development in the future.