29d Adsorptive Membrane Based Separations

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Preparative chromatography is widely used in the downstream purification of biopharmaceutical products. Replacement of resins by membranes as chromatographic supports, overcomes many limitations associated with resin-based chromatography such as high-pressure drops, slow processing rates due to pore diffusion and channelling of the feed through the bed. In particular recent studies indicate that hindered pore diffusion is particularly severe for large biomolecules. For example, in the purification of recombinant antibodies, anion exchange columns are frequently used to bind trace amounts of contaminants such as DNA and host cell proteins. However due to hindered pore diffusion which results in early breakthrough of the contaminants, current commercial purification schemes use columns that are greatly over designed.

While adsorptive membranes show tremendous potential their use in commercial applications has been limited. In this presentation important design considerations for adsorptive membranes will be discussed. Careful design of adsorptive membrane based unit operatios will be essential to avoid disappointing results.