

## 5.2: Source Region Control

The mass spectrometer system will also include controls for the source region. These controls will vary depending upon the ionization technique being used for analysis. For GC/MS and LC/MS systems this software will also control the chromatography system. In general, this requires setting parameters that control the temperature of the sample inlet, determine the ionization energy and efficiency along with parameters that control the efficiency of extracting ions from the source region and transferring them into the analyzer region. These parameters often interact with each other so acquiring spectra with good signal to noise levels requires careful optimization. Typically, this is done using a reference sample and an automated tuning program. The automated tuning program allow the user to set some parameters, like the ionization energy, and the software then varies the other parameters, including voltages on the ion extraction lens systems, to get the best signal possible. The source region for an electrospray mass spectrometer is shown in Figure 5.2.1



Figure 5.2.1: Electrospray Source

The reference sample is often a fluorinated compound used for calibration and tuning since fluorine has a single isotope, which simplifies the spectra, and they have relatively high vapor pressure for their mass. Perfluorotributylamine and prefluorokerosene are two common reference standards for gas phase samples. Ultramark 1621, a mixture of fluorinated compounds, is often used for electrospray and FAB.

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