

An Overview of Matrix Elimination Strategies for Ion Exchange Chromatography

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Matrix elimination is a method of sample preparation that removes interfering matrix species prior to analysis. Also referred to as solid phase extraction, an analyte is bound to the phase while the matrix is washed through a column or cartridge. The analyte is then eluted from the cartridge with a suitable eluent and volume adjustment for subsequent analysis, all of these steps are labor intensive. The process of matrix elimination for environmental samples is especially challenging due to the wide variety of matrices and analytes. For environmental contaminants applicable to ion exchange separation, matrix elimination has evolved from offline, labor intensive, sample prep steps to automated online, and finally to 2 dimensional applications that not only remove matrix, but bring improved selectivity and increased sensitivity to a method. This new, Matrix Elimination Ion Chromatography (MEIC) shows a 4 fold increase in sensitivity for bromate and perchlorate analysis. This technique has resulted in the creation of two new EPA methods for drinking, waste, and ground water analysis.

