GREENS FUNCTION ANALYSIS OF DISPERSION IN MEMBRANES

Adsorption membranes have the potential to be used in a variety of applications. However, maldistribution of flow, non uniform flow, and extracolumn effects are holding it back from its true potential. All of these problems are caused by dispersion. Reverse flow experiments were conducted on an HPLC with three samples of bovine heart cytochrome C, thirty nanometer latex spheres, and 80 nanometer latex spheres. Also, three different configurations were used on the injection valves in an attempt to pinpoint where most of the dispersion is taking place. Greens function was used to provide three driving parameters, mean residence time, standard deviation, and space time of the experimental chromatograph data. Another objective was to examine what happens when the pore sizes of the membrane are relatively close to the size of the particle being passed through the membrane. The results show that the dispersion around the membrane and peripherals is overwhelmed by the dispersion in the detector of the HPLC. Also, at lower flow rates, particles near pore size constantly get lodged in the system and are unable to be detected.

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