

Simple method for measuring diffusion coefficient with FO membranes

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Diffusion coefficient is of great importance for researches related to solution dynamics. However, diffusion coefficient of some unfamiliar solutes and mixtures of solutes are usually not known. Due to this hardness and limitation of expensive devices, researchers have been assuming the diffusion coefficients. However, this may differ from real diffusive behavior. We suggest a new simple method for obtaining diffusion coefficient by using membranes which structural parameter is known. We can predict the permeate flux of membrane by calculating internal concentration polarization and salt flux with membrane permeability, applied pressure, draw solution concentration, diffusion coefficient and structure parameter. However, with PRO configuration and other parameters known, permeate flux can be fixed and diffusion coefficient can be obtained. Because water is permeating to the draw solution side, diffusion coefficients of different concentration are obtained simultaneously. Furthermore, we expect this method would be effective in other applications as well.