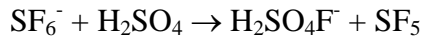


Chemical Ionization Mass Spectrometer (CIMS)

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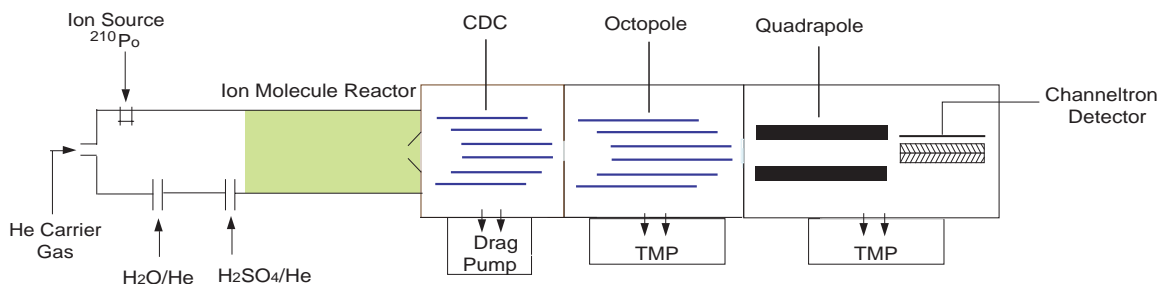
Chemical ionization is the use of ion molecules to selectively ionize a compound of interest. For example, SF_6^- ion reagent is used to detect H_2SO_4 :



Because $\text{H}_2\text{SO}_4\text{F}^-$ is a unique ion reaction product that is only representative of H_2SO_4 , selective detection of H_2SO_4 is possible. This is typical negative ion chemistry.

For positive ion chemistry, positive water ions (H_3O^+) can be used as a reagent. Because H_3O^+ transfers protons to a wide variety of organic compounds, this is a powerful method to detect organic compounds. This is also referred as to proton transfer chemical ionization mass spectrometry (PTR-CIMS).

A typical CIMS instrument can be constructed from an ion source, an ion molecular reactor, and a quadrupole mass spectrometer. Shown below is schematic diagram of a CIMS that detects H_2SO_4 .



References:

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