37h A Software Program for Preparative Ion-Exchange Chromatography

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As an important technique in bioseparation processes, ion-exchange chromatography is often studied in undergraduate and graduate biochemical engineering courses. Chromulator-IEX was developed to allow the simulation of ion-exchange chromatography. It solves the general rate model equations numerically using finite elements and orthogonal collocation. The steric mass-action isotherm is used with pH-dependent equilibrium constants and characteristic charges, making it suitable for the study of pH gradient elution of proteins. It features a graphical user interface, visualization of effluent histories, animations showing profile development in the column, and position-time plots. The column feed can be specified in a number of ways, allowing virtually any mode of operation to be studied.

An academic version of the software is available free of charge for teaching and academic research.