

Applications of High Performance Ion-Exchange Chromatography in the Pharmaceutical Industry

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1 ESSENTIALS OF ION-EXCHANGE CHROMATOGRAPHY

1.1 Introduction to Ion-Exchange Chromatography

Ion-exchange chromatography (IEC) is based on the interaction of ionic species in the mobile phase with charged functional groups immobilized on a stationary phase. IEC is divided into anion-exchange chromatography and cation-exchange chromatography depending on the type of ion it is separating. Anion exchangers contain positively charged functional groups in the stationary phase and cation exchangers have negatively charged functional groups. High performance IEC (HPIC) uses mechanically stable stationary phase supports that allow the high pressures needed for rapid and high resolution separations. HPIC can be considered a mature analytical technique [1] and thorough descriptions can be found in various handbooks [2, 3].