

Transport of ions across epoxy freestanding thin films using a home built transport cell

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Advances within the materials and chemical science have created a unique opportunity for the identification of a new multi-functional and environmentally compliant aerospace coating for military hardware. Transport of chemical species is very important for many approaches for achieving such a new coating system. The objectives of this work are to: (1) quantitatively understand the effect parameters on transport of chemical species across coatings; (2) assist design and development of a new functional coating system. Therefore, transport of different ions across epoxy freestanding thin films will be examined in a home built transport cell. The transport experiments will be conducted under two different conditions (1) natural conditions; (2) electric fields. The applied electric field will be controlled by constant potential technique. Capillary Electrophoresis (CE) analyses of the concentration of ions will be carried out periodically during the experiments. Various concentrations, pH values of feed and permeate solutions, film thickness and applied potentials will be adopted in order to determine the parameters playing roles on the permeate characteristics of the films.