

A Study on Reversible and Irreversible Pressure Profiles of High Performance Liquid Chromatography

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High Performance Liquid Chromatography requires high precision particle packed column to achieve highly repeatable retention times for difference chemical species. As the number of experiments wear downs the performance of the column, there accumulates solid like cladding on the surface of the packed particles in the column. We study the dynamic behavior of the carrier fluid flow through the packed column with gradient concentration condition using the pressure profile. Certain types of eluents dissolve the particle surface contamination rather well. The performance of those cleaning solutions are examined with the experimental study with theoretical explanations. Temperature conditions are also varied to study the thermo-rheological behavior of the gradient eluents. We study the relationship between pressure profile, gradient elutions, absorption curves together with the aggregation particle structure.