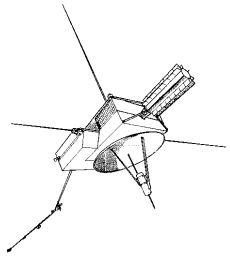
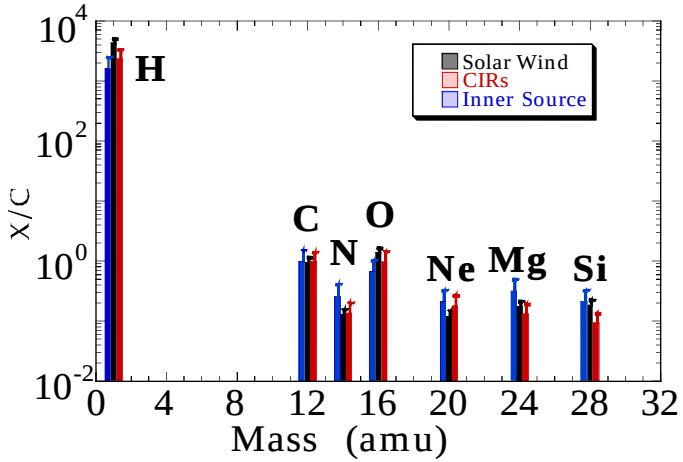
# Origin of Inner-Source Pickup Ions Discovered



"Inner Source", Solar Wind and CIR Abundances




**Elemental abundance ratios (relative to C) of inner source ions, solar wind, and CIR energetic particles are shown. Within the uncertainties the composition of the inner source is similar to that of the solar wind. The similarity of the inner source composition to that of CIR energetic particles suggests a possible inner source contribution to the energetic particle source.**

**Inner-source pickup ions are created in the inner solar system by ionization of neutral atoms; they are distinguished from ions of interstellar neutral origin by a much colder thermal distribution. The lower temperature of the inner source ions results from adiabatic cooling as the ions are convected outward in the expanding solar wind flow. Recent SWICS/Ulysses results (Gloeckler et al., JGR, 105, 7459, 2000) have shown that the composition of these inner-source pickup ions closely resembles that of the solar wind. Thus, the neutral source of these ions is thought to be absorption of solar wind ions on interplanetary dust, followed by neutralization and reemission as atoms. When the atoms are again ionized, some of them are further accelerated by interplanetary shocks, providing another source of the energetic ions observed at corotating interaction regions in the solar wind.**

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