

## 5.3: Mass Analyzer Control

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Control of the mass analyzer requires adjustment of voltages and currents described for the operation of the analyzer and control over voltages on the ion lenses that focus and direct the ions to the detector. The user will need to set the mass range for the analysis. The mass range is limited by the design of the instrument and is an important specification. The range scanned and the speed of the scan are typically adjusted for an experiment. The mass range should cover the expected range for the analyte but scanning a larger range than needed should be avoided. Scanning outside the range needed will either slow down the analysis or just results in the collection of background noise. The scanning speed should be adjusted to balance the speed of the experiment with the signal to noise. Scanning too fast may distort the spectra and reduce S/N levels. Scanning too slow is a significant problem with chromatography or other experiments where the signal is transient. For GC/MS in particular the chromatography peak may only be several seconds wide. The mass spectrum needs to be acquired quickly enough that the analyte concentration is constant for the entire scan. If the concentration varies during the scan it will distort the relative intensity of ions collected at different times.

The mass analyzer needs to be tuned to optimize the efficiency of ion transmission and calibrated to determine the mass scale. This is typically done using a reference sample as part of the tuning process described for the source region.

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