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$\frac{E}{2}$ mass spectrum

Processes of the charge-stripping type:

$$M^+ + X \rightarrow M^{2+} + X + e$$

occuring in a collision cell (containing a gas, X) located in a field-free region preceding a magnetic and electric sector combination placed in either order, may be detected as follows. If the instrument slits are wide and if the electric sector field E is set to half the value required to transmit the main ion-beam, the only ions to be transmitted will be those with a kinetic energy/charge ratio half, or almost exactly half, that of the main ion beam. The product ions of the charge-stripping process fulfil this condition. If the magnetic field B is scanned, a mass spectrum of such doubly-charged product ions, and thus of their singly-charged precursors, is obtained. Such a spectrum is called an $\frac{E}{2}$ mass spectrum. Interference from product ions from processes of the type:

$$M_1^+ + X \rightarrow M_2^+ + X + M_3$$

where m_1, m_2, and $(m_1 - m_2)$ are the masses of M_1^+, M_2^+ and M_3, respectively, and where $m_2 = 0.5\, m_1$, can arise in $\frac{E}{2}$ mass spectra.

Source:
PAC, 1991, *63*, 1541 *(Recommendations for nomenclature and symbolism for mass spectroscopy (including an appendix of terms used in vacuum technology). (Recommendations 1991))* on page 1552

