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Waters launches charge detection mass spectrometry technology

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To accelerate the development of next-generation biotherapeutics



US-based Waters Corporation has unveiled the Waters Xevo Charge Detection Mass Spectrometer (CDMS), delivering unmatched measurement and characterisation for the broadest range of mega-mass biomolecules central to next-generation therapeutics and structural biology.

With the rapid growth of cell and gene therapies, mRNA, and complex protein therapeutics, scientists face significant challenges in analyzing increasingly large and heterogeneous drug modalities – yet existing tools are limited in resolution, sensitivity, and compliance-readiness.

The Xevo CDMS System addresses these gaps with direct, individual-particle mass measurement for molecules up to 150+ MDa, enabling previously unattainable analysis of protein complexes, nucleic acids, lipid nanoparticles, viral vectors, and more.

The Waters Xevo CDMS provides confident analysis of new modalities, like empty, partial, and full viral vector capsids, using up to 100-fold less sample volume than that required by current techniques, and delivering results in less than ten minutes, even at concentrations as low as 10^{10} vp/mL. This new capability paves the way for real-time characterization of gene therapies during process development – ultimately improving the safety and efficacy of advanced therapies.

Additionally, CDMS absolves the need for deconvolution or digestion approaches to achieve simple and accurate analysis of complex molecules. This transformational mass spectrometry advancement supports a wide range of applications – from discovery and research, through process development, to regulatory approval and manufacturing.