Nitrate Ion Chemical Ionization Source for API-ToF Mass Spectrometer System

**Ionization Scheme**

\[
\begin{align*}
(HNO_3)^{n+1} & \rightarrow (HNO_3)^n \cdot N \cancel{O_3}^- \\
(HNO_3)_n \cdot NO_3^- + HX & \rightarrow (HNO_3)_n + HNO_3 + X^- \\
& \rightarrow (HNO_3)_n + (NO_3^-) \cdot HX
\end{align*}
\]

HX is H_2SO_4, oxidized organic acids, other strong acids

**ADVANTAGES**

- Soft and selective ionization by charge transfer with highly acidic gases (e.g., H_2SO_4) and cluster formation with polar low volatility oxidized organic gases.
- Soft x-ray source for ionization, no radioactive elements.
- Electrostatic flow reactor system based on the design of Eisele and Tanner, 1993.
- Mass flow controllers for precise control of flow reactor and HNO_3 vapor source.
- EyeOn™Electronics for control of gas flows and electrostatic voltages, USB computer interface 2U 19" rack mountable.
- EyeOn™control software.
- All required hardware for mounting to CI-API TOF Mass Spectrometer systems.