

Accelerated Multiple Reaction Monitoring (aeMRM)

Driving productivity with high-speed MRM acquisition rates

Speed that transforms throughput

Quantitative workflows require sufficient peak sampling for accurate integration and comparison between samples and across studies. As labs expand analyte panels and shorten run times, multiple reaction monitoring [MRM] concurrency increases, creating cycle time challenges. Analysts often respond by extending gradients, narrowing RT windows, or limiting transitions - reducing throughput or affecting robustness or quantitative integrity. Available on the **SCIEX novus V55 system**, accelerated MRM [aeMRM] enables sub-to-low millisecond cycle times, supporting more transitions, faster methods, and greater analyte coverage while maintaining robust quantitative performance.

The aeMRM advantage

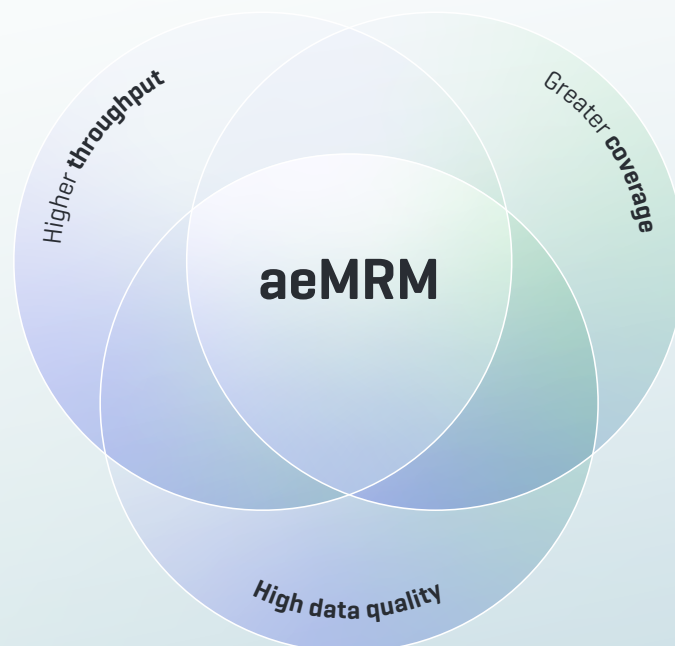
- Sub-1 ms cycle times enable monitoring of more transitions
- Supports higher throughput, enhanced analyte coverage, and flexible method design without losing accuracy
- Overcomes cycle time limitations while maintaining quantitative performance

Anatomy of an MRM Cycle

In traditional MRM cycles, Q1 isolates a target precursor ion, Q2 fragments it using collision-induced dissociation [CID], and Q3 selects a specific product ion that is measured by the detector.

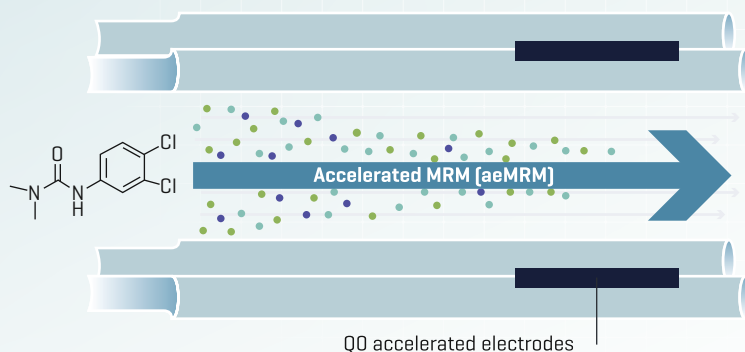
- Every transition includes a pause and dwell period for signal acquisition.
- The total cycle time is determined by the pause and dwell times of all transitions.
- In traditional [~500 MRMs per second] MRM cycles, clearing time contributes a nearly constant ~0.5 ms pause
- In aeMRM, we have optimized the transition timing to reduce cycle duration and improve acquisition performance

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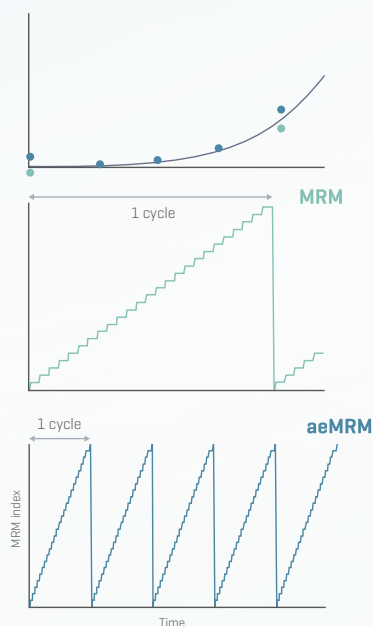


How does aeMRM work?

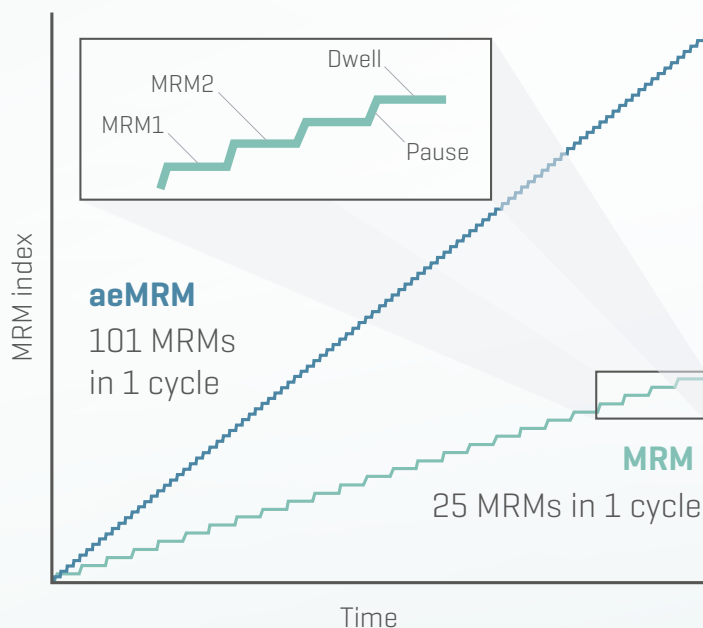
- Optimized acquisition timing enables sub-1 ms cycle times
- Q0 acceleration electrodes to move ions through quickly
- Updated SCIEX OS software algorithms optimizes MRM switching time



More points across LC peak



Higher MRM multiplexing



Benefits of aeMRM

Enables faster cycling

Supports more transitions while maintaining data-point density across chromatographic peaks

Maintains data quality

Preserves key data quality metrics like data point density and supports wider RT windows without peak loss

Efficient polarity switching

Faster acquisition offsets polarity-switching overhead and reduces undersampling

Supports panel expansion

Increase analyte panels, especially for pesticide residues, without extending run times or compromising data quality

Enables method scalability

Supports larger panels, polarity switching, and dense MRM scheduling

Single-injection workflows

Enables single-injection workflows by supporting more transitions per cycle and reducing repeat analyses