

## Polymer Adsorption into Nanopores and Its Applications in Polymer HPLC

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Understanding of polymer transport in nanopores is important for the advancement of chromatography and membrane-based separation techniques of polymers. The geometrical restriction of nanopore channels can impede the mobility of polymer chains confined in pores. It has been well understood for the polymer diffusion in nanopores in terms of polymer reptation, when polymer chains do not have adsorptive interactions with the pore surfaces. When the polymer chains adsorb on the nanopore surfaces, however, the confinement effects on polymer adsorption and diffusion are further complicated. This is because the polymer chains have to be not only deformed by the geometric restrictions of the pores, but also adsorbed by the affinitive interactions with the surfaces. Here, we study the adsorption and transport of polystyrenes in solution using nanoporous silica. After pre-adsorbing the polystyrenes in nanoporous silica using cyclohexane solutions, low molecular weight displacer molecules are added to the solutions to understand how the solvent quality and surface affinity tuning by the displacer addition affects the adsorption and transports of the adsorptive chains confined in nanopores.