PE3

Cationic Polyelectrolyte in Polypyrrole Matrix
양이온성 고분자 전해질을 포함하는 폴리피롤에 관한 연구

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It is not facile to permanently incorporate cationic species into polypyrrole matrix since cations cannot play a role as charge balancing ions either during electropolymerization or subsequent redox-switching processes. We utilized viologen oligomers as cationic polyelectrolyte and tried to incorporate into polypyrrole/poly(styrene sulfonate) [PP/PSS] during electropolymerization. We chose viologen polymers with a hexamethylene linkage as bipyridine units are electrochemically active and viologen-containing PP/PSS electrodes can possess a electrocatalytic function for oxygen reduction. Two solutions containing various amounts of polyviologen and $Na^{+}PSS^{-}$ were mixed to obtain precipitates. This was re-dissolved in aq. solutions by careful control of solution pH. Preliminary results indicate that viologen units can be entrapped in the matrix and the amount is quite sensitive to electropolymerization conditions. It was also found that the presence of small amounts of viologen in electropolymerization media substantially inhibit PP-Cl synthesis, but doesn't affect PP/PSS polymerization rates. Now, we are examining the reason of this difference.