

# Ion Trap Mass Spectrometers

Resolving complexity with mass spectrometry

## LCQ FLEET

### *Exceptional Analytical Value*

The Thermo Scientific LCQ Fleet ion trap makes excellent full-scan MS<sup>n</sup> sensitivity, ruggedness, and reliability cost effective. It delivers rich information for routine analysis of complex samples and integrates seamlessly with fast HPLC systems under an easy-to-use single point of control.



## LTQ XL

### *Gateway to Discovery*

The Thermo Scientific LTQ XL linear ion trap combines exceptional sensitivity with tremendous flexibility. It applies multistage activation, CID (Collision-Induced Dissociation), PQD (Pulsed-Q Dissociation), and optional ETD (Electron Transfer Dissociation), to generate extensive structural information for the most demanding applications. Available FAIMS offers greater specificity for complex samples, while the optional MALDI source promises speed and simplicity. The LTQ XL™ can be upgraded to the ultra-high resolution and mass accuracy of the LTQ Orbitrap XL™ or LTQ FT Ultra™ hybrid mass spectrometers.

## VELOS PRO

### *Accelerating Innovation*

The Thermo Scientific Velos Pro is the pinnacle of ion trap mass spectrometry that delivers enhanced performance for complex sample analyses. For the first time ever with an ion trap, the Velos Pro™ offers Trap-HCD (Higher-Energy Collisional Dissociation) combined with CID, PQD and ETD to solve the most difficult analytical problems. With the improved robustness of generation II ion optics, the Velos Pro delivers reliability on the fastest, most-sensitive, highest capability ion trap available today. It offers the ultimate in identification and quantitation of low-abundance compounds and provides absolute confidence in every result. The Velos Pro can also be enhanced with the ultra-high resolution and mass accuracy of Orbitrap Velos Pro or Orbitrap Elite technology.



## ELECTRON TRANSFER DISSOCIATION (ETD)

### *The Essential Tool for PTM Analysis*

ETD, available for the LTQ XL, Velos Pro, and all Orbitrap series hybrid products offers ECD-like fragmentation, producing abundant peptide fragmentation while preserving labile PTMs such as phosphorylation. ETD, combined with the huge ion storage capacity of Thermo Scientific linear ion traps, creates a powerful new tool for protein and peptide analysis.



## LTQ ORBITRAP XL

### Entry Level Research Tool for Proteomics and Small Molecule Analysis

Combining patented Orbitrap technology with the fast and highly sensitive LTQ XL linear ion trap, the LTQ Orbitrap XL mass spectrometer provides reliable detection and identification of compounds in complex mixtures. Outstanding mass accuracy, resolving power and high sensitivity MS<sup>n</sup> performance make the LTQ Orbitrap XL the instrument of choice for identifying and characterizing more compounds in less time. The LTQ Orbitrap XL hybrid mass spectrometer supports a wide range of applications, from routine compound identification to the analysis of trace levels components in complex mixtures.

## ORBITRAP VELOS PRO

### Benchmark Platform for Confident Structural Elucidation

Building on the industry-leading Orbitrap™ platform, the Thermo Scientific Orbitrap Velos Pro features dual-pressure ion trap technology that delivers ultimate robustness and increased dynamic range. With the Velos Pro dual-pressure linear ion trap front end, rapid scanning enables higher productivity and generation II optics provide enhanced ruggedness for the system. The outstanding data quality and sensitivity of the Orbitrap Velos Pro, whether using CID, HCD or ETD fragmentation, makes it ideal for analyzing complex mixtures, such as identifying low level proteins and structural elucidation of metabolites. Similarly, the high mass accuracy and resolving power of the Orbitrap Velos Pro increase the speed and confidence of protein identification in complex samples by minimizing false positives.



## ORBITRAP ELITE

### High-Field Orbitrap Enables New Possibilities in Research and Discovery

The Thermo Scientific Orbitrap Elite combines a novel high-field Orbitrap with Velos Pro dual-pressure ion trap technology to deliver unsurpassed resolving power, increased sensitivity, high scan speeds and a larger dynamic range. With a maximum resolving power of >240,000 FWHM, a 4x increase over previous technology, the Orbitrap Elite provides unprecedented confidence in results by enabling molecular weight determination of intact proteins and in-depth analysis of isobaric species. The ultra high resolution of the system is especially useful when dealing with complex and low abundance samples, in applications such as proteomics, metabolomics and lipidomics. The availability of multiple fragmentation techniques (CID, HCD and ETD-optional) offers a new level of versatility and performance for wide variety of research applications for experiments at a greater depth than previously possible.

## LTQ FT ULTRA

### Unprecedented Analytical Power

The Thermo Scientific LTQ FT Ultra merges advanced ion trap and Fourier Transform Ion Cyclotron Resonance (FT-ICR) technologies into a single instrument with unprecedented analytical power. Ultra high resolution and sensitivity, coupled with sub-ppm mass accuracy and ECD and IRMPD fragmentation capabilities, are available for applications demanding ultimate performance and flexibility, such as analysis of petroleum and environmental samples, and top-down protein analysis.



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