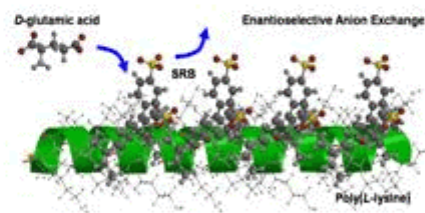


Enantioselective Anion Exchange on Poly(L-lysine) Monolayer

Ion exchange between negatively charged fluorescent dyes and chiral glutamic acids was examined on a poly(L-lysine) (PLL) layer assembled on ultrathin TiO₂-gel films. TiO₂-gel film with a thickness of 6–7 nm was first deposited on a quartz substrate by means of surface sol-gel process, molecularly thin PLL layer was then immobilized on titania surface. After characterizing the conformation of the PLL chains, fluorescent dyes with different hydrophobicity (sulforhodamin B or carboxyfluorescein) were electrostatically adsorbed on the PLL layer, and desorption of the dye molecules into dilute *D*- (or *L*-) glutamic acid solution was investigated. The enantioselective binding of glutamic acids was monitored by the release of the pre-adsorbed fluorescent dyes. We found that the speed and amount of desorption highly depended on the chirality of glutamic acids as well as the molecular structure of the fluorescent dyes. Binding mode of the pre-adsorbed molecules plays an important role in the exchange of molecules. Such recognition will provide a general concept for the complicated interaction between biomacromolecules in multi-electrolyte solution.



Schematic illustration of anion exchange on a PLL chain.