Project Description: Residual Gas Analyzer & Control-PC upgrade for the Local-Electrode Atom-Probe (LEAP) at NUCAAPT

The residual gas analyzer (RGA) simultaneously records the partial pressures of gasses present in the LEAP ultra-high vacuum chamber: green – H; red – He; blue - H₂O; purple - CO₂), and displays the values live in a graph (top diagram). The mass spectrum is displayed in the bottom half. Both graphs are on a logarithmic scale. Courtesy of Cameca (Madison, WI).

The LEAP tomograph at NUCAAPT is a position-sensitive time-of-flight mass spectrometer with subnanometer spatial resolution in all three-dimensions and with single-atom sensitivity. The residual-gas analyzer (RGA) addition will track the residual gases in the LEAP analysis chamber, providing a baseline for the interpretation of the data recorded with the LEAP. Upgrading the control-PC triples the maximum data recording rate of the LEAP. Larger datasets can be collected in shorter times, allowing for analyzing larger microstructural features with datasets of higher significance.