

TEMPERATURE AND CHARGE DEPENDENCE ON THE PERMEABILITY OF FERRICYANIDE IONS THROUGH POLYELECTROLYTE MULTILAYER MEMBRANES. Ramy Ghostine, Joseph Schlenoff. Department of Chemistry and Biochemistry, Florida State University, Tallahassee, Florida, 32306

The permeability of a triple charged redox active ion, ferricyanide, through polyelectrolyte thin films of poly(diallyldimethylammonium) chloride (PDADMA) and polystyrene sulfonate (PSS) were investigated at different temperature and different salt concentration. The concentration of ferricyanide inside the membrane was measured by Attenuated Total Reflectance Fourier Transform Infra Red Spectroscopy (ATR-FTIR). A rotating disk electrode (RDE) was used to measure the fluxes across the film, and to calculate the diffusion coefficients of ferricyanide inside the membrane. It was found that the amount of ferricyanide inside the film decreases with temperature when salt ions are present. A potential shift was recorded on the cyclic voltammograms at different salt concentration between the bare electrode and the coated electrode, due to the difference in ferri/ferrocyanide concentration gradients inside the film.