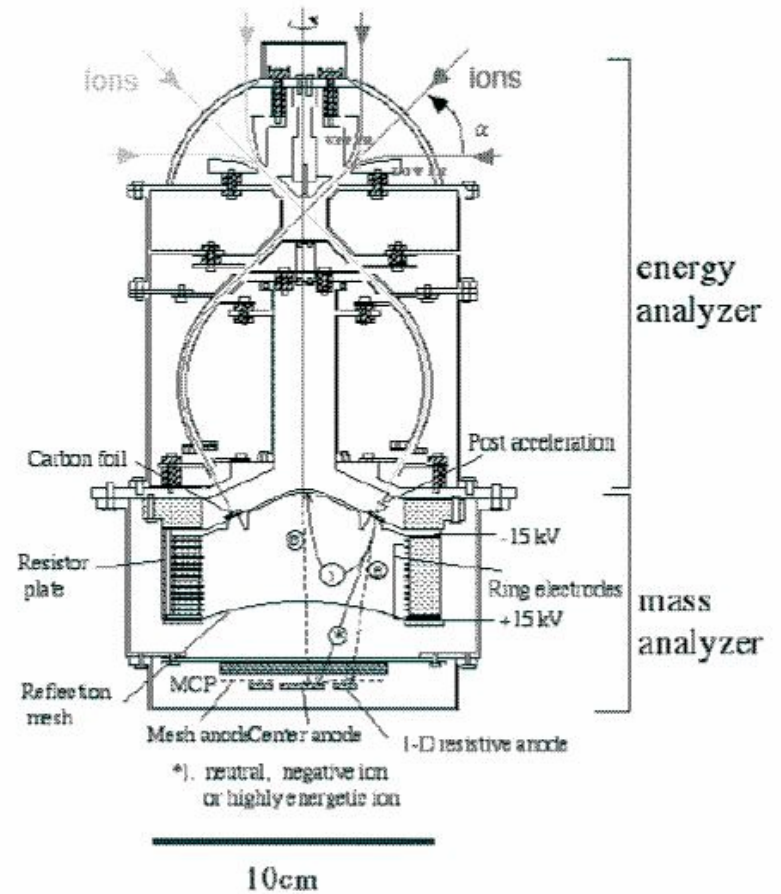


Cooperative Lunar Mission Scientific Opportunities

SELENE PACE Instrument
Observation of the LCROSS
Lunar Impact

PACE Ion mass spectrometer

- 1-60 amu range
- 5 eV/q – 28 keV/q energy range
- $m/\Delta m \sim 15$



Key Issues

- SELENE Mass analyzer is capable of measuring volatiles arising from the LCROSS impact.
- Photoions from the primary impact and later arising from sublimation of the warming debris may be observed.
- An LCROSS mode for the instrument should be developed to optimize the measurement.

The motional electric field may organize the ions and deliver them to the spacecraft

$$\mathbf{E} = -\mathbf{V} \times \mathbf{B},$$

- \mathbf{V} is the plasma bulk velocity
- \mathbf{B} the interplanetary magnetic field.

For a typical solar wind speed of 400 km/s, magnetic field of 10 nT and spiral field angle of 135° , $E \sim 3$ eV/km at the Moon.