

# SIMULTOF™ MASS SPECTROMETRY FOR HIGH PERFORMANCE MS-MS

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A new principle for time-of-flight (TOF) mass spectrometry is described together with applications to analysis of small molecules, peptides, and intact proteins by MALDI. This advance allows simultaneous space and velocity focusing and provides both high resolving power and high sensitivity using a relatively simple analyzer. Existing TOF instruments employ “space focusing” and “delayed extraction” to reduce effects of initial position and initial velocity, but it is impossible to simultaneously achieve both space focusing and velocity focusing in these instruments. In recent work we have developed an alternative approach to focusing in TOF that overcomes this limitation. A new tandem TOF instrument has been developed that provides high resolution precursor selection, efficient fragmentation without a collision cell, and sensitive detection of fragments with high resolving power and mass accuracy. Applications to tissue imaging, MSIA, and LC-MS-MS are presented.