

Multidimensional Liquid Chromatography-Mass Spectrometry Technological Advancement in Proteome Study

Dr. Michel Brusson*

Department of Biomedical Sciences, Institute of MGR, Chennai, India

Abstract

Liquid chromatography is a powerful separation technique widely used in analytical chemistry. It involves the differential partitioning of analyte between a mobile phase and a stationary phase. The analyte mixture is dissolved in a liquid solvent, which serves as the mobile phase and flows through a column packed with a stationary phase material. As the mobile phase moves through the column, different components of the analyte mixture interact differently with the stationary phase, leading to their separation. Various separation mechanisms, such as adsorption, partition, ion-exchange, size-exclusion, and affinity chromatography, can be employed depending on the analyte and separation goals. The separated analyte are then detected using techniques like UV/Vis spectroscopy, mass spectrometry, or fluorescence spectroscopy. Liquid chromatography offers high separation efficiency, versatility, and is applied in diverse fields such as pharmaceuticals, environmental analysis, and biotechnology.

*Corresponding author: Dr. Michel Brusson, Department of Biomedical Sciences, Institute of MGR, Chennai, India, E-mail: russon@gmail.com

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