12.4 Instrumentation

12.4.1 Ion detection

Detection Limit

The detection limit reflects the smallest amount of sample or the lowest partial pressure that gives a signal that can be distinguished from the background noise. It is recommended that a signal-to-noise ratio of 2:1 be used to define the detection limit. See also 18.4.3.7 and 2.4.

Faraday cup (or cylinder) collector

A hollow collector, open at one end and closed at the other, used to collect beams of ions.

Photographic plate recording

The recording of ion beams by allowing them to strike a photographic plate that is then developed.

Secondary electron multiplier

A device to multiply current in an electron beam (or in a photon or particle beam by first converting them to electrons) by incidence of accelerated electrons upon a surface of an electrode which yields a number of secondary electrons greater than the number of incident electrons. These electrons are then accelerated to another electrode (or another part of it), which in turn emits further seondary electrons so that the process can be repeated.

Sensitivity

This is the observed change in ion curent per unit mass of sample flow through the ion source and is measured in coulomb per microgram, C μg^{-1}. An alternative measure of sensitivity, more suitable for gases, is the observed change in partial pressure of the sample in the ion source, expressed in ampere per pascal, A/Pa. See also 18.4.3.2.