The dispersion of a solute applied to the chromatography tubing.

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Key words: liquid chromatography, chromatography tubing, extra-column dispersion

The purpose of this review is to outline the effects of dispersion occurring in extra – column volume in liquid chromatography systems. This phenomenon brings the systematic error into the process of chromatographic separation or analysis and therefore has been the subject of numerous studies – theoretical and also experimental. Different approaches to the problem of dispersion in the injection loop, capillary tubing and detector of a liquid chromatography system are presented. The theoretical works were predominantly based on material balance of the solute in the laminar flow which has been treated analytically or numerically. The experimental studies were usually focused on the influence of extra – column dispersion on height equivalent of theoretical plate or used Taylor equation for calculation of the variance of mostly low molecular solutes. Only few studies dealt with the spreading of macromolecular solutes in flowing stream, where their low diffusion coefficient and density differences between their solution and the mobile phase have additional effect on the dispersion. An overview of the semi – empirical and empirical equations for calculation of dispersion in various systems is also given.

This work was supported by The Slovak Grant Agency for Science VEGA (Grant No. 1/0065/03)