Electrochemical Processes at Ionic Liquid Modified Electrodes: Ionic Liquid Films and Ionic Liquid Stabilized Gold Nanoparticles

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Room temperature ionic liquids are becoming attractive component of electrochemical systems \cite{1,2,3} including liquid modified electrodes \cite{4,5}. These already become important tool to study ion transfer processes across ionic liquid|aqueous solution interface \cite{6} driven by electrochemical generation of charge in one phase \cite{5,6}.

Earlier studies were restricted to the electrodes modified with film or droplet of ionic liquid containing redox active probe and immersed into aqueous solution \cite{7,8} this presentation. In this presentation we will elucidate electrochemical processes at more complex electrodes modified with ionic liquid as one of the components. First electrode is modified with liquid film of Mn(III) tetraphenylporphyrin solution in ionic liquid supported toluene. Second system involves electrode covered by solid film of fullerene C\textsubscript{60} and ionic liquid and for comparison electrode modified with C\textsubscript{60} solution in ionic liquid supported 1,2-dichlorobenzene. In both cases tris(pentafluoroethyl) trifluorophosphate was used as ionic liquid. The electrochemical processes on these electrodes are rather complex and involve electron transfer and ion transfer across liquid|liquid and solid|liquid interface.

Last system employs thiolated imidazolium stabilized gold nanoparticles for electrode modification. These particles together with gold nanoparticles having negatively charged functionalities are used to prepare gold nanoparticulate film electrode with layer-by-layer technique. This material exhibits voltammetry characteristic for gold electrode and UV-vis spectra typical for gold nanoparticles.

\begin{thebibliography}{9}
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\bibitem{6} T. Kakiuchi, Z. Samec, Pure Appl. Chem.
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