

# Resolution and Sensitivity Tuning of an Electrostatic Ion Trap

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Anharmonic resonant ion trap mass spectrometry (ART MS) has been gaining increasing acceptance for applications requiring (1) fast spectral output, (2) low power requirements, (3) small sensor dimensions and (4) ability to locate control electronics remotely from the sensor (i.e. harsh radiation environments). An auto-tuning procedure, included in the control software, optimizes all relevant operational parameters and allows users to provide consistent mass spectrometer performance in the field. In-depth understanding of the principles of operation of the technology and related control parameters can also be applied in the field to further adjust instrument performance under challenging experimental conditions and for installations relying on custom software packages. In this presentation the latest understanding of the principles of operation of ARTMS technology is described with particular emphasis on the role of ion energetics, electron emission current and gas pressure on the resolution and sensitivity of the sensor. Armed with this knowledge any user can very quickly identify and optimize the parameters that need adjustment in the mass spectrometer to obtain the expected instrument performance.