Investigation of Novel Electrode Materials for Electrochemically-Based Remediation of High- and Low-Level Mixed Wastes in the DOE Complex

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Research Objectives

One of the key issues that must be solved to achieve a successful remediation of the high level liquid wastes (HLW) at the Hanford and at Savannah River sites is the removal of the significant quantities of nitrate and nitrite in the existing liquid waste streams that are presently on these sites in the DOE complex. One method of waste stream remediation is electrochemical oxidation, which is an in-situ method that has been well-documented to have significant advantages in many areas with respect to pump-and-treat approaches to waste remediation. There are, however, significant aspects of the electrochemical oxidation process that need to be addressed from a basic research viewpoint. The research being performed under this proposal will investigates new materials, initially based on degenerately-doped titanias, for use in the electrochemical degradation of organics and nitrogen-containing compounds in sites of concern to the DOE remediation effort.